

COLOR CODE INDEX: Text Underlined = New Language Added ~~Text Strikethrough~~ = Language Deleted **Magenta** = NEW or Modified Text by ICC in 2018 **Turquoise** = NEW or Modified Text by ICC in 2021
~~Yellow Strikethrough~~ = Text Deleted from the Code by COH **Green Text** = NEW or Modified Text by COH in 2021 **Grey Text** = Previous COH Amendment Brought Forward to 2021

<u>Confidential Notice:</u> This file is confidential and intended solely for the use of the individual or entity to whom this file is shared with. This is notification that any unauthorized review, disclosure, dissemination, distribution, or copying of it or its contents is prohibited. Thank you.			
2015 Houston IFC – Chapter 1 Scope and Administration	2021 IFC – Chapter 1 – Scope and Administration	2021 Houston IFC Amendments	Code Change Summary
[A] 101.1 Title. These regulations shall be known as the <u>City of Houston Fire Code of [NAME OF JURISDICTION]</u> , hereinafter referred to as “this code,” and also known as the <i>Fire Code</i> . The <i>Construction Code</i> collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, City of Houston Ordinance No. 2021-1037 ⁴ .		[A] 101.1 Title. These regulations shall be known as the <u>City of Houston Fire Code of [NAME OF JURISDICTION]</u> , hereinafter referred to as “this code,” and also known as the <i>Fire Code</i> . ~~The Construction Code collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, City of Houston Ordinance No. 2021-1037⁴.~~	No change to Houston amendment.
	101.2 Scope. This code establishes regulations affecting or relating to structures, processes, premises, and safeguards regarding all of the following: 1. The hazard of fire and explosion arising from the storage, handling or use of structures, materials, or devices. 2. Conditions hazardous to life, property or public welfare in the occupancy of structures or premises. 3. Fire hazards in the structure or on the premises from occupancy or operation. 4. Matters related to the construction, extension, repair, alteration or removal of fire protection suppression or alarm systems. 5. Conditions affecting the safety of fire fighters and emergency responders during emergency operations.		Minor update to base code language.
[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted. <u>Appendices A, B, C, D, E, F, G, H, I, J and M are hereby adopted and made part of this code.</u>		[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted. <u>Appendices A, B, C, D, E, F, G, H, I, J, M, and N are hereby adopted and made part of this code.</u>	Update to Houston amendment to include Appendix N in adopted appendices.
[A] 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 a reasonable level of safety to fire fighters and emergency responders during emergency operations. <u>The provisions of this code shall not apply to any activity for which local regulation is preempted by federal or state law.</u>	[A] 101.3 Intent. Purpose.	[A] 101.3 Purpose. 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 a reasonable level of safety to fire fighters and emergency responders during emergency operations. <u>The provisions of this code shall not apply to any activity for which local regulation is preempted by federal or state law.</u>	Section renamed in base code. No change to Houston amendment.
[A] 101.3.1 Landlord/tenant. The terms of this code shall not be construed to alter the terms of any lease or other agreement between landlord and tenant or others relating to property that is the subject of this code; provided that no provision of any lease or other agreement shall be construed to excuse compliance with this code by any person, including the construction, maintenance, occupancy, or use of any property in violation of this code. It is the intent of this code to identify the parties this jurisdiction will hold responsible for compliance with and violations of this code, rather		[A] 101.3.1 Landlord/tenant. The terms of this code shall not be construed to alter the terms of any lease or other agreement between landlord and tenant or others relating to property that is the subject of this code; provided that no provision of any lease or other agreement shall be construed to excuse compliance with this code by any person, including the construction, maintenance, occupancy, or use of any property in violation of this code. It is the intent of this code to identify the parties this jurisdiction will hold responsible for compliance with and violations of this code, rather	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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than to determine the rights and liabilities of persons under agreements to which this jurisdiction is not a party.		than to determine the rights and liabilities of persons under agreements to which this jurisdiction is not a party.	
[A] 101.6 Standards. Copies of the Houston Fire Department Life Safety Bureau Standards that are referred to in this code have been placed on file in the city secretary's Office in connection with the code's adoption and shall constitute a part of this code. The standards may be inspected in the city secretary's Office or the Office of the Fire Prevention Bureau, and copies may be purchased at the fees prescribed by law.		[A] 101.6 Standards. Copies of the Houston Fire Department Life Safety Bureau Standards that are referred to in this code have been placed on file in the city secretary's Office in connection with the code's adoption and shall constitute a part of this code. The standards may be inspected in the city secretary's Office or the Office of the Fire Prevention Bureau, and copies may be purchased at the fees prescribed by law.	No change to Houston amendment.
[A] 102.2 Administrative, operational and maintenance provisions. The administrative, operational and maintenance provisions of this code shall apply to: 1. Conditions and operations arising after the adoption of this code. 2. Existing conditions and operations <u>not legally in existence at the time of adoption of this code.</u> 3. Conditions that, in the opinion of the <i>fire code official</i> , constitute a distinct hazard to life or property. This section shall be construed in a manner that is consistent with the <i>Existing Building Code</i> , Sections 102 and 110 of this code, and City of Houston Ordinance No. 78-2672.		[A] 102.2 Administrative, operational and maintenance provisions. The administrative, operational and maintenance provisions of this code shall apply to: 1. Conditions and operations arising after the adoption of this code. 2. Existing conditions and operations <u>not legally in existence at the time of adoption of this code.</u> 3. Conditions that, in the opinion of the <i>fire code official</i> , constitute a distinct hazard to life or property. This section shall be construed in a manner that is consistent with the <i>Existing Building Code</i> , Sections 102 and 110 of this code, and City of Houston Ordinance No. 78-2672.	No change to Houston amendment.
[A] 102.2.1 Existing and annexed buildings. Buildings or structures in existence at the time of the adoption of this code may have their existing use or occupancy continued if the buildings or structures comply with the standards established in Chapter 10, Article IX, of the <i>City Code</i> , Section 102.6 of the <i>Building Code</i> , and the <i>Existing Building Code</i> . Determination of compliance shall be under the primary jurisdiction of the building official. Whenever the <i>fire code official</i> determines, pursuant to inspection of such a building or structure, that there exists therein a fire hazard that causes the building or structure to be dangerous to life, the <i>fire code official</i> shall initiate proceedings under Chapter 10, Article VIII, of the <i>City Code</i> , including the placarding of buildings as authorized therein. The <i>fire code official</i> shall notify the neighborhood protection official, and if the building official determines that the building or structure constitutes a dangerous building as defined in Chapter 10, Article IX, of the <i>City Code</i> , then the building official shall initiate dangerous building abatement proceedings before the hearing official or the Building and Standards Commission under the applicable provisions of Chapter 10 of the <i>City Code</i> .		[A] 102.2.1 Existing and annexed buildings. Buildings or structures in existence at the time of the adoption of this code may have their existing use or occupancy continued if the buildings or structures comply with the standards established in Chapter 10, Article IX, of the <i>City Code</i> , Section 102.6 of the <i>Building Code</i> , and the <i>Existing Building Code</i> . Determination of compliance shall be under the primary jurisdiction of the building official. Whenever the <i>fire code official</i> determines, pursuant to inspection of such a building or structure, that there exists therein a fire hazard that causes the building or structure to be dangerous to life, the <i>fire code official</i> shall initiate proceedings under Chapter 10, Article VIII, of the <i>City Code</i> , including the placarding of buildings as authorized therein. The <i>fire code official</i> shall notify the neighborhood protection official, and if the building official determines that the building or structure constitutes a dangerous building as defined in Chapter 10, Article IX, of the <i>City Code</i> , then the building official shall initiate dangerous building abatement proceedings before the hearing official or the Building and Standards Commission under the applicable provisions of Chapter 10 of the <i>City Code</i> .	No change to Houston amendment.
	[A] 102.3 Change of use or occupancy. A Changes of occupancy shall not be made unless the use or occupancy of any structure that would place the structure in a different division of the same group or occupancy or in a different group of occupancies, unless such structure is made to comply with the requirements of this code and the <i>International Existing Building Code</i>. Subject to the approval of the fire code official, the use or occupancy of an existing structure shall be allowed to be changed and the structure is allowed to be occupied for		Base code provisions for change of use/occupancy has been updated to coincide with updates to the IEBC.

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	~~purposes in other groups without conforming to all of the requirements of this code and the International Building Code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use.~~ Exception: Where approved by the fire code official, a change of occupancy shall be permitted without complying with the requirements of this code and the International Existing Building Code, provided that the new or proposed use or occupancy is less hazardous, based on life and fire risk, than the existing use or occupancy.		
	102.5 Application of residential code. Where structures are designed and constructed in accordance with the <i>International Residential Code</i>, the provisions of this code shall apply as follows: Construction and design provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water supplies. Where interior or exterior systems or devices are installed, construction permits required by Section 105.7 of this code shall apply.		Minor wordsmithing to base code language.
[A] 102.10 Conflicting provisions. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall <u>prevail</u> ~~be applicable.~~ ~~Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.~~ Where, in any specific instance, provisions of this code, including appendices and standards, specify different materials, different methods of construction, or other requirements that differ from those provided in the <i>City Code</i> or other volumes of the <i>Construction Code</i>, including adopted appendices, and the <i>building official</i> and the fire marshal are unable to mutually reconcile the requirements by issuing a written interpretation, then either of them may refer the matter to the General Appeals Board created under the <i>Building Code</i>, which shall conduct a review of the matter and issue a written code interpretation based upon the apparent intent of the codes involved. Notwithstanding any other provision, interpretations that are issued by the General Appeals board shall not be subject to any further appeal.		[A] 102.10 Conflicting provisions. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall <u>prevail</u> ~~be applicable.~~ ~~Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.~~ Where, in any specific instance, provisions of this code, including appendices and standards, specify different materials, different methods of construction, or other requirements that differ from those provided in the <i>City Code</i> or other volumes of the <i>Construction Code</i>, including adopted appendices, and the <i>building official</i> and the fire marshal are unable to mutually reconcile the requirements by issuing a written interpretation, then either of them may refer the matter to the General Appeals Board created under the <i>Building Code</i>, which shall conduct a review of the matter and issue a written code interpretation based upon the apparent intent of the codes involved. Notwithstanding any other provision, interpretations that are issued by the General Appeals board shall not be subject to any further appeal.	No change to Houston amendment.

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SECTION 103 “DEPARTMENT OF LIFE SAFETY AND FIRE PREVENTION BUREAU” [A] 103.1 General. The department of fire prevention Life Safety and Fire Prevention Bureau of the Houston Fire Department is established within the jurisdiction under the direction of the fire code official. The function of the department this bureau shall be the implementation, administration and enforcement of the provisions of this code. [A] 103.2 Appointment. The fire code official shall be appointed by the chief appointing authority of the fire department of the jurisdiction; and the fire code official shall not be removed from office except for cause and after full opportunity to be heard on specific and relevant charges by and before the appointing authority. [A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the fire code official shall have the authority to appoint a deputy fire code official, other related technical officers, inspectors and other employees. [A] 103.34 Liability. The fire code official, member of the board of appeals, officer or employee charged with the enforcement of this code, while acting for the jurisdiction, in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties. Except as otherwise provided by law, the fire code official shall not personally be liable in damages for any act or omission arising out of any official action taken to implement and enforce the provisions of this code. Additionally, except as otherwise provided by law, the fire code official shall not personally be liable in damages for any act or omission taken in the course and scope of employment. Where and to the extent consistent with the provisions of Chapter 2, Article X of the City Code, this jurisdiction shall provide legal representation and indemnification for any suit or claim brought against the fire code official or any deputies because of acts or omissions performed in the implementation or enforcement of this code. This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating, or controlling any building, structure or system or any other construction for any damages to persons or property caused by defects, nor shall the Houston Fire Department Life Safety Bureau or the jurisdiction be held as assuming any such liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.	PART 2—ADMINISTRATIVE PROVISIONS ADMINISTRATION AND ENFORCEMENT SECTION 103 DEPARTMENT OF FIRE PREVENTION CODE COMPLIANCE AGENCY [A] 103.1 Creation of agency. The [INSERT NAME OF DEPARTMENT] is hereby created and the official in charge thereof shall be known as the fire code official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code. [A] 103.2 Appointment. The fire code official shall be appointed by the chief appointing authority of the jurisdiction. [A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the fire code official shall have the authority to appoint a deputy fire code official, other related technical officers, inspectors and other employees. Such employees shall have powers as delegated by the fire code official.	PART 2—ADMINISTRATION AND ENFORCEMENT SECTION 103 CODE COMPLIANCE AGENCY [A] 103.1 Creation of agency. The [INSERT NAME OF DEPARTMENT] Life Safety and Fire Prevention Bureau of the Houston Fire Department is hereby created and the official in charge thereof shall be known as the fire code official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code. [A] 103.2 Appointment. The fire code official shall be appointed by the chief appointing authority of the fire department of the jurisdiction; and the fire code official shall not be removed from office except for cause and after full opportunity to be heard on specific and relevant charges by and before the appointing authority. [A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the fire code official shall have the authority to appoint a deputy fire code official, other related technical officers, inspectors and other employees. Such employees shall have powers as delegated by the fire code official.	Minor wordsmithing to base code language. Minor wordsmithing to Houston amendment, no changes to intent. No change to Houston amendment. Minor updates to base code language. No change to Houston amendment. Houston amendment relocated to Section 104.7.

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~~[A] 103.4.1 Legal defense. Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representatives of the jurisdiction until the final termination of the proceedings. The <i>fire code official</i> or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code; and any officer of the department of fire prevention, acting in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of official duties in connection therewith.~~		~~[A] 103.4.1 Legal defense. Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representatives of the jurisdiction until the final termination of the proceedings. The <i>fire code official</i> or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code; and any officer of the department of fire prevention, acting in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of official duties in connection therewith.~~	No change to Houston amendment.
	SECTION 104 GENERAL AUTHORITY AND RESPONSIBILITIES DUTIES AND POWERS OF THE FIRE CODE OFFICIAL		Minor changes to base code language.
[A] 104.1 General. <u>The</u> Consistent with the provisions of this code, the <i>fire code official</i> is hereby authorized to enforce the provisions of this code and shall have the authority to render interpretations of this code, and to adopt policies, procedures, rules and ~~regulations~~ <u>standards</u> in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and ~~regulations~~ <u>standards</u> shall be in compliance with the intent and purpose of this code and shall not have the effect of waiving requirements specifically provided for in this code. <u>A certified copy of the standards shall be filed with the city secretary and additional copies shall be kept in the office of the Fire Prevention Bureau for inspection by the public. Copies shall be furnished at the fees provided by law.</u> <u>The <i>fire code official</i> is authorized to enforce all ordinances of the jurisdiction and laws of the state pertaining to:</u> <u>1. The prevention of fires;</u> <u>2. The suppression or extinguishing of dangerous or hazardous fires;</u> <u>3. The storage, use and handling of hazardous materials;</u> <u>4. The installation and maintenance of automatic, manual and other private fire alarm systems and fire extinguishing equipment;</u> <u>5. The maintenance and regulation of fire escapes;</u> <u>6. The maintenance of fire protection and the elimination of fire hazards on land and in buildings, structures and other property including those under construction;</u> <u>7. The means, adequacy and maintenance of egress;</u> <u>8. The investigation of the cause, origin and circumstances of fire and unauthorized releases of hazardous materials;</u> <u>9. The posting of accurate certificates of occupancy and life safety certificates where required by the <i>Building Code</i>; and</u> <u>10. The conducting of fire safety campaigns.</u>	[A] 104.1 General. The <i>fire code official</i> is hereby authorized to enforce the provisions of this code and ~~The fire code official~~ shall have the authority to render interpretations of this code, and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of this code. ~~Such policies, procedures, rules and regulations~~ shall not have the effect of waiving requirements specifically provided for in this code.	[A] 104.1 General. <u>The</u> Consistent with the provisions of this code, the <i>fire code official</i> is hereby authorized to enforce the provisions of this code. ~~The fire code official~~ <u>and</u> shall have the authority to render interpretations of this code, and to adopt policies, procedures, rules and ~~regulations~~ <u>standards</u> in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and ~~regulations~~ <u>standards</u> shall be in compliance with the intent and purpose of this code. ~~Such policies, procedures, rules and regulations~~ and shall not have the effect of waiving requirements specifically provided for in this code. <u>A certified copy of the standards shall be filed with the city secretary and additional copies shall be kept in the office of the Fire Prevention Bureau for inspection by the public. Copies shall be furnished at the fees provided by law.</u> <u>The <i>fire code official</i> is authorized to enforce all ordinances of the jurisdiction and laws of the state pertaining to:</u> <u>1. The prevention of fires;</u> <u>2. The suppression or extinguishing of dangerous or hazardous fires;</u> <u>3. The storage, use and handling of hazardous materials;</u> <u>4. The installation and maintenance of automatic, manual and other private fire alarm systems and fire extinguishing equipment;</u> <u>5. The maintenance and regulation of fire escapes;</u> <u>6. The maintenance of fire protection and the elimination of fire hazards on land and in buildings, structures and other property including those under construction;</u> <u>7. The means, adequacy and maintenance of egress;</u> <u>8. The investigation of the cause, origin and circumstances of fire and unauthorized releases of hazardous materials;</u> <u>9. The posting of accurate certificates of occupancy and life</u>	No change to Houston amendment.

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		safety certificates where required by the <i>Building Code</i> ; and 10. <u>The conducting of fire safety campaigns.</u>	
[A] 104.1.1 Standards. Throughout this code, the <i>fire code official</i> is authorized to grant approvals or permissions, promulgate standards, impose requirements, or exercise similar discretionary authorization over materials, personnel, activities or procedures; however, no specific standards or decision-making criteria are stated. It is intended that discretionary authorization be administered in a uniform manner, that authorizations not be unreasonably withheld, and that rules and standards be based upon the preservation of the public health, safety and welfare. The <i>fire code official</i> shall be guided by accepted principles of fire safety and shall look to this code and any standards that are adopted herein by reference for guidance. If an individual authorization is denied, the person requesting the authorization shall be advised of the reasons in writing and shall be entitled to a review of the decision by appeal to the Board of Appeals.		[A] 104.1.1 Standards. Throughout this code, the <i>fire code official</i> is authorized to grant approvals or permissions, promulgate standards, impose requirements, or exercise similar discretionary authorization over materials, personnel, activities or procedures; however, no specific standards or decision-making criteria are stated. It is intended that discretionary authorization be administered in a uniform manner, that authorizations not be unreasonably withheld, and that rules and standards be based upon the preservation of the public health, safety and welfare. The <i>fire code official</i> shall be guided by accepted principles of fire safety and shall look to this code and any standards that are adopted herein by reference for guidance. If an individual authorization is denied, the person requesting the authorization shall be advised of the reasons in writing and shall be entitled to a review of the decision by appeal to the Board of Appeals.	No change to Houston amendment.
[A] 104.5 Notices and orders. ~~The~~ As may be required to enforce this code, the <i>fire code official</i> is authorized to issue and to serve such notices, or orders, and criminal citations, as well as administrative citations or summonses in the manner prescribed by Chapter 10, Article XVIII, of the <i>City Code</i> ~~as are required to affect compliance with this code in accordance with Sections 109.1 and 109.2.~~	[A] 104.5 Notices and orders. The <i>fire code official</i> is authorized to issue such notices or orders as are required to affect compliance with this code in accordance with Sections 109.1 110.1 and 109.2 110.2 .	[A] 104.5 Notices and orders. ~~The~~ As may be required to enforce this code, the <i>fire code official</i> is authorized to issue and to serve such notices, or orders, and criminal citations, as well as administrative citations or summonses in the manner prescribed by Chapter 10, Article XVIII, of the <i>City Code</i> ~~as are required to affect compliance with this code in accordance with Sections 110.1 and 110.2.~~	No change to Houston amendment.
	[A] 103.4 104.7 Liability.	104.7 Liability. ~~The fire code official, member of the board of appeals, officer or employee charged with the enforcement of this code, while acting for the jurisdiction, in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of an act or omission in the discharge of official duties. Except as otherwise provided by law, the <i>fire code official</i> shall not personally be liable in damages for any act or omission arising out of any official action taken to implement and enforce the provisions of this code. Additionally, except as otherwise provided by law, the <i>fire code official</i> shall not personally be liable in damages for any act or omission taken in the course and scope of employment. Where and to the extent consistent with the provisions of Chapter 2, Article X of the <i>City Code</i>, this jurisdiction shall provide legal representation and indemnification for any suit or claim brought against the <i>fire code official</i> or any deputies because of acts or omissions performed in the implementation or enforcement of this code.~~ This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating, or controlling any building, structure or system or any other construction for any damages to persons or property caused by defects, nor shall the Houston Fire Department Life Safety Bureau or the jurisdiction be held as assuming any such liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.	No changes to Houston amendment, relocated from Section 103.3.

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	~~[A] 103.4.1~~ 104.7.1 Legal defense.		Base code renumbering.
	~~[A] 104.7~~ 104.8 Approved materials and equipment.		Base code renumbering.
	~~[A] 104.7.1~~ 104.8.1 Material and equipment reuse.		Base code renumbering.
	~~[A] 104.7.2~~ 104.8.2 Technical assistance.		Base code renumbering.
	[A] 104.8 104.9 Modifications. Where there are practical difficulties involved in carrying out the provisions of this code, the <i>fire code official</i> shall have the authority to grant modifications for individual cases, provided ~~that~~ the <i>fire code official</i> shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements.		Minor changes to base code provisions.
	~~[A] 104.9~~ 104.10 Alternative materials, design and methods of construction and methods equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been <i>approved</i> . ~~The fire code official is authorized to approve an alternative material, design or method of construction shall be approved~~ where the <i>fire code official</i> finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, ~~at least~~ not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, <i>fire resistance</i> , durability and safety.		Minor wordsmithing to base code provisions.
[A] 104.10.1 Assistance from other agencies. Police and other enforcement agencies shall have authority to render necessary assistance in the investigation of fires <u>and in enforcing the provisions of this code</u> when requested to do so <u>by the fire code official</u> .	~~[A] 104.9.1~~ 104.10.1 Research reports.		Base code renumbering. Previous Houston amendment relocated to Section 104.11.1.

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	~~[A] 104.9.2~~ 104.10.2 Tests. Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the <i>fire code official</i> shall have the authority to require tests as evidence of compliance to be made ~~at no~~ without expense to the jurisdiction.		Minor changes to base code provisions.
	~~104.10~~ 104.11 Fire investigations.		Base code renumbering.
	~~104.10.4~~ 104.11.1 Assistance from other agencies.	[A] 104.11.1 Assistance from other agencies. Police and other enforcement agencies shall have authority to render necessary assistance in the investigation of fires <u>and in enforcing the provisions of this code</u> when requested to do so <u>by the fire code official</u> .	Base code renumbering. No changes to Houston amendment, relocated from Section 104.10.1.
	~~104.11~~ 104.12 Authority at fires and other emergencies.		Base code renumbering.
	~~104.11.4~~ 104.12.1 Barricades.		Base code renumbering.
	~~104.11.2~~ 104.12.2 Obstructing operations.		Base code renumbering.
	~~104.11.3~~ 104.12.3 Systems and devices.		Base code renumbering.
	SECTION 105 PERMITS 105.1 General. Permits shall be in accordance with Sections 105.1.1 through 105.7.48 ~~25~~ .		No Houston amendment.
[A] 105.1.1 Permits required. ~~A property owner or owner's authorized agent who intends to conduct an operation or business, or install or modify systems and equipment that are regulated by this code, or to cause any such work to be performed, shall first make application to the fire code official and obtain the required permit. Permits required by this code shall be obtained from the Fire Permit Office. The property owner or authorized agent shall obtain a permit prior to~~		[A] 105.1.1 Permits required. ~~A property owner or owner's authorized agent who intends to conduct an operation or business, or install or modify systems and equipment that are regulated by this code, or to cause any such work to be performed, shall first make application to the fire code official and obtain the required permit. Permits required by this code shall be obtained from the Fire Permit Office. The property owner or authorized agent shall obtain a permit prior to engaging in any activities, operations,~~	No change to Houston amendment.

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engaging in any activities, operations, practices, or functions regulated by this code and requiring a permit as listed in Section 105.6, and shall pay permit fees, as required, prior to receiving issuance of the permit. Issued permits shall be kept on the premises designated therein at all times and shall be readily available for inspection by the <i>fire code official</i> . It shall be unlawful for any person to engage in any activities, operations, practices or functions listed in Section 105.6 for any reason without holding a current and valid permit for the activity, operation, practice or function as issued by the Fire Permit Office.		practices, or functions regulated by this code and requiring a permit as listed in Section 105.6, and shall pay permit fees, as required, prior to receiving issuance of the permit. Issued permits shall be kept on the premises designated therein at all times and shall be readily available for inspection by the <i>fire code official</i> . It shall be unlawful for any person to engage in any activities, operations, practices or functions listed in Section 105.6 for any reason without holding a current and valid permit for the activity, operation, practice or function as issued by the Fire Permit Office.	
[A] 105.1.2 Types of permits. There shall be two types of permits as follows: 1. Operational permit, issued by the Fire Department. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.6 for either: 1.1. A prescribed period. 1.2. Until renewed or revoked. 2. Construction permit, issued by the <i>building official</i> in accordance with the <i>Building Code</i> . A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by and in accordance with the <i>Building Code</i> Section 105.7.	[A] 105.1.2 Types of permits. There shall be two types of permits as follows: 1. Operational permit. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.5 for either: 1.1 A prescribed period. 1.2 Until renewed or revoked. 2. Construction permit. A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by Section 105.6 .	[A] 105.1.2 Types of permits. There shall be two types of permits as follows: 1. Operational permit, issued by the Fire Department. An operational permit allows the applicant to conduct an operation or a business for which a permit is required by Section 105.5 for either: 1.1. A prescribed period. 1.2. Until renewed or revoked. 2. Construction permit, issued by the <i>building official</i> in accordance with the <i>Building Code</i> . A construction permit allows the applicant to install or modify systems and equipment for which a permit is required by and in accordance with the <i>Building Code</i> Section 105.6 .	Minor changes to base code to update sections. No change to Houston amendment.
[A] 105.2.2 Inspection authorized. Before a new operational permit is <i>approved</i> , the <i>fire code official</i> is authorized, but not required, to inspect the receptacles, vehicles, buildings, devices, premises, storage spaces or areas to be used to determine compliance with this code or any operational constraints required. In instances where laws or regulations are enforceable by departments of the jurisdiction other than the fire department, joint approval shall be obtained from all departments concerned.		[A] 105.2.2 Inspection authorized. Before a new operational permit is <i>approved</i> , the <i>fire code official</i> is authorized, but not required, to inspect the receptacles, vehicles, buildings, devices, premises, storage spaces or areas to be used to determine compliance with this code or any operational constraints required. In instances where laws or regulations are enforceable by departments of the jurisdiction other than the fire department, joint approval shall be obtained from all departments concerned.	No change to Houston amendment.
[A] 105.2.3 Time limitation of application. An application for which no permit is issued within 180 days following the date of application shall become inactive, and plans and other data submitted for review thereafter shall be returned to the applicant or destroyed by the <i>fire code official</i> . The <i>fire code official</i> is authorized to grant one or more extensions of time for additional periods not to exceed 180 days each, for a maximum of two years from the date of the original application, upon written request and justifiable cause demonstrated by the applicant. If an application for permit does not result in a permit within two years after the date of original application, the permit application shall expire. In order to renew action on an application after expiration, the applicant shall submit a new permit application and plans and shall pay a new plan review fee. An application for a permit for any proposed work or operation shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been diligently prosecuted or a permit shall have been issued; except that the <i>fire code official</i> is authorized to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.		[A] 105.2.3 Time limitation of application. An application for which no permit is issued within 180 days following the date of application shall become inactive, and plans and other data submitted for review thereafter shall be returned to the applicant or destroyed by the <i>fire code official</i> . The <i>fire code official</i> is authorized to grant one or more extensions of time for additional periods not to exceed 180 days each, for a maximum of two years from the date of the original application, upon written request and justifiable cause demonstrated by the applicant. If an application for permit does not result in a permit within two years after the date of original application, the permit application shall expire. In order to renew action on an application after expiration, the applicant shall submit a new permit application and plans and shall pay a new plan review fee. An application for a permit for any proposed work or operation shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been diligently prosecuted or a permit shall have been issued; except that the <i>fire code official</i> is authorized to grant one or more extensions of time for additional periods not exceeding 90 days	No change to Houston amendment.

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		each. The extension shall be requested in writing and justifiable cause demonstrated.	
[A] 105.3.1 Expiration. An operational permit shall remain in effect until reissued, renewed, or revoked or for such a period of time as specified in the permit. ~~Construction permits shall automatically become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. Before such work recommences, a new permit shall be first obtained and the fee to recommence work, if any, shall be one-half the amount required for a new permit for such work, provided that changes have not been made and will not be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year.~~ Permits are not transferable and any change in occupancy, operation, tenancy or ownership shall require that a new permit be issued.		[A] 105.3.1 Expiration. An operational permit shall remain in effect until reissued, renewed, or revoked or for such a period of time as specified in the permit. ~~Construction permits shall automatically become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. Before such work recommences, a new permit shall be first obtained and the fee to recommence work, if any, shall be one-half the amount required for a new permit for such work, provided that changes have not been made and will not be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year.~~ Permits are not transferable and any change in occupancy, operation, tenancy or ownership shall require that a new permit be issued.	No change to Houston amendment.
[A] 105.3.3 Occupancy prohibited before approval. The building or structure shall not be occupied prior to the ~~fire code building official~~ issuing a permit and conducting associated inspections indicating the applicable provisions of this code have been met certificate of occupancy in accordance with the <i>Building Code</i> and the <i>Residential Code</i>. Exceptions: 1. The building official is authorized to issue a temporary certificate of occupancy in accordance with the <i>Building Code</i> and the <i>Residential Code</i>. 2. The ~~fire code official~~, with the joint approval of the building official, is authorized to permit the temporary occupancy of a building, or portion thereof, when standby personnel are provided in accordance with Section 114.		[A] 105.3.3 Occupancy prohibited before approval. The building or structure shall not be occupied prior to the ~~fire code building official~~ issuing a permit and conducting associated inspections indicating the applicable provisions of this code have been met certificate of occupancy in accordance with the <i>Building Code</i> and the <i>Residential Code</i>. Exceptions: 1. The building official is authorized to issue a temporary certificate of occupancy in accordance with the <i>Building Code</i> and the <i>Residential Code</i>. 2. The ~~fire code official~~, with the joint approval of the building official, is authorized to permit the temporary occupancy of a building, or portion thereof, when standby personnel are provided in accordance with Section 115.	Updating numbering to reference changed sections, no other change to Houston amendment.
	[A] 105.3.4 Conditional permits. Where permits are required and upon the request of a permit applicant, the <i>fire code official</i> is authorized to issue a conditional permit to occupy the premises or portion thereof before the entire work or operations on the premises is completed, provided that such portion or portions will be occupied safely prior to full completion or installation of equipment and operations without endangering life or public welfare.		Minor wordsmithing in base code language.
[A] 105.3.8 Validity of permit. The issuance or granting of a permit or approval of plans and specifications shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other applicable laws, or any other ordinances of the <i>jurisdiction</i>. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the <i>jurisdiction</i> shall not be valid. The issuance of a permit based on construction documents, operational documents, specifications, and other data shall not prevent the <i>fire code official</i> from thereafter requiring the correction of errors in the construction documents.		[A] 105.3.8 Validity of permit. The issuance or granting of a permit or approval of plans and specifications shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other applicable laws, or any other ordinances of the <i>jurisdiction</i>. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the <i>jurisdiction</i> shall not be valid. The issuance of a permit based on construction documents, operational documents, specifications, and other data shall not prevent the <i>fire code official</i> from thereafter requiring the correction of errors in the construction documents.	No change to Houston amendment.

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operation documents, specifications, and ~~or~~ other data, or from preventing construction, occupancy or use of a structure when in violation of this code or of any other applicable law. A permit and all its privileges are issued to the owner of the property for which the permit is issued, regardless of who submits the application or pays the permit fees. A permit shall be valid only for the person listed on the application as performing the work and for the scope of work identified on the permit. A name change on an application or the existing permit must be obtained if the person performing the work listed on the application or existing permit is no longer responsible for the work performed. Provided that a refund has not been issued, the property owner has not changed, and written authority for the name change has been provided by the property owner to the building official and/or <i>fire code official</i>, who shall issue an amended permit. A name change fee and an administrative fee shall be charged as provided in Section 118.1 of the <i>Building Code</i> and the city fee schedule. In the case of the death or dissolution of the original property owner or person performing the work listed on the existing permit, pursuant to a timely name change request within 45 calendar days after such death or dissolution, the permit will be transferred to the new property owner or amended to include the name of the new person performing the work at no fee except for the administrative fee established in Section 118.1.1. of the <i>Building Code</i> and the city fee schedule. Failure to apply for a name change within the requisite 45 calendar days shall subject the property owner to applicable permit fees established in Section 118 of the <i>Building Code</i> and the city fee schedule based on the scope of work for all remaining construction and uninspected work.		~~documents, operation documents, specifications, and or other data, or from preventing construction, occupancy or use of a structure when in violation of this code or of any other applicable law.~~ A permit and all its privileges are issued to the owner of the property for which the permit is issued, regardless of who submits the application or pays the permit fees. A permit shall be valid only for the person listed on the application as performing the work and for the scope of work identified on the permit. A name change on an application or the existing permit must be obtained if the person performing the work listed on the application or existing permit is no longer responsible for the work performed. Provided that a refund has not been issued, the property owner has not changed, and written authority for the name change has been provided by the property owner to the building official and/or <i>fire code official</i>, who shall issue an amended permit. A name change fee and an administrative fee shall be charged as provided in Section 118.1 of the <i>Building Code</i> and the city fee schedule. In the case of the death or dissolution of the original property owner or person performing the work listed on the existing permit, pursuant to a timely name change request within 45 calendar days after such death or dissolution, the permit will be transferred to the new property owner or amended to include the name of the new person performing the work at no fee except for the administrative fee established in Section 118.1.1. of the <i>Building Code</i> and the city fee schedule. Failure to apply for a name change within the requisite 45 calendar days shall subject the property owner to applicable permit fees established in Section 118 of the <i>Building Code</i> and the city fee schedule based on the scope of work for all remaining construction and uninspected work.	
	[A] 105.4.2 Information on construction documents. Construction documents shall be drawn to scale ~~up~~ upon suitable material. Electronic media documents are allowed to be submitted where approved by the fire code official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations as determined by the fire code official.		Minor wordsmithing to base code language.
	[A] 405.5 105.4 Revocation.	[A] 105.4 Revocation. ~~The fire code official is authorized to revoke a permit issued under the provisions of this code where it is found by inspection or otherwise~~ A permit issued under the provisions of this code may be revoked as provided herein after a hearing conducted by the Section 105 hearing official, if that hearing official finds from a preponderance of evidence cited at such hearing that there has been a false statement or misrepresentation as to the material facts in the application or <i>construction documents</i> on which the permit or approval was based, or a violation of the terms and conditions as set forth in this code, including, but not limited to, any one of the following: 1. The permit is used for a location or establishment other than that for which it was issued.	No change to Houston amendment, relocated from Section 105.5

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		2. The permit is used for a condition or activity other than that listed in the permit. 3. Conditions and limitations ~~for the permit, as~~ set forth in ~~the permit this code,~~ have been violated. 4. There have been any false statements or misrepresentations as to the material fact in the application for permit or plans submitted or a condition of the permit. 5. The permit is used by a different person or firm than the name for which it was issued.	
		[A] 105.4.1 Notice of hearing. Not later than 14 days prior to the date set for the revocation hearing by the Section 105 hearing official, the permit holder shall be given a written notice by the <i>fire code official</i> , which shall set forth: 1. The grounds on which the <i>fire code official</i> will seek revocation of the permit; 2. That a hearing has been scheduled thereon before the Section 105 hearing official and the time, date and place of the hearing; and 3. That the permit holder may appear, may be represented by counsel, may present evidence and may cross examine any witness presented by the <i>fire code official</i> .	No change to Houston amendment, relocated from Section 105.5.1.
		[A] 105.4.2 Hearing. Except for hearings related to orders issued under Section 105.5.3, all hearings under this Section 105 shall be conducted by a Section 105 hearing official. In rendering a decision, the Section 105 hearing official shall consider only the evidence presented at the hearing. A decision of the Section 105 hearing official shall be set forth in writing, copies of which shall be served upon each party in the same manner as the notice of a right to a hearing.	No change to Houston amendment, relocated from Section 105.5.2.
		[A] 105.4.3 Emergency revocation of permit. If the revocation of a permit issued under this code reasonably appears to be necessary to abate or improve a serious and immediate fire hazard, the <i>fire code official</i> may revoke the permit without prior notice or hearing. In such circumstance, however, the <i>fire code official</i> must provide the permit holder with an opportunity for a post-revocation hearing in the manner prescribed by Chapter 10, Article IX, Division 8, of the <i>City Code</i> .	No change to Houston amendment, relocated from Section 105.5.3.
[A] 105.5 Revocation. ~~The <i>fire code official</i> is authorized to revoke a permit issued under the provisions of this code where it is found by inspection or otherwise~~ A permit issued under the provisions of this code may be revoked as provided herein after a hearing conducted by the Section 105 hearing official, if that hearing official finds from a preponderance of evidence cited at such hearing that there has been a false statement or misrepresentation as to the material facts in the application or <i>construction documents</i> on which the permit or approval was based, or a violation of the terms and conditions as set forth in this code, including, but not limited to, any one of the following: 1. The permit is used for a location or establishment other than that for which it was issued. 2. The permit is used for a condition or activity other than that listed in the permit.	105.5 Required operational permits. The <i>fire code official</i> is authorized to issue operational permits for the operations set forth in Sections 105.6.1 through 105.6.48 50 .		Previous Houston amendment relocated to Section 105.4.

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3. Conditions and limitations <u>for the permit, as set forth in the permit this code</u>, have been violated. 4. There have been any false statements or misrepresentations as to the material fact in the application for permit or plans submitted or a condition of the permit. 5. The permit is used by a different person or firm than the name for which it was issued. 6. The permittee failed, refused or neglected to comply with orders or notices duly served in accordance with the provisions of this code within the time provided therein. 7. The permit was issued in error or in violation of an ordinance, regulation or this code. Moved to 105.4																														
		TABLE 105.5 SCHEDULE OF FIRE PERMITS <table><tr><th>SECTION REFERENCE NUMBER</th><th>PERMIT DESCRIPTION</th><th>AMOUNT OR QUANTITY</th></tr><tr><td>105.5.1</td><td>Additive Manufacturing</td><td></td></tr><tr><td>105.5.2</td><td>Aerosol products</td><td></td></tr><tr><td>105.5.3</td><td>Apparatus access, road access-control gates</td><td>One Two or more</td></tr><tr><td>105.5.4</td><td>Aviation facilities</td><td>Aircraft refueling vehicles: First one Each additional Maximum Aircraft service or repair occupancy</td></tr><tr><td>105.5.5</td><td>Carnivals, festivals, trade show exhibitions and fairs</td><td></td></tr><tr><td>105.5.6</td><td>Cellulose nitrate film</td><td></td></tr><tr><td>105.5.7</td><td>Combustible dust-producing operations</td><td></td></tr><tr><td>105.5.8</td><td>Combustible fibers</td><td>Tier 1: Loose fiber storage > 100 and < 500 cu. ft. Baled fiber storage > 100 and < 1,000 cu. ft.</td></tr></table>	SECTION REFERENCE NUMBER	PERMIT DESCRIPTION	AMOUNT OR QUANTITY	105.5.1	Additive Manufacturing		105.5.2	Aerosol products		105.5.3	Apparatus access, road access-control gates	One Two or more	105.5.4	Aviation facilities	Aircraft refueling vehicles: First one Each additional Maximum Aircraft service or repair occupancy	105.5.5	Carnivals, festivals, trade show exhibitions and fairs		105.5.6	Cellulose nitrate film		105.5.7	Combustible dust-producing operations		105.5.8	Combustible fibers	Tier 1: Loose fiber storage > 100 and < 500 cu. ft. Baled fiber storage > 100 and < 1,000 cu. ft.	No changes to Houston amendment for fire permits table, relocated from Section 105.6. Some permits have been updated per base code section renumbering.
SECTION REFERENCE NUMBER	PERMIT DESCRIPTION	AMOUNT OR QUANTITY																												
105.5.1	Additive Manufacturing																													
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				Tier 2: Amounts greater than for Tier 1	
		105.5.9	Compressed gases	Tier 1: Carbon dioxide used in carbon dioxide enrichments systems: 875 cu. ft at NTP (100 lb) Carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications: 875 cu. ft at NTP (100 lb) Corrosive: > 200 cu. ft. and ≤1,620 cu. ft. at NTP Flammable (except cryogenic fluids and liquified petroleum gases): >200 cu. ft. and ≤ 2,000 cu. ft. at NTP Highly toxic: up to 40 cu. ft. at NTP Inert & simple asphyxiant: no limit > 6,000 cu. ft. at NTP (no limit, always Tier 1) Oxidizing (including oxygen): > 504 cu. ft. and ≤ 3,000 cu. ft. at NTP Pyrophoric > 100 cu. ft. at NTP Toxic: up to 1,620 cu. ft. at NTP Tier 2: Amounts greater than for Tier 1	
		105.5.10	Covered and open mall buildings	Includes partial cost of Life Safety Inspection	

14

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		105.5.11 Cryogenic fluids	Tier 1: Flammable: > 1 gal. and ≤ 90 gal. (inside bldg.) > 60 gal. and ≤ 90 gal. (outside bldg.) Inert: > 60 gal. (inside bldg.) no limit, always Tier 1 > 500 gal. (outside bldg.) no limit, always Tier 1 Oxidizing (includes oxygen): > 10 gal. and ≤ 90 gal. (inside bldg.) > 50 gal. and ≤90 gal. (outside bldg.) Physical or health hazard not included above: no limit, always Tier 1 Tier 2: Amounts greater than for Tier 1
		105.5.12 Cutting and welding	
		105.5.13 Dry cleaning	
		105.5.14 Energy storage systems	
		105.5.15 Exhibits and trade shows	
		105.5.16 Explosives, fireworks, and pyrotechnics	
		105.5.17 Fire depository, key boxes	One Two or more
		105.5.18 Flammable and combustible liquids	Parts 1-5, 7, 8: Tier 1 Class IA: > 5 gal. and ≤ 60 gal. (inside bldg.) > 10 gal. and ≤ 60 gal. (outside bldg.) Class IB: > 5 gal. and ≤ 120 gal. (inside bldg.)

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				> 10 gal. and ≤ 120 gal. (outside bldg.) Class IC: > 5 gal. and ≤ 180 gal. (inside bldg.) > 10 gal. and ≤ 180 gal. (outside bldg.) Class IA, IB, or IC combined amounts: > 5 gal. and ≤ 240 gal. (inside bldg.) > 10 gal. and ≤ 240 gal. (outside bldg.) Class II: > 25 gal. and ≤ 240 gal. (inside bldg.) > 60 gal. and ≤ 240 gal. (outside bldg.) Class IIIA: > 25 gal. and ≤ 660 gal. (inside bldg.) > 60 gal. and ≤ 660 gal. (outside bldg.) Class IIIB: > 60 gal. no limit; always Tier 1 (in a tank or vessel) Parts 1-5, 7, 8: Tier 2 Amounts greater than for Tier 1 Part 6: Tank removal, installation, disposal or abandonment One Two Three or more	
		<u>105.5.19</u>	<u>Floor finishing</u>		
		<u>105.5.20</u>	<u>Fruit and crop ripening</u>		
		<u>105.5.21</u>	<u>Fumigation and thermal insecticidal fogging</u>		
		<u>105.5.22</u>	<u>Hazardous materials</u>	<u>Tier 1:</u>	

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				Corrosive liquid > 55 gal. and ≤ 1,000 gal. Corrosive solid > 1,000 lbs. and ≤ 10,000 lbs. Flammable solids > 100 lbs. and ≤ 250 lbs. Highly toxic liquids or solids up to 20 lbs. Oxidizing material, Class 1: Liquids > 55 gal. and ≤ 8,000 lbs. Solids > 500 lbs. and ≤ 8,000 lbs. Oxidizing material, Class 2: Liquids > 10 gal. and ≤ 500 lbs. Solids > 100 lbs. and ≤ 500lbs. Oxidizing material liquid or solid, Class 3: Liquids > 1 gal. and ≤ 20 lbs. Solids > 10 lbs. and ≤ 20 lbs. Oxidizing material, liquid or solid, Class 4: up to 2 lbs. Organic peroxides, liquid or solid, Class 1: up to 10 lbs. Organic peroxides, liquid or solid, Class 2: up to 100 lbs. Organic peroxides, Class 3: Liquid > 1 gal. and ≤ 250 lbs. Solid > 10 lbs. and ≤ 250 lbs. Organic peroxides, Class 4:	

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				2 gal. or 20 lbs. or more (no limit, always Tier 1) Pyrophoric gases: up to 100 cu. ft. Pyrophoric liquid or solid: up to 8 lbs. Toxic liquid: > 10 gal. and ≤ 1,000 lbs. Toxic solid: >100 lbs. and ≤ 1,000 lbs. Unstable reactive, gas, Class 1: no limit (no limit, always Tier 1) Unstable reactive, gas, Class 2: up to 500 cu. ft. Unstable reactive, gas, Class 3: up to 100 cu. ft. Unstable reactive, gas, Class 4: up to 20 cu. ft. Unstable reactive, liquid & solid, Class 1:> 10 gal. or 100 lbs. (no limit, always Tier 1) Unstable reactive, Class 2: Liquid > 5 gal. and ≤100 lbs. Solid > 50 lbs. and ≤ 100 lbs. Unstable reactive, liquid & solid, Class 3: up to 10 lbs. Unstable reactive, liquid & solid, Class 4: up to 2 lbs. Water reactive, liquid & solid, Class 1: > 55 gal. or 500 lbs. (no limit, always Tier 1) Water reactive, Class 2:	

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		Liquid > 5 gal. and ≤ 100 lbs. Solid > 50 lbs. and ≤ 100 lbs. Water reactive, liquid & solid, Class 3: up to 10 lbs. Tier 2 Amounts greater than for Tier 1 Organic peroxides, liquid or solid, unclassified detonable	
		105.5.23 HPM facilities	
		105.5.24 High-piled storage Level 1: 2,500 - 20,000 sq. ft. Level 2: > 20,000 sq. ft.	
		105.5.25 Hot work operations	
		105.5.26 Industrial ovens	
		105.5.27 Lumber yards and woodworking plants	
		105.5.28 Liquid- or gas- fueled vehicles or equipment in assembly buildings One unit Two units Three or more units	
		105.5.29 LP-gas Uses other than for mobile food units 125 gallons (473 L) aggregate water capacity For use on a mobile food unit	
		105.5.30 Magnesium Tier 1: Storage, >10 lbs. and ≤ 250 lbs. Open use, >10 lbs. and ≤ 25 lbs. Tier 2: Amount greater than for Tier 1	

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Turquoise = NEW or Modified Text by ICC in 2021

		105.5.31 Miscellaneous combustible storage One unit (50 ft³) Two or more units (> 50 ft³)	
		105.5.32 Mobile food preparation vehicles	
		105.5.33 Motor fuel-dispensing facilities	
		105.5.34 Open burning	
		105.5.35 Reserved	
		105.5.36 Open flames and candles	
		105.5.37 Organic coatings Tier 2 (no Tier 1): For operations producing > 1 gal. in one day	
		105.5.38 Outdoor assembly event	
		105.5.39 Places of assembly 50-100 occupants (includes partial cost of Life Safety Inspection) 101-299 occupants (includes partial cost of Life Safety Inspection) 300+ occupants (includes partial cost of Life Safety Inspection)	
		105.5.40 Plant extraction systems	
		105.5.41 Reserved	
		105.5.42 Pyrotechnic special effects materials	
		105.5.43 Pyroxylin plastics Tier 2 (no Tier 1): To store or handle > 25 lbs. of pyroxylin	
		105.5.44 Refrigeration equipment	
		105.5.45 Repair garages and motor fuel-dispensing facilities	

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary																											
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		<table><tr><td><u>105.5.46</u></td><td><u>Rooftop heliports</u></td><td></td></tr><tr><td><u>105.5.47</u></td><td><u>Spraying or dipping</u></td><td></td></tr><tr><td><u>105.5.48</u></td><td><u>Storage of scrap tires and tire byproducts</u></td><td></td></tr><tr><td><u>105.5.49</u></td><td><u>Temporary membrane structures, tents and canopies</u></td><td></td></tr><tr><td><u>105.5.50</u></td><td><u>Tire-rebuilding plants</u></td><td></td></tr><tr><td><u>105.5.51</u></td><td><u>Waste handling</u></td><td></td></tr><tr><td><u>105.5.52</u></td><td><u>Wood products</u></td><td></td></tr><tr><td><u>105.5.53</u></td><td><u>Asphalt kettles and roof torching operations</u> <u>Asphalt kettles Ignited torches - (annual repair permit)</u> <u>Site specific permit</u></td><td><u>Asphalt kettles</u> <u>First one</u> <u>Each additional</u> <u>Maximum</u> <u>Ignited torches</u> <u>First one</u> <u>Each additional</u> <u>Maximum</u></td></tr><tr><td><u>105.5.54</u></td><td><u>Gas detection systems</u></td><td></td></tr></table>	<u>105.5.46</u>	<u>Rooftop heliports</u>		<u>105.5.47</u>	<u>Spraying or dipping</u>		<u>105.5.48</u>	<u>Storage of scrap tires and tire byproducts</u>		<u>105.5.49</u>	<u>Temporary membrane structures, tents and canopies</u>		<u>105.5.50</u>	<u>Tire-rebuilding plants</u>		<u>105.5.51</u>	<u>Waste handling</u>		<u>105.5.52</u>	<u>Wood products</u>		<u>105.5.53</u>	<u>Asphalt kettles and roof torching operations</u> <u>Asphalt kettles Ignited torches - (annual repair permit)</u> <u>Site specific permit</u>	<u>Asphalt kettles</u> <u>First one</u> <u>Each additional</u> <u>Maximum</u> <u>Ignited torches</u> <u>First one</u> <u>Each additional</u> <u>Maximum</u>	<u>105.5.54</u>	<u>Gas detection systems</u>		
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[A] 105.5.1 Notice of hearing. Not later than 14 days prior to the date set for the revocation hearing by the Section 105 hearing official, the permit holder shall be given a written notice by the <i>fire code official</i>, which shall set forth: 1. The grounds on which the <i>fire code official</i> will seek revocation of the permit; 2. That a hearing has been scheduled thereon before the Section 105 hearing official and the time, date and place of the hearing; and 3. That the permit holder may appear, may be represented by counsel, may present evidence and may cross examine any witness presented by the <i>fire code official</i>. Moved to 105.4.1	105.5.1 Additive manufacturing. An operational permit is required to conduct additive manufacturing operations regulated by Section 320.3.		New base code section for additive manufacturing to receive operational permit. Previous Houston amendment relocated to Section 105.4.1.																											
[A] 105.5.2 Hearing. Except for hearings related to orders issued under Section 105.5.3, all hearings under this Section 105 shall be conducted by a Section 105 hearing official. In rendering a decision, the Section 105 hearing official shall consider only the evidence presented at the hearing. A decision of the Section 105 hearing official shall be set forth in writing, copies of which shall be served upon each party in the same manner as the notice of a right to a hearing. Moved to 105.4.2	105.5.2 Aerosol products, aerosol cooking spray products and plastic aerosol 3 products. An operational permit is required to manufacture, store or handle an aggregate quantity of Level 2 or Level 3 aerosol products, aerosol cooking spray products or plastic aerosol 3 products in excess of 500 pounds (227 kg) net weight.		New base code language expanding operational permits for aerosol products. Previous Houston amendment relocated to Section 105.4.2.																											

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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[A] 105.5.3 Emergency revocation of permit. If the revocation of a permit issued under this code reasonably appears to be necessary to abate or improve a serious and immediate fire hazard, the <i>fire code official</i> may revoke the permit without prior notice or hearing. In such circumstance, however, the <i>fire code official</i> must provide the permit holder with an opportunity for a post-revocation hearing in the manner prescribed by Chapter 10, Article IX, Division 8, of the <i>City Code</i>. Moved to 105.4.3	~~405.6.2~~ 105.5.3 Amusement buildings. An operational permit is required to operate a special amusement building.	[A] 105.5.3 Amusement buildings. An operational permit is required to operate a special amusement building. Apparatus access, road access-control gates. An operational permit is required to install or maintain an access-control gate on a fire apparatus access road.	Base code section renumbered. Previous Houston amendment relocated to Section 105.4.3. Houston amendment for apparatus access/roads has been relocated from Section 105.6.2, no changes.
	~~405.6.3~~ 105.5.4 Aviation facilities.		Base code renumbering.
	~~405.6.5~~ ~~105.6.4~~ 105.5.5 Carnivals and fairs.	[A] 105.5.5 Carnivals, festivals, trade shows, exhibitions, and fairs. An operational permit is required to conduct a carnival, festival, trade show, other exhibition, or fair. A site or floor plan showing dimensions and locations of the aisles, cooking booths, LP-gas storage, etc., shall be submitted with the permit application.	Updated Section number, no major change to Houston amendment.
	~~405.6.6~~ ~~105.6.5~~ 105.5.6 Cellulose nitrate film.		Base code renumbering.
	~~405.6.7~~ ~~105.6.6~~ 105.5.7 Combustible dust-producing operations.		Base code renumbering.
	~~405.6.8~~ ~~105.6.7~~ 105.5.8 Combustible fibers.		Base code renumbering.
	~~405.6.9~~ ~~105.6.8~~ 105.5.9 Compressed gases. An operational permit is required for the storage, use or handling at <i>normal temperature and pressure</i> (NTP) of <i>compressed gases</i> in excess of the amounts listed in Table 105.6.9B.		Base code renumbering.
	~~405.6.10~~ ~~105.6.9~~ 105.5.10 Covered and open mall buildings.		Base code renumbering.
	~~405.6.11~~ ~~105.6.10~~ 105.5.11 Cryogenic fluids. An operational permit is required to produce, store, transport on site, use, handle or dispense <i>cryogenic fluids</i> in excess of the amounts listed in Table 405.6.11B. 105.5.11. TABLE 105.6.11B TABLE 105.5.11		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~105.6.12~~ ~~105.6.14~~ 105.5.12 Cutting and welding.	[A] 105.5.12 Cutting and welding. ~~An operational permit is required to conduct cutting or welding operations within the jurisdiction.~~ See Section 105.6.25.	No change to Houston amendment, corrected reference, relocated from Section 105.6.12.
	~~105.6.13~~ ~~105.6.12~~ 105.5.13 Dry cleaning.		Base code renumbering.
	105.5.14 Energy storage systems. An operational permit is required for stationary and mobile energy storage systems regulated by Section 1207.		New base code provisions for ESS operational permits.
	~~105.6.14~~ ~~105.6.13~~ 105.5.15 Exhibits and trade shows.	[A] 105.5.15 Exhibits and trade shows. ~~An operational permit is required to operate exhibits and trade shows.~~ See Section 105.5.5.	Base code renumbering. No change to Houston amendment, corrected reference, relocated from Section 105.6.14.
	~~105.6.15~~ ~~105.6.14~~ 105.5.16 Explosives.	[A] 105.5.16 Explosives, fireworks and pyrotechnics. An operational permit is required for the manufacture, storage, handling, sale or use of any quantity of <i>explosives</i> , <i>explosive materials</i> , fireworks or pyrotechnic special effects within the scope of Chapter 56. Exception: Storage in Group R-3 occupancies of smokeless propellant, black powder and small arms primers for personal use, not for resale and in accordance with Section 5606.	Base code renumbering. No change to Houston amendment, relocated from Section 105.6.15.
	~~105.6.16~~ ~~105.6.15~~ 105.5.17 Fire hydrants and valves. An operational permit is required to use or operate fire hydrants or valves intended for fire suppression purposes that are installed on water systems and accessible to ~~provided with ready access from~~ a fire apparatus access road that is open to or generally used by the public. Exception: A permit is not required for authorized employees of the water company that supplies the system or the fire department to use or operate fire hydrants or valves.	[A] 105.5.17 Fire hydrants and valves. Fire depository, key boxes. An operational permit is required to install a key box or fire depository box. See Houston Fire Department LSB Standard No. 05, "Key Boxes" and LSB Standard No. 06, "Fire Depository Boxes." ~~An operational permit is required to use or operate fire hydrants or valves intended for fire suppression purposes that are installed on water systems and provided with ready access from a fire apparatus access road that is open to or generally used by the public.~~ Exception: A permit is not required for authorized employees of the water company that supplies the system or the fire department to use or operate fire hydrants or valves.	Base code renumbering, minor wordsmithing change to base code language. No change to Houston amendment, relocated from Section 105.6.16.
	~~105.6.17~~ ~~105.6.16~~ 105.5.18 Flammable and combustible liquids. An operational permit is required: 1. To use or operate a pipeline for the transportation within facilities of flammable or combustible liquids. This requirement shall not apply to the off-site transportation in pipelines regulated by the Department of Transportation (DOTn) nor does it apply to piping systems. 2. To store, handle or use Class I liquids in excess of 5 gallons (19 L) in a building or in excess of 10 gallons		Base code renumbering; includes updates to base code provisions for flammable and combustible liquids.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	(37.9 L) outside of a building, except that a permit is not required for the following: 2.1. The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant or mobile heating plant, unless such storage, in the opinion of the fire code official, would cause an unsafe condition. 2.2. The storage or use of paints, oils, varnishes or similar flammable mixtures where such liquids are stored for maintenance, painting or similar purposes for a period of not more than 30 days. 3. To store, handle or use Class II or Class IIIA liquids in excess of 25 gallons (95 L) in a building or in excess of 60 gallons (227 L) outside a building, except for fuel oil used in connection with oil-burning equipment. 4. To store, handle or use Class IIIB liquids in tanks or portable tanks for fueling motor vehicles at motor fuel-dispensing facilities or where connected to fuel-burning equipment. Exception: Fuel oil and used motor oil used for space heating or water heating. 5. To remove Class I or II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes. 6. To operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed or used. 7. To place temporarily out of service (for more than 90 days) an underground, protected above-ground or above-ground flammable or combustible liquid tank. 8. To change the type of contents stored in a flammable or combustible liquid tank to a material that poses a greater hazard than that for which the tank was designed and constructed. 9. To manufacture, process, blend or refine flammable or combustible liquids. 10. To engage in the dispensing of liquid fuels into the fuel tanks of motor vehicles at commercial, industrial, governmental or manufacturing establishments in accordance with Section 5706.5.4 or to engage in on-demand mobile fueling operations in accordance with Section 5707. 11. To utilize a site for the dispensing of liquid fuels from tank vehicles into the fuel tanks of motor vehicles, marine craft and other special equipment at commercial, industrial, governmental or manufacturing establishments in accordance with Section 5706.5.4 or, where required by the fire code official, to utilize a site for on-demand mobile fueling operations in accordance with Section 5707.		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~105.6.18~~ 105.6.17 105.5.19 Floor finishing.		Base code renumbering.
	~~105.6.19~~ 105.6.18 105.5.20 Fruit and crop ripening.		Base code renumbering.
	~~105.6.20~~ ~~105.6.19~~ 105.5.21 Fumigation and insecticidal fogging.		Base code renumbering.
	~~105.6.21~~ ~~105.6.20~~ 105.5.22 Hazardous materials. An operational permit is required to store, transport on site, dispense, use or handle hazardous materials in excess of the amounts listed in Table ~~405.6.21~~ 105.6.20 105.5.22 .		Base code renumbering.
<u>{EDITORIAL NOTE: TABLE 105.6.21 SHALL REMAIN AS SET FORTH IN THE 2015 IFC, BUT IS NOT ADOPTED BY THIS JURISDICTION.}</u>	TABLE 105.6.21 TABLE 105.6.20 TABLE 105.5.22 PERMIT AMOUNTS FOR HAZARDOUS MATERIALS	EDITORIAL NOTE: TABLE 105.5.22 IS DELETED IN ITS ENTIRETY AND IS NOT ADOPTED BY THIS JURISDICTION.	No changes to Houston amendment removing Table for hazardous material permit amounts.
	~~105.6.22~~ 105.6.21 105.5.23 HPM facilities.		Base code renumbering.
	~~105.6.23~~ ~~105.6.22~~ 105.5.24 High-piled storage. An operational permit is required to use a building or portion thereof as a high-piled storage area exceeding with more than 500 square feet (46 m²), including aisles, of high-piled storage.	[A] 105.5.24 High-piled storage. An operational permit is required to use a building or portion thereof with more than 500 2500 square feet (~~46~~ 232 m²), including isles, of <i>high-piled combustible storage</i> , as defined in Chapter 2. A floor plan showing the dimensions and locations of the stockpiles and aisles shall be submitted with the permit application in accordance with Chapter 2.	Base code renumbering and minor updates to base code language for high-pile storage. No changes to Houston amendment, relocated from Section 105.6.23.
	~~105.6.24~~ ~~105.6.23~~ 105.5.25 Hot work operations.	[A] 105.5.25 Hot work operations. An operational permit is required for hot work including, but not limited to: 1. Public exhibitions and demonstrations where hot work is conducted. 2. Use of portable hot work equipment inside, or for cutting or welding in or on a building or a structure. Exception: Work that is conducted under a construction permit. 3. Fixed-site hot work equipment, such as welding booths. 4. Hot work conducted within a ~~hazardous fire~~ wildfire risk area.	Base code renumbering. No changes to Houston amendment, relocated from Section 105.6.24.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		5. Application of roof coverings with the use of an open-flame device. 6. ~~Where approved, the fire code official shall issue a permit to carry out a hot work program. This program allows approved personnel to regulate their facility's hot work operations. The approved personnel shall be trained in the fire safety aspects denoted in this chapter and shall be responsible for issuing permits requiring compliance with the requirements found in Chapter 35. These permits shall be issued only to their employees or hot work operations under their supervision.~~	
	~~105.6.25~~ 105.6.24 105.5.26 Industrial ovens.		Base code renumbering.
	~~105.6.26~~ ~~105.6.25~~ 105.5.27 Lumber yards and woodworking plants.		Base code renumbering.
	~~105.6.27~~ ~~105.6.26~~ 105.5.28 Liquid- or gas-fueled vehicles or equipment in assembly buildings.		Base code renumbering.
	~~105.6.28~~ 105.6.27 105.5.29 LP-gas.	[A] 105.5.29 LP-gas. An operational permit is required ~~for:~~ ~~1. Storage and use of LP-gas. to install or maintain any LP-gas container of 125 gallons (473 L) aggregate water capacity or more or operate any tank vehicle that is used for the transportation of LP-gas. An operational permit is required to use any amount of LP-gas for demonstrations, public exhibitions, portable heating (excluding R occupancies), temporary commercial cooking or on mobile food units. For a single container with a 500-gallon (1,893 L) water capacity or for one or more containers with an aggregate 2,000 gallons (7,572 L) water capacity or more, the installer shall submit construction documents for the permit. For operational permit requirements for LP-gas storage, handling, or use, see Chapter 61.~~ ~~Exception: A permit is not required for individual containers with a 500-gallon (1,893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1,893 L), serving occupancies in Group R-3.~~ ~~2. Operation of cargo tankers that transport LP-gas.~~	Base code renumbering. No change to Houston amendment, relocated from Section 105.6.29.
	~~105.6.29~~ ~~105.6.28~~ 105.5.30 Magnesium.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~105.6.30~~ ~~105.6.29~~ 105.5.31 Miscellaneous combustible storage. An operational permit is required to store in any building or upon any premises in excess of 2,500 cubic feet (71 m ³) gross volume of combustible empty packing cases, boxes, barrels or similar containers, combustible pallets , rubber tires, rubber, cork or similar combustible material.	[A] 105.5.31 Miscellaneous combustible storage. ~~An operational permit is required to store in any building or upon any premises in excess of 2,500 cubic feet (71 m³) gross volume of combustible empty packing cases, boxes, barrels or similar containers, combustible pallets, rubber tires, rubber, cork or similar combustible material.~~ An operational permit is required to store more than 50 cubic feet (1.4 m³) of uncompacted rubbish or combustible waste.	Base code renumbering, minor changes to base code language. No changes to Houston amendment, relocated from Section 105.6.30.
	~~105.6.30~~ 105.5.32 Mobile food preparation vehicles. ~~A permit is required for mobile food preparation vehicles equipped with appliances that produce smoke or grease-laden vapors.~~		Base code renumbering, new code language for food preparation vehicles requiring permit.
	~~105.6.32~~ 105.5.34 Open burning.		Base code renumbering.
	~~105.6.33~~ 105.5.35 Open flames and torches.	[A] 105.5.35 Reserved. Open flames and torches. ~~An operational permit is required to remove paint with a torch; or to use a torch or open flame device in a wildfire risk area.~~	Base code renumbering. No change to Houston amendment, relocated from Section 105.6.33.
	~~105.6.34~~ 105.5.36 Open flames and candles.		Base code renumbering.
	~~105.6.35~~ 105.5.37 Organic coatings.		Base code renumbering.
	~~105.6.36~~ 105.5.38 Outdoor assembly event. ~~An operational permit is required to conduct an outdoor assembly event where planned attendance exceeds 1,000 persons.~~		Base code renumbering, new requirements for outdoor assembly event operational permit.
	~~105.6.36~~ ~~105.6.37~~ 105.5.39 Places of assembly.		Base code renumbering.
	~~105.6.38~~ 105.5.40 Plant extraction systems. ~~An operational permit is required to use plant extraction systems.~~		Base code renumbering, new requirements for plant extraction system operational permit.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~105.6.37~~ ~~105.6.39~~ 105.5.41 Private fire hydrants.	[A] 105.5.41 Reserved. ~~Private fire hydrants.~~ An operational permit is required for the removal from service, use or operation of private fire hydrants. Exception: A permit is not required for private industry with trained maintenance personnel, private fire brigade or fire departments to maintain, test and use private hydrants.	Base code renumbering. No change to Houston amendment, relocated from Section 105.6.37.
	~~105.6.38~~ ~~105.6.40~~ 105.5.42 Pyrotechnic special effects material.		Base code renumbering.
	~~105.6.39~~ ~~105.6.41~~ 105.5.43 Pyroxylin plastics.		Base code renumbering.
	~~105.6.40~~ ~~105.6.42~~ 105.5.44 Refrigeration equipment.		Base code renumbering.
	~~105.6.41~~ ~~105.6.43~~ 105.5.45 Repair garages and motor fuel-dispensing facilities.		Base code renumbering.
	~~105.6.42~~ ~~105.6.44~~ 105.5.46 Rooftop heliports. An operational permit is required for the operation of a rooftop heliport.		Base code renumbering.
	~~105.6.43~~ ~~105.6.45~~ 105.5.47 Spraying or dipping.		Base code renumbering.
	~~105.6.44~~ ~~105.6.46~~ 105.5.48 Storage of scrap tires and tire byproducts.		Base code renumbering.
	~~105.6.45~~ ~~105.6.47~~ 105.5.49 Temporary membrane structures and tents. An operational permit is required to operate an air-supported temporary membrane structure, a temporary stage canopy, special event structure or a tent having an area in excess of 400 square feet (37 m²). Exceptions: 1. Tents used exclusively for recreational camping purposes. 2. Tents open on all sides, which comply with all of the following:	[A] 105.5.49 Temporary membrane structures, and tents and canopies. An operational permit is required to operate an air-supported temporary membrane structure, a temporary special event structure or a tent having an area in excess of 400-1,200 square feet (~~37-112~~ m²) or more. Exceptions: 1. Tents used exclusively for recreational camping purposes. 2. Tents open on all sides, which comply with all of the following:	Base code renumbering with minor wordsmithing. No change to Houston amendment, relocated from Section 105.6.45.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2.1. Individual tents having a maximum size of 700 square feet (65 m²). 2.2. The aggregate area of multiple 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 m²) total. 2.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.	~~2.1. Individual tents having a maximum size of 700 square feet (65 m²).~~ ~~2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3,658 mm) shall not exceed 700 square feet (65 m²) total.~~ ~~2.3. A minimum clearance of 12 feet (3,658 mm) to structures and other tents shall be provided.~~	
	~~105.6.46~~ ~~105.6.48~~ 105.5.50 Tire-rebuilding plants.		Base code renumbering.
	~~105.6.47~~ ~~105.6.49~~ 105.5.51 Waste handling.		Base code renumbering.
	~~105.6.48~~ ~~105.6.50~~ 105.5.52 Wood products.		Base code renumbering.
		[A] 105.5.53 Asphalt kettles and roof torching operations. A permit is required in accordance with Sections 303 and Chapters 33 and 35.	No change to Houston amendment, relocated from Section 105.6.49.
		[A] 105.5.54 Gas detection systems. A construction permit is required for the installation of or modification to gas detection systems. Maintenance performed in accordance with this code is not considered a modification and shall not require a permit.	No change to Houston amendment, relocated from Section 105.6.53.
	~~105.7~~ 105.6 Required construction permits. The <i>fire code official</i> is authorized to issue construction permits for work as set forth in Sections 105.7.6.1 through 105.7.6.48 ~~2524~~ .	~~[A] 105.6 Reserved.~~ Required construction permits. The <i>fire code official</i> is authorized to issue construction permits for work as set forth in Sections 105.6.1 through 105.6.24. [EDITORIAL NOTE: PROVISIONS OF SECTION 105.6.1 THROUGH 105.6.4 NOT SHOWN ARE DELETED IN THEIR ENTIRETY AND ARE NOT ADOPTED BY THIS JURISDICTION.]	Base code renumbering. No change to Houston amendment, relocated from Section 105.7.
	~~105.7.1~~ 105.6.1 Automatic fire-extinguishing systems.		Base code renumbering.
	105.7.2 Battery systems. A construction permit is required to install stationary storage battery systems having a liquid capacity of more than 50 gallons (189 L) regulated by Section 1206.2 .		Minor changes to base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	105.7.3 Capacitor energy storage systems. A construction permit is required to install capacitor energy storage systems regulated by Section 1206.3.		New base code section requiring ESS construction permit.
~~[A] 105.6.2 Amusement buildings. An operational permit is required to operate a special amusement building. Apparatus access, road access-control gates. An operational permit is required to install or maintain an access-control gate on a fire apparatus access road.~~ Moved to 105.5.3	~~105.7.3~~ 105.7.4 105.6.2 Compressed gases.		Base code renumbering. Previous Houston amendment relocated to Section 105.5.3.
	~~105.7.4~~ ~~105.7.5~~ 105.6.3 Cryogenic fluids. A construction permit is required for installation of or <i>alteration</i> to outdoor stationary <i>cryogenic fluid</i> storage systems where the system capacity exceeds the amounts listed in Table 105.6.140.		Base code renumbering.
	~~105.7.5~~ ~~105.7.6~~ 105.6.4 Emergency responder communication coverage system. A construction permit is required for installation of or modification to in-building, two-way emergency responder communication coverage systems and related equipment. Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.		Base code renumbering and minor wordsmithing changes.
~~[A] 105.6.5 Carnivals, festivals, trade shows, exhibitions, and fairs. An operational permit is required to conduct a carnival, festival, trade show, other exhibition, or fair. A site or floor plan showing dimensions and locations of the aisles, cooking booths, LP-gas storage, etc., shall be submitted with the permit application.~~ Moved to 105.5.5	105.6.5 Energy storage systems. A construction permit is required to install energy storage systems regulated by Section 1207.		New base code section for ESS construction permit. Previous Houston amendment relocated to Section 105.5.5.
	~~105.7.6~~ ~~105.7.7~~ 105.6.6 Fire alarm and detection systems and related equipment.		Base code renumbering.
	~~105.7.7~~ ~~105.7.8~~ 105.6.7 Fire pumps and related equipment.		Base code renumbering.
	~~105.7.8~~ ~~105.7.9~~ 105.6.8 Flammable and combustible liquids.		Base code renumbering.
	~~105.7.10~~ 105.6.9 Fuel cell power systems. A construction permit is required to install stationary fuel cell power systems.		New base code section for fuel cell power system construction permit, renumbered in 2021 edition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~105.7.11~~ 105.6.10 Gas detection systems. A construction permit is required for the installation of or modification to gas detection systems. Maintenance performed in accordance with this code is not considered a modification and shall not require a permit.		New base code section for gas detection system construction permit, renumbered in 2021 edition.
	~~105.7.9~~ ~~105.7.12~~ 105.6.11 Gates and barricades across fire apparatus access roads.		Base code renumbering.
~~[A] 105.6.12 Cutting and welding. An operational permit is required to conduct cutting or welding operations within the jurisdiction. See Section 105.6.24.~~ Moved to 105.5.12	~~105.7.10~~ ~~105.7.13~~ 105.6.12 Hazardous materials. A construction permit is required to install, repair damage to, abandon, remove, place temporarily out of service, or close or substantially modify a storage facility or other area regulated by Chapter 50 where the hazardous materials in use or storage exceed the amounts listed in Table 105.6.240.		Base code renumbering. Previous Houston amendment relocated to Section 105.5.12.
	~~105.7.14~~ 105.6.13 High-piled combustible storage. A construction permit is required for the installation of or modification to a structure with more than 500 square feet (46 m2), including aisles, of high-piled combustible storage. Maintenance performed in accordance with this code is not considered to be a modification and does not require a construction permit.		New base code section for high-piled storage construction permit, renumbered in 2021 edition.
~~[A] 105.6.14 Exhibits and trade shows. An operational permit is required to operate exhibits and trade shows. See Section 105.6.5.~~ Moved to 105.5.15	~~105.7.11~~ ~~105.7.15~~ 105.6.14 Industrial ovens.		Base code renumbering. Previous Houston amendment relocated from Section 105.5.15.
~~[A] 105.6.15 Explosives, fireworks and pyrotechnics. An operational permit is required for the manufacture, storage, handling, sale or use of any quantity of explosives, explosive materials, fireworks or pyrotechnic special effects within the scope of Chapter 56.~~ ~~Exception: Storage in Group R-3 occupancies of smokeless propellant, black powder and small arms primers for personal use, not for resale and in accordance with Section 5606.~~ Moved to 105.5.16	~~105.7.12~~ ~~105.7.16~~ 105.6.15 LP-gas.		Base code renumbering. Previous Houston amendment relocated from Section 105.5.16.
~~[A] 105.6.16 Fire hydrants and valves. Fire depository, key boxes. An operational permit is required to install a key box or fire depository box. See Houston Fire Department LSB Standard No. 05, "Key Boxes" and LSB Standard No. 06, "Fire Depository Boxes." An operational permit is required to use or operate fire hydrants or valves intended for fire suppression purposes that are installed on water systems and accessible to a fire apparatus access road that is open to or generally used by the public.~~ ~~Exception: A permit is not required for authorized employees of the water company that supplies the system~~	~~105.7.17~~ 105.6.16 Motor vehicle repair rooms and booths. A construction permit is required to install or modify a motor vehicle repair room or booth. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.		New base code section for motor vehicle repair rooms/booths construction permit, renumbered in 2021 edition. Previous Houston amendment relocated to Section 105.5.17.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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~~or the fire department to use or operate fire hydrants or valves.~~ Moved to 105.5.17			
	~~105.7.18~~ 105.6.17 Plant extraction systems. A construction permit is required for installation of or modification to plant extraction systems. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.		New base code section for plant extraction system construction permit, renumbered in 2021 edition.
	~~105.7.13~~ ~~105.7.19~~ 105.6.18 Private fire hydrants.		Base code renumbering.
	~~105.7.14~~ ~~105.7.20~~ 105.6.19 Smoke control or smoke exhaust systems.		Base code renumbering.
	~~105.7.15~~ ~~105.7.21~~ 105.6.20 Solar photovoltaic power systems.		Base code renumbering.
{EDITORIAL NOTE: TABLE 105.6.21 SHALL REMAIN AS SET FORTH IN THE 2015 IFC, BUT IS NOT ADOPTED BY THIS JURISDICTION.}	~~105.7.22~~ 105.6.21 Special event structure. A single construction permit is required to erect and take down a temporary special event structure.		Base code renumbering, includes new requirements for construction permits for special event structures. Previous Houston amendment relocated to appropriate section, 105.5.22, to remove table for hazardous material permit amounts.
	~~105.7.16~~ ~~105.7.23~~ 105.6.22 Spraying or dipping.		Base code renumbering.
[A] 105.6.23 High-piled storage. An operational permit is required to use a building or portion thereof as a <i>high-piled storage area</i> , as defined in Chapter 32, exceeding ~~500~~ <u>2500</u> square feet (~~46~~ <u>232</u> m ²). A floor plan showing the dimensions and locations of the stock piles and aisles shall be submitted with the permit application in accordance with Chapter 32. Moved to 105.5.24	~~105.7.17~~ ~~105.7.24~~ 105.6.23 Standpipe systems.		Base code renumbering. Previous Houston amendment relocated to Section 105.5.24.
[A] 105.6.24 Hot work operations. An operational permit is required for hot work including, but not limited to: 1. Public exhibitions and demonstrations where hot work is conducted. 2. Use of portable hot work equipment inside, <u>or for cutting or welding in or on a building or a structure.</u> Exception: Work that is conducted under a construction permit. 3. Fixed-site hot work equipment, such as welding booths.	~~105.7.18~~ ~~105.7.25~~ 105.6.24 Temporary membrane structures and tents.		Base code renumbering. Previous Houston amendment relocated to Section 105.5.25.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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4. Hot work conducted within a <u>hazardous fire wildfire risk</u> area. 5. Application of roof coverings with the use of an open-flame device. 6. ~~Where <u>approved</u>, the <u>fire code official</u> shall issue a permit to carry out a hot work program. This program allows <u>approved</u> personnel to regulate their facility's hot work operations. The <u>approved</u> personnel shall be trained in the fire safety aspects denoted in this chapter and shall be responsible for issuing permits requiring compliance with the requirements found in Chapter 35. These permits shall be issued only to their employees or hot work operations under their supervision.~~ Moved to 105.5.25			
[A] 105.6.28 LP-gas. An operational permit is required ~~for:~~ <u>1. Storage and use of LP-gas to install or maintain any LP-gas container of 125 gallons (473 L) aggregate water capacity or more or operate any tank vehicle that is used for the transportation of LP-gas. An operational permit is required to use any amount of LP-gas for demonstrations, public exhibitions, portable heating (excluding R occupancies), temporary commercial cooking or on mobile food units. For a single container with a 500-gallon (1,893 L) water capacity or for one or more containers with an aggregate 2,000 gallons (7,572 L) water capacity or more, the installer shall submit construction documents for the permit. For operational permit requirements for LP-gas storage, handling, or use, see Chapter 61.</u> ~~Exception: A permit is not required for individual containers with a 500-gallon (1,893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1,893 L), serving occupancies in Group R-3.~~ ~~2. Operation of cargo tankers that transport LP-gas.~~ Moved to 105.5.29			Previous Houston amendment relocated to Section 105.5.29.
[A] 105.6.30 Miscellaneous combustible storage. An operational permit is required to store in any building or upon any premises in excess of 2,500 cubic feet (71 m³) gross volume of combustible empty packing cases, boxes, barrels or similar containers, rubber tires, rubber, cork or similar combustible material. <u>An operational permit is required to store more than 50 cubic feet (1.4 m³) of uncompacted rubbish or combustible waste.</u> Moved to 105.5.31			Previous Houston amendment relocated to Section 105.5.31.
~~[A] 105.6.33 Reserved. Open flames and torches. An operational permit is required to remove paint with a torch; or to use a torch or open flame device in a wildfire risk area.~~ Moved to 105.5.35			Previous Houston amendment relocated to Section 105.5.35.
~~[A] 105.6.37 Reserved. Private fire hydrants. An operational permit is required for the removal from service, use or operation of private fire hydrants.~~ ~~Exception: A permit is not required for private industry with trained maintenance personnel, private fire brigade or fire departments to maintain, test and use private hydrants.~~			Previous Houston amendment relocated to Section 105.5.41.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
Moved to 105.5.41			
[A] 105.6.45 Temporary membrane structures, and tents and canopies. An operational permit is required to operate an air-supported temporary membrane structure, a temporary stage canopy or a tent having an area ~~in excess of 400-1,200 square feet (37-112 m²) or more.~~ Exceptions: 1.—Tents used exclusively for recreational camping purposes. 2. ~~Tents open on all sides, which comply with all of the following:~~ 2.1. ~~Individual tents having a maximum size of 700 square feet (65 m²).~~ 2.2. ~~The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3,658 mm) shall not exceed 700 square feet (65 m²) total.~~ 2.3. ~~A minimum clearance of 12 feet (3,658 mm) to structures and other tents shall be provided.~~ Moved to 105.5.49			Previous Houston amendment relocated to Section 105.5.49.
[A] 105.6.49 Asphalt kettles and roof torching operations. A permit is required in accordance with Sections 303 and Chapters 33 and 35. Moved to 105.5.53			Previous Houston amendment relocated to Section 105.5.53.
[A] 105.6.50 Battery systems. A permit is required to install stationary storage battery systems regulated by Section 1206.2.			Houston Amendment removed, added to base code.
[A] 105.6.51 Capacitor energy storage systems. A construction permit is required to install capacitor energy storage systems regulated by Section 1206.3.			Houston Amendment removed, added to base code.
[A] 105.6.52 Fuel cell power systems. A construction permit is required to install stationary fuel cell power systems.			Houston Amendment removed, added to base code.
[A] 105.6.53 Gas detection systems. A construction permit is required for the installation of or modification to gas detection systems. Maintenance performed in accordance with this code is not considered a modification and shall not require a permit.			Previous Houston amendment relocated to Section 105.5.54.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
~~[A] 105.7 Reserved. Required construction permits. The <i>fire code official</i> is authorized to issue construction permits for work as set forth in Sections 105.7.1 through 105.7.18.~~ <u>[EDITORIAL NOTE: PROVISIONS OF SECTION 105.7 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IFC BUT ARE NOT ADOPTED BY THIS JURISDICTION.]</u> Moved to 105.6			Previous Houston amendment relocated to Section 105.6.
	SECTION 106 CONSTRUCTION DOCUMENTS [A] 106.1 Submittals. <i>Construction documents</i> and supporting data shall be submitted in two or more sets with each application for a permit and in such form and detail as required by the <i>fire code official</i>. The <i>construction documents</i> shall be prepared by a <i>registered design professional</i> where required by the statutes of the jurisdiction in which the project is to be constructed. Exception: The <i>fire code official</i> is authorized to waive the submission of <i>construction documents</i> and supporting data not required to be prepared by a <i>registered design professional</i> if it is found that the nature of the work applied for is such that review of <i>construction documents</i> is not necessary to obtain compliance with this code.		Construction document provisions have been relocated to new section, Section 106.
	[A] 106.2.1 Information on construction documents. <i>Construction documents</i> shall be drawn to scale on suitable material. Documents in a digital format are allowed to be submitted where <i>approved</i> by the <i>fire code official</i>. <i>Construction documents</i> shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations as determined by the <i>fire code official</i>.		Minor changes to base code language.
		[A] 106.2.2 Fire protection system shop drawings. Shop drawings for the fire protection system(s) shall be submitted to indicate compliance with this code and the <i>construction documents</i>, and shall be <i>approved</i> prior to the start of installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9. Exception: With approved engineered drawings, a “go to work permit” can be issued prior to shop drawing review and approval.	New Houston amendment adding exception to the section requiring shop drawing review.
106.2.3 Requested inspections. Whenever a person requests that the jurisdiction conduct an inspection, or perform other duties not specified in this code and not in connection with a permit required under this code the service shall be scheduled outside regular working hours, or on a weekend or a holiday observed by the jurisdiction, so that the service will not interfere with the regular duties of or cause an undue burden on jurisdiction personnel. Moved to 108.2.3.			Houston amendment relocated to Section 108.2.3.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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106.2.4 Priority inspection. Whenever an inspection is required by the <i>fire code official</i> or whenever a person requests that the jurisdiction conduct an inspection or perform other duties specified in this code at a specific time rather than at the convenience of the jurisdiction, the service shall be scheduled outside regular working hours, or on a weekend or a holiday observed by the jurisdiction, so that the service will not interfere with the regular duties of jurisdiction personnel or cause an undue burden on jurisdiction personnel. Moved to 106.2.5 and 108.2.4.			Houston amendment relocated to Section 106.2.5 and 108.2.4.
		106.2.5 Priority inspection. Whenever an inspection is required by the <i>fire code official</i> or whenever a person requests that the jurisdiction conduct an inspection or perform other duties specified in this code at a specific time rather than at the convenience of the jurisdiction, the service shall be scheduled outside regular working hours, or on a weekend or a holiday observed by the jurisdiction, so that the service will not interfere with the regular duties of jurisdiction personnel or cause an undue burden on jurisdiction personnel.	No change to Houston amendment, relocated from Section 106.2.4.
		[A] Retention of construction documents. One set of <i>construction documents</i> ~~shall~~ may be retained by the <i>fire code official</i> for a period of not less than 180 days form the date of completion of the permitted work, or as required by state or local laws. One set of <i>approved construction documents</i> shall be returned to the applicant, and said set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress.	New Houston amendment to wordsmith base code language requiring construction documents be kept by the fire code official.
106.5 Inspections of Facilities Having Hazardous Materials Processes, Piping, and Storage. All tanks and piping associated with a hazardous, combustible, flammable liquids or gases shall be maintained in a safe operation condition. Tanks and piping shall be maintained, inspected, and tested in accordance with their listing, manufacturing recommendations, or national recognized standard. Tanks, valves, and piping shall be visually inspected monthly for rust, deterioration or leakage. Documentation must be provided to the AHJ upon request. Moved to 108.5			Houston amendment relocated to Section 108.5.
	SECTION 106107 FEES ~~106.1~~ 107.1 Fees. A permit shall not be issued until the fees have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.	[A] 107.1 Fees. A permit shall not be issued until the fees have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid. ~~Fees for permits, inspections and other services under this code shall be assessed in the amounts set forth in the <i>city fee schedule</i> and payable to the jurisdiction. Fees are annual unless otherwise provided in this code or by regulation of the <i>fire code official</i>.~~	Base code provisions for Fees has been relocated from Section 113 in 2015, and from 106 in 2018. No change to Houston amendment, relocated from Section 113.1.
		107.1.1 Permits. Except for permits and inspections under Section 107.1.3.2, the fee for a permit includes an initial inspection and one follow-up inspection if a follow-up inspection is deemed necessary in the judgment of the inspector.	No change to Houston amendment, relocated from Section 113.1.1.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		107.1.2 Special inspection provisions. 107.1.2.1 Inspections not related to permits. Fees for inspection or other services not specified in this code and not in connection with a permit required under this code shall be based on the time expended as set forth in the <i>city fee schedule</i> for this provision. A deposit in the full amount of the anticipated fee shall be required prior to the commencement of the inspection. Examples of the types of inspections covered by this section include, but are not limited to, inspections requested by persons who are applying for state or federal permits that have provisions for a fire inspection and compliance inspections requested in connection with real estate transactions. This fee shall be in addition to all other fees required by this code.	No change to Houston amendment, relocated from Section 113.
		107.1.2.2 Priority inspections at a specific time. Fees for priority inspections or other services specified in this code at a scheduled, specific time, rather than at the convenience of the jurisdiction, shall be based on the time expended as set forth in the <i>city fee schedule</i> for this provision. This fee shall be in addition to all other fees required by this code.	No change to Houston amendment, relocated from Section 113.
		107.2.2 Reinspections. 107.1.3.1 Reinspection fee. Whenever it becomes necessary to make a reinspection (after the initial inspection and one follow-up inspection under Section 107.1.1 or after the initial inspection under Section 107.1.3.2) because of faulty material, faulty workmanship, or incomplete work, or for any other reason, the permit holder shall pay for each reinspection a fee in the amount stated in the city fee schedule, unless a greater fee is specifically required by this code. This fee shall be in addition to all other fees required by this code.	No change to Houston amendment, relocated from Section 113.
		107.1.3.2 Retesting and reinspection fees for fire protection systems and underground fuel storage tank permits. Fees for permits, inspections, and testing for fire alarm, sprinkler, and other fire protection systems under Sections 901.5 (fire alarm, sprinkler and other fire protection systems) and 5704.2.12.2 (underground fuel storage tanks) include one-time inspection and testing. If a fire protection system or underground fuel storage tank fails testing or inspection or approved plans are not on site at the time of the scheduled test, the permit holder shall pay a retest fee in the amount set forth in the city fee schedule for retesting and reinspection.	No change to Houston amendment, relocated from Section 113.
		107.1.3.3 Inspection cancellation fee. A fee in the amount stated in the city fee schedule shall be assessed to the permit holder and payable to the jurisdiction if a scheduled test or inspection of a fire protection system pursuant to Section 901.5 or underground fuel storage tank pursuant to Section 5704.2.12.2 is cancelled by the permit holder at any time during the four hours prior to the time scheduled for the test or inspection.	Updated section number, no change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		107.1.4 Other fees. 107.1.4.1 Administrative fee. The administrative fee stated in the city fee schedule shall be charged upon the preparation of each permit or license issued by the fire department. This fee shall apply regardless of whether the permit or license is issued pursuant to this code or the <i>City Code</i> , and it shall be payable in addition to all other applicable fees for the permit or license. The foregoing administrative fee shall not be applicable if no other fee is provided by law for the permit or license.	No change to Houston amendment, relocated from Section 113.
		107.1.4.2 Receipt. The administrative receipt fee stated in the city fee schedule shall be charged upon the preparation of each fee or deposit receipt issued by the Houston Permitting Center. This fee shall apply regardless of whether the fee or deposit is payable pursuant to this code or the <i>City Code</i> . This fee shall be in addition to all other applicable fees or deposits. When paid for a deposit or fee receipt, this fee shall neither constitute nor be refundable as a part of the deposit. This fee shall not apply when a permit or license is issued and the fee specified in Section 107.1.1 above is imposed.	No change to Houston amendment, relocated from Section 113.
		107.1.4.3 Correction fee. The correction fee stated in the city fee schedule shall be charged for correction of any license or permit in those instances where the license or permit is initially issued with an error caused by incorrect information having been furnished by the applicant. A reinspection fee shall also be imposed as provided in Section 107.1.1 when the error causes a reinspection to be required.	No change to Houston amendment, relocated from Section 113.
		107.1.4.4 Replacement fee. The replacement fee stated in the city fee schedule shall be charged for replacement of any permit that is lost or requires replacement for other reasons, such as a change of the permit holder's name.	No change to Houston amendment, relocated from Section 113.
	~~106.2~~ 107.2 Schedule of permit fees. ~~A~~ Where a permit is required, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.	[A] 107.2 Schedule of permit fees. Where a permit is required, a fee for each permit or service shall be paid as required, in accordance with the <u>city fee</u> schedule ~~as established by the applicable governing authority.~~	Base code section relocated in 2018 and 2021. No change to Houston amendment, relocated from Section 113.2.
	107.3 Permit valuations. The applicant for a permit shall provide an estimated permit value at the time of application. Permit valuations shall include the total value of work, including materials and labor, for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment and permanent systems. If, in the opinion of the <i>fire code official</i> , the valuation is underestimated on the application, the permit shall be denied unless the applicant can show detailed estimated to meet the approval of the <i>fire code official</i> . Final permit valuation shall be set by the <i>fire code official</i> .		New base code language for permit valuation requirements when applying for permit.
	~~106.3~~ 107.4 Work commencing before permit issuance. A person who commences any work, activity or operation regulated by this code before obtaining the necessary permits shall be subject to ~~an additional~~ a fee established by the		Minor wordsmithing changes in base code language.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	applicable governing authority, which shall be in addition to the required permit fee.		
	~~106.4~~ 107.5 Related fees. The payment of the fee for the construction, alteration, removal or demolition of work done in connection to or concurrently with the work or activity authorized by a permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.		Base code renumbering.
	~~106.5~~ 107.6 Refunds. The applicable governing authority is authorized to establish a refund policy.	[A] 107.6 Refunds. ~~The applicable governing authority is authorized to establish a refund policy. The fire code official or building official, as applicable, may authorize a refund of any fee paid hereunder that was erroneously paid or collected due to an error by a jurisdiction employee. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.~~ ~~The fire code official or building official, as applicable, may authorize a refund of not more than 90 percent of the amount in excess of the minimum permit fee paid when no inspection has been performed under a permit issued in accordance with this code. If an inspection has been performed under the permit, no refund shall be authorized. The originally paid administrative fee shall be nonrefundable.~~ ~~The fire code official or building official, as applicable, shall not authorize a refund of any fee paid except on written application filed by the original permit holder not later than 180 calendar days after the date of fee payment.~~	Base code renumbering. No change to Houston amendment, relocated from Section 113.5.
		107.7 Exemption from permits and fees. To the extent that the state and the federal government are exempt as a matter of law from compliance with this code, neither the state nor the federal government shall be required to obtain a permit for work undertaken for, by or on the premises of either of them. However, the fees set forth in this code shall be applicable to the extent that the state or the federal government elects to obtain a permit for exempt work. ~~Except for work undertaken for, by or on the premises of the state or the federal government, permits shall be required for work undertaken for, by or on the premises of any political subdivision or unit of government (including, but not limited to, the jurisdiction) in the same manner and to the same extent as for work performed by or for other persons. The fees prescribed in this code shall be applicable to all permits issued to or for governmental agencies except counties and the jurisdiction. The jurisdiction and counties are exempted from the payment of fees. The exemption for the jurisdiction and for counties shall extend only to work to be undertaken for, by or on the premises of the jurisdiction or a county itself as a body corporate and politic. Furthermore, the exemption for a county shall not extend to work undertaken for, by or on the premises of units of government that, although affiliated with a county, have separate governmental existence from the county, including but not limited to, hospital districts and flood control districts.~~	No change to Houston amendment, relocated from Section 113.6.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		107.8 Annual fee increase. Notwithstanding any maximum fee established by this section, the fees established in this code, as adjusted according to this provision, shall be automatically increased on the first day of each subsequent calendar year as provided in Section 1-13 of the <i>City Code</i> .	No change to Houston amendment, relocated from Section 113.7.
[A] 108.1 Board of appeals established. In order to hear and decide appeals of orders from decisions or determinations made by of the <i>fire code official</i> relative to the application and interpretation of this code as to the suitability of alternate materials and types of construction and to provide for reasonable interpretations of the provisions of this code, there shall be and is hereby created a board of appeals. The board of appeals shall be appointed by the mayor, subject to confirmation by the city council governing body and shall hold office at its pleasure. The <i>fire code official</i> shall be an ex officio member of said board but shall not have a vote on any matter before the board. The board shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the <i>fire code official</i> . See Appendix A. Moved to 111.1	SECTION 106-107 108 INSPECTIONS 106.1 107.1 108.1 Inspection authority.		Base code renumbering. Houston amendment relocated to Section 111.1.
[A] 108.2 Limitations on authority. An application for appeal shall be based on a claim that the intent of this code or the rules legally adopted hereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equivalent method of protection or safety is proposed. The board shall not have authority to waive requirements of this code. <u>The <i>fire code official</i> shall take action in accordance with the decision of the board.</u> Moved to 111.2	106.2 107.2 108.2 Inspections. The <i>fire code official</i> is authorized to engage such expert opinion as deemed necessary to report upon unusual, detailed or complex technical issues subject to the approval of the governing body.		Base code renumbering. Houston amendment relocated to Section 111.2.
[A] 108.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to this code hazards of fire, explosions, hazardous conditions or fire protection systems and are not employees of the jurisdiction. Moved to 111.3	106.2.1 107.2.1 108.2.1 Inspection requests.		Base code renumbering. Houston amendment relocated to Section 111.3.
	106.2.2 107.2.2 108.2.2 Approval required. The <i>fire code official</i> , upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with this code.		Base code renumbering.
		108.2.3 Requested inspections. Whenever a person requests that the jurisdiction conduct an inspection, or perform other duties not specified in this code and not in connection with a permit required under this code the service shall be scheduled outside regular working hours, or on a weekend or a holiday observed by the jurisdiction, so that the service will not interfere with the regular duties of or cause an undue burden on jurisdiction personnel.	No change to Houston amendment, relocated from Section 106.2.3.
		108.2.4 Priority inspection. Whenever an inspection is required by the <i>fire code official</i> or whenever a person requests that the jurisdiction conduct an inspection or perform other duties specified in this code at a specific time rather than at the convenience of the jurisdiction, the service shall be scheduled outside regular working hours, or on a weekend or a holiday observed by the jurisdiction, so that the service	No change to Houston amendment, relocated from Section 106.2.4.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		will not interfere with the regular duties of jurisdiction personnel or <u>cause an undue burden on jurisdiction personnel.</u>	
	~~106.3~~ ~~107.3~~ 108.3 Concealed work. It shall be the duty of the permit applicant to cause the work to remain ~~accessible and exposed~~ visible and able to be accessed for inspection purposes. Where any installation subject to inspection prior to use is covered or concealed without having first been inspected, the <i>fire code official</i> shall have the authority to require that such work be ~~exposed~~ made visible and able to be accessed for inspection. Neither the <i>fire code official</i> nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.		Base code renumbering with minor wordsmithing changes to language.
	~~106.4~~ ~~107.4~~ 108.4 Approvals.		Base code renumbering.
		108.5 Inspections of Facilities Having Hazardous Materials Processes, Piping, and Storage. All tanks and piping associated with a hazardous, combustible, flammable liquids or gases shall be maintained in a safe operation condition. Tanks and piping shall be maintained, inspected, and tested in accordance with their listing, manufacturing recommendations, or national recognized standard. Tanks, valves, and piping shall be visually inspected monthly for rust, deterioration or leakage. Documentation must be provided to the AHJ upon request.	No change to Houston amendment, relocated from Section 106.5.
	SECTION 407-108 109 MAINTENANCE ~~107.1~~ ~~108.1~~ 109.1 Maintenance of safeguards.		Base code renumbering.
	~~107.2~~ ~~108.2~~ 109.2 Testing and operation.		Base code renumbering.
	~~107.2.1~~ ~~108.2.1~~ 109.2.1 Reinspection and testing.		Base code renumbering.
[A] 109.3 Notice of violation. Where the <i>fire code official</i> finds a building, premises, vehicle, storage facility or outdoor area that is in violation of this code, the <i>fire code official</i> is authorized to prepare a written notice of violation (“NOV”) describing the conditions deemed unsafe and, where compliance is not immediate, specifying a time for reinspection. <u>The NOV advises the recipient of the existence of a violation of this code but does not initiate a judicial or administrative proceeding. Service of a NOV is not required prior to service of a citation or summons or to other action to enforce this code.</u> Moved to 112.3	~~107.3~~ ~~108.3~~ 109.3 be provided to the fire code official upon request.		Base code renumbering. Previous Houston amendment relocated to Section 112.3.
[A] 109.3.1 Service of NOV. <u>The <i>fire code official</i> may serve (by personal service or by certified mail, return receipt requested) an NOV upon such person(s) as the <i>fire code official</i> reasonably believes should be notified of the violation. A notice of violation issued pursuant to this code shall be served upon the owner, the owner’s authorized agent, operator, occupant or other person responsible for the condition or violation, either by</u>			Previous Houston amendment relocated to Section 112.3.1.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
~~personal service, mail or by delivering the same to, and leaving it with, some person of responsibility upon the premises. For unattended or abandoned locations, a copy of the NOV may such notice of violation shall be posted on the premises in a conspicuous place at or near the entrance to such premises, in which case a copy of the NOV and the notice of violation shall be mailed by certified mail, with return receipt requested or a certificate of mailing, to the owner of the property at the owner's last known address, according to the records of the appraisal district in which the property is located of the owner, the owner's authorized agent, or occupant.~~ Moved to 112.3.1			
~~[A] 109.3.3 Prosecution of violations. If the notice of violation is not complied with promptly, the fire code official is authorized to request the legal counsel of the jurisdiction to institute the appropriate legal proceedings at law or in equity to restrain, correct or abate such violation or to require removal or termination of the unlawful occupancy of the structure in violation of the provisions of this code or of the order or direction made pursuant hereto. If a person owning, operating, or maintaining an occupancy, property, or vehicle subject to this code allows a violation of this code to exist or fails to take immediate action to abate a violation when ordered to do so by the fire code official, the fire code official is authorized to take any action authorized by this code or other applicable law.~~ Moved to 112.3.3			Previous Houston amendment relocated to Section 112.3.2.
~~[A] 109.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under provisions of this code, shall be guilty of a [SPECIFY OFFENSE], punishable by a fine of not more than [AMOUNT] dollars or by imprisonment not exceeding [NUMBER OF DAYS], or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense. General penalty; continuing violations. When in this code an act is prohibited or is made or declared to be unlawful or an offense or misdemeanor, or wherever in this code the doing of any act is required or the failure to do any act is declared to be unlawful, and no specific penalty is provided therefor, the violation of any such provision of this code shall be punished by a fine of not less than \$500.00, nor more than \$2000.00; provided, however, that no penalty shall be greater or lesser than the penalty provided for the same offense under the laws of the state. Each day any violation of this code shall continue shall constitute a separate offense. In prosecutions under this code, the various provisions hereof that are designated as exceptions shall not be treated as exceptions within the meaning of Section 2.02 of the Texas Penal Code, and instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the Texas Penal Code.~~ Moved to 112.4	~~107.4~~ 108.4 109.4 Supervision.		Base code renumbering. Previous Houston amendment relocated to Section 112.4.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
~~[A] 109.4.1 Abatement of violation. In addition to the imposition of the penalties herein described, the fire code official is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises. License suspension/revocation. The suspension, revocation, cancellation or denial of any license, permit or certificate by the jurisdiction shall not prohibit the imposition of any civil or criminal penalty. The imposition of a civil or criminal penalty by the jurisdiction shall not prohibit the suspension, revocation, cancellation or denial of any license, permit or certificate.~~ Moved to 112.4.1			Previous Houston amendment relocated to Section 112.4.1.
109.4.2 Enforced removal or abatement. The application of the foregoing penalty shall not be held to prevent the enforced removal or abatement of any prohibited condition. Moved to 112.4.2			Previous Houston amendment relocated to Section 112.4.2.
109.4.3 Administrative adjudication of unlawful parking or stopping of vehicle. The provisions of Chapter 16, Article IV, of the <i>City Code</i> shall be applicable to the adjudication of any offense arising under this code that involves the parking or stopping of a vehicle. The fines for parking or stopping of a vehicle shall be as otherwise provided in this section or other provisions of this code as applicable, but the citation shall be issued and adjudicated in all respects as provided in Chapter 16, Article IV, of the <i>City Code</i>. Moved to 112.4.3			Previous Houston amendment relocated to Section 112.4.3.
109.4.4 Referral to city attorney. In addition to other remedies authorized by this code or other applicable law, the <i>fire code official</i> may refer a violation to the city attorney for appropriate legal action to abate or restrain an activity, condition, or occupancy constituting or resulting from a violation of this code. Moved to 112.4.4			Previous Houston amendment relocated to Section 112.4.4.
	~~107.5 108.5~~ 109.5 Rendering equipment inoperable. Portable or fixed fire-extinguishing systems or devices, and fire-warning systems, shall be provided with ready access and shall not be rendered inoperative or inaccessible, except as necessary during emergencies, maintenance, repairs, <i>alterations</i>, drills or prescribed testing.		Base code renumbering and minor wordsmithing changes to language.
	~~107.6 108.6~~ 109.6 Overcrowding. The <i>fire code official</i>, upon finding any overcrowding conditions or obstructions in <i>aisles</i>, passageways or other <i>means of egress</i>, or upon finding any condition that constitutes a life safety hazard, shall be authorized to cause the event to be stopped until such condition or obstruction is corrected.		Base code renumbering.
~~[A] 110.1 General authority. If during the inspection of a premises, a building or structure, or any building system, in whole or in part, constitutes a clear and inimical threat to human life, safety or health, the fire code official shall issue such notice or orders to remove or remedy the conditions as shall be deemed necessary in accordance with this section, and shall refer the building to the building~~	SECTION 112-113-110 SERVICE UTILITIES 112.1 113.1 110.1 Authority to disconnect service utilities.		Base code renumbering. Previous Houston amendment relocated to Section 114.1.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
department for any repairs, ~~alterations, remodeling, removing or demolition required.~~ If all or part of a property or structure violates this code and constitutes a threat to public health or safety, the <i>fire code official</i> shall issue such notices or orders to abate the threat as are reasonable under the circumstances. Such notices may include one or more placards posted conspicuously at the property stating that the property is a threat to public health or safety, that the fire marshal may order an evacuation of the structure or take other action against the property, and that persons who continue to use the building do so at their own risk. The wording of the placard shall be factually accurate, but no particular wording is prescribed. Moved to 114.1			
[A] 110.1.2 Structural hazards. Administrative hearing under City Code. Where an apparent structural hazard is caused by the faulty installation, operation or malfunction of any of the items or devices governed by this code, the <i>fire code official</i> shall immediately notify the building code official in accordance with Section 110.1. <u>The <i>fire code official</i> may schedule a public hearing before a hearing officer as provided by Chapter 10, Article IX, Division 2, of the City Code and request any relief authorized by the said Article IX.</u> Moved to 114.1.2			Previous Houston amendment relocated to Section 114.1.2.
[A] 110.3 Summary abatement. ~~Where conditions exist that are deemed hazardous to life and property, the <i>fire code official</i> or fire department official in charge of the incident is authorized to abate summarily such hazardous conditions that are in violation of this code.~~ If all or part of a property or structure constitutes a serious and immediate fire hazard, the <i>fire code official</i> or a fire department official in charge of an incident may abate or otherwise remedy the said hazard without prior notice or hearing. In such a circumstance, however, the <i>fire code official</i> must provide each owner, lienholder, and mortgagee of the subject property with an opportunity for a post-abatement hearing in the manner prescribed by Chapter 10, Article IX, Division 8, of the <i>City Code</i> . Moved to 114.7			Previous Houston amendment relocated to Section 114.7.
	SECTION 408-109 111 BOARDMEANS OF APPEALS ~~108.1 109.1~~ 111.1 Board of appeals established. In order to hear and decide appeals of orders, decisions or determinations made by the <i>fire code official</i> relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The board of appeals shall be appointed by the <u>applicable</u> governing <u>authority</u> and shall hold office at its <u>pleasure</u> . The board shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the <i>fire code official</i> .	[A] 111.1 Board of appeals established. In order to hear and decide appeals <u>of orders from decisions or determinations made by of the <i>fire code official</i> relative to the application and interpretation of this code as to the suitability of alternate materials and types of construction and to provide for reasonable interpretations of the provisions of this code.</u> there shall be <u>and is hereby created</u> a board of appeals. The board of appeals shall be appointed by the <u>mayor, subject to confirmation by the city council</u> <u>applicable governing authority and shall hold office at its pleasure.</u> The <i>fire code official</i> shall be an ex officio member of said board <u>but shall not have a vote on any matter before the board.</u> The board shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the <i>fire code official</i> . <u>See Appendix A.</u>	Base code renumbering and minor wordsmithing changes to language. No change to Houston amendment, relocated from Section 108.1.
	~~108.2 109.2~~ 111.2 Limitations on authority. An application for appeal shall be based on a claim that the <u>true</u> intent of this code or the rules legally adopted <u>thereunder</u> have been incorrectly interpreted, the provisions of this code do not fully apply or an equivalent <u>or better form of construction</u> is proposed. The board	[A] 111.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equivalent or better form of protection is proposed. The board shall not have authority to waive requirements of this code or interpret the administration of this code.	Base code renumbering and minor wordsmithing changes to language. No change to Houston amendment, relocated from Section 108.2.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	shall not have authority to waive requirements of this code or interpret the administration of this code.	The <i>fire code official</i> shall take action in accordance with the decision of the board.	
	~~408.3~~ 109.3 111.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosions, hazardous conditions or <i>fire protection systems</i> , and are not employees of the jurisdiction.	[A] 111.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to this code hazards of fire, explosions, hazardous conditions or fire protection systems and are not employees of the jurisdiction.	Base code renumbering. No change to Houston amendment, relocated from Section 108.3.
[A] 111.4 Failure to comply. ~~It shall be unlawful to fail to comply with any stop work order. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.~~ Moved to 113.4	111.4 Administration. The <i>fire code official</i> shall take immediate action in accordance with the decision of the board.		New base code section for board of appeal decisions. Previous Houston amendment relocated to Section 113.4.
	SECTION ~~409~~ 110 112 VIOLATIONS ~~409.1~~ 110.1 112.1 Unlawful acts.		Base code renumbering.
	~~409.2~~ 110.2 112.2 Owner/occupant responsibility.		Base code renumbering.
	~~409.3~~ 110.3 112.3 Notice of violation.	[A] 112.3 Notice of violation. Where the <i>fire code official</i> finds a building, premises, vehicle, storage facility or outdoor area that is in violation of this code, the <i>fire code official</i> is authorized to prepare a written notice of violation (" NOV ") describing the conditions deemed unsafe and, where compliance is not immediate, specifying a time for reinspection. The NOV advises the recipient of the existence of a violation of this code but does not initiate a judicial or administrative proceeding. Service of a NOV is not required prior to service of a citation or summons or to other action to enforce this code.	Base code renumbering. No change to Houston amendment, relocated from Section 109.3.
	~~409.3.1~~ 110.3.1 112.3.1 Service. A notice of violation issued pursuant to this code shall be served upon the <i>owner</i> , the owner's authorized agent, operator, occupant or other person responsible for the condition or violation, either by personal service, mail or by delivering the same to, and leaving it with, some person of responsibility upon the premises.	[A] 112.3.1 Service of NOV. The <i>fire code official</i> may serve (by personal service or by certified mail, return receipt requested) an NOV upon such person(s) as the <i>fire code official</i> reasonably believes should be notified of the violation. A notice of violation issued pursuant to this code shall be served on the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation, either by personal service, mail or by delivering the same to, and leaving it with, some person of responsibility upon the premises. For unattended or abandoned locations, a copy of the NOV may such notice of violation shall be posted on the premises in a conspicuous place at or near the entrance to such premises, in which case a copy of the NOV and the notice of violation shall be mailed by certified mail, with return receipt requested or a certificate of mailing , to the owner of the property at the owner's last known address, according	Base code renumbering. No change to Houston amendment, relocated from Section 109.3.1.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		to the records of the appraisal district in which the property is located ~~of the owner, the owner's authorized agent, or occupant.~~	
	~~109.3.2~~ 110.3.2 112.3.2 Compliance with orders and notices.		Base code renumbering.
	~~109.3.3~~ 110.3.3 112.3.3 Prosecution of violations.	[A] 112.3.3 Prosecution of violations. ~~If the notice of violation is not complied with promptly, the fire code official is authorized to request the legal counsel of the jurisdiction to institute the appropriate legal proceedings at law or in equity to restrain, correct or abate such violation or to require removal or termination of the unlawful occupancy of the structure in violation of the provisions of this code or of the order or direction made pursuant hereto. If a person owning, operating, or maintaining an occupancy, property, or vehicle subject to this code allows a violation of this code to exist or fails to take immediate action to abate a violation when ordered to do so by the fire code official, the fire code official is authorized to take any action authorized by this code or other applicable law.~~	Base code renumbering. No change to Houston amendment, relocated from Section 109.3.3.
	~~109.3.4~~ 110.3.4 112.3.4 Unauthorized tampering.		Base code renumbering.
	~~109.4~~ 110.4 112.4 Violation penalties.	[A] 112.4 Violation penalties. ~~Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under provisions of this code, shall be guilty of a [SPECIFY OFFENSE], punishable by a fine of not more than [AMOUNT] dollars or by imprisonment not exceeding [NUMBER OF DAYS], or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.~~ General penalty; continuing violations. ~~When in this code an act is prohibited or is made or declared to be unlawful or an offense or misdemeanor, or wherever in this code the doing of any act is required or the failure to do any act is declared to be unlawful, and no specific penalty is provided therefor, the violation of any such provision of this code shall be punished by a fine of not less than \$500.00, nor more than \$2000.00; provided, however, that no penalty shall be greater or lesser than the penalty provided for the same offense under the laws of the state. Each day any violation of this code shall continue shall constitute a separate offense. In prosecutions under this code, the various provisions hereof that are designated as exceptions shall not be treated as exceptions within the meaning of Section 2.02 of the Texas Penal Code, and instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the Texas Penal Code.~~	Base code renumbering. No change to Houston amendment, relocated from Section 109.4.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~109.4.1~~ <u>110.4.1</u> <u>112.4.1</u> Abatement of violation.	<u>[A] 112.4.1 Abatement of violation.</u> In addition to the imposition of the penalties herein described, the <i>fire code official</i> is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises. <u>License suspension/revocation.</u> The suspension, revocation, cancellation or denial of any license, permit or certificate by the jurisdiction shall not prohibit the imposition of any civil or criminal penalty. The imposition of a civil or criminal penalty by the jurisdiction shall not prohibit the suspension, revocation, cancellation or denial of any license, permit or certificate.	Base code renumbering. No change to Houston amendment, relocated from Section 109.4.1.
		<u>112.4.2 Enforced removal or abatement.</u> The application of the foregoing penalty shall not be held to prevent the enforced removal or abatement of any prohibited condition.	No change to Houston amendment, relocated from Section 109.4.2.
		<u>112.4.3 Administrative adjudication of unlawful parking or stopping of vehicle.</u> The provisions of Chapter 16, Article IV, of the <i>City Code</i> shall be applicable to the adjudication of any offense arising under this code that involves the parking or stopping of a vehicle. The fines for parking or stopping of a vehicle shall be as otherwise provided in this section or other provisions of this code as applicable, but the citation shall be issued and adjudicated in all respects as provided in Chapter 16, Article IV, of the <i>City Code</i> .	No change to Houston amendment, relocated from Section 109.4.3.
		<u>112.4.4 Referral to city attorney.</u> In addition to other remedies authorized by this code or other applicable law, the <i>fire code official</i> may refer a violation to the city attorney for appropriate legal action to abate or restrain an activity, condition, or occupancy constituting or resulting from a violation of this code.	No change to Houston amendment, relocated from Section 109.4.4.
<u>[A] 113.1 Fees.</u> A permit shall not be issued until the fees have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid. <u>Fees for permits, inspections and other services under this code shall be assessed in the amounts set forth in the city fee schedule and payable to the jurisdiction. Fees are annual unless otherwise provided in this code or by regulation of the <i>fire code official</i>.</u> Moved to 107.1	SECTION ~~111~~ <u>112</u> <u>113</u> STOP WORK ORDER ~~111.1~~ <u>112.1</u> <u>113.1</u> <u>Order.</u> <u>Authority.</u>		Base code renumbering. Previous Houston amendment relocated to Section 107.1.
<u>113.1.1 Permits.</u> Except for permits and inspections under Section 113.1.3.2, the fee for a permit includes an initial inspection and one follow-up inspection, if a follow-up inspection is deemed necessary in the judgment of the inspector. Moved to 107.1.1			Previous Houston amendment relocated to Section 107.
<u>113.1.2 Special inspection provisions.</u> Moved to 107.1.2 <u>113.1.2.1 Inspections not related to permits.</u> Fees for inspection or other services not specified in this code and not in connection with a permit required under this code			Previous Houston amendment relocated to Section 107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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shall be based on the time expended as set forth in the city fee schedule for this provision. A deposit in the full amount of the anticipated fee shall be required prior to the commencement of the inspection. Examples of the types of inspections covered by this section include, but are not limited to, inspections requested by persons who are applying for state or federal permits that have provisions for a fire inspection and compliance inspections requested in connection with real estate transactions. This fee shall be in addition to all other fees required by this code. Moved to 107.1.2.1			
113.1.2.2 Priority inspections at a specific time. Fees for priority inspections or other services specified in this code at a scheduled, specific time, rather than at the convenience of the jurisdiction, shall be based on the time expended as set forth in the city fee schedule for this provision. This fee shall be in addition to all other fees required by this code. Moved to 107.1.2.2			Previous Houston amendment relocated to Section 107.
113.1.3 Reinspections. Moved to 107.1.3 113.1.3.1 Reinspection fee. Whenever it becomes necessary to make a reinspection (after the initial inspection and one follow-up inspection under Section 113.1.1 or after the initial inspection under Section 113.1.3.2) because of faulty material, faulty workmanship, or incomplete work, or for any other reason, the permit holder shall pay for each reinspection a fee in the amount stated in the city fee schedule, unless a greater fee is specifically required by this code. This fee shall be in addition to all other fees required by this code. Moved to 107.1.3.1			Previous Houston amendment relocated to Section 107.
113.1.3.2 Retesting and reinspection fees for fire protection systems and underground fuel storage tank permits. Fees for permits, inspections, and testing for fire alarm, sprinkler, and other fire protection systems under Sections 901.5 (fire alarm, sprinkler and other fire protection systems) and 5704.2.12.2 (underground fuel storage tanks) include one-time inspection and testing. If a fire protection system or underground fuel storage tank fails testing or inspection or approved plans are not on site at the time of the scheduled test, the permit holder shall pay a retest fee in the amount set forth in the city fee schedule for retesting and reinspection. Moved to 107.1.3.2			Previous Houston amendment relocated to Section 107.
113.1.3.3 Inspection cancellation fee. A fee in the amount stated in the city fee schedule shall be assessed to the permit holder and payable to the jurisdiction if a scheduled test or inspection of a fire protection system pursuant to Section 901.5 or underground fuel storage tank pursuant to Section 5704.2.12.2 is cancelled by the permit holder at any time during the four hours prior to the time scheduled for the test or inspection. Moved to 107.1.3.3			Previous Houston amendment relocated to Section 107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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113.1.4 Other fees. Moved to 107.1.4 113.1.4.1 Administrative fee. The administrative fee stated in the city fee schedule shall be charged upon the preparation of each permit or license issued by the fire department. This fee shall apply regardless of whether the permit or license is issued pursuant to this code or the <i>City Code</i> , and it shall be payable in addition to all other applicable fees for the permit or license. The foregoing administrative fee shall not be applicable if no other fee is provided by law for the permit or license. Moved to 107.1.4.1			Previous Houston amendment relocated to Section 107.
113.1.4.2 Receipt. The administrative receipt fee stated in the city fee schedule shall be charged upon the preparation of each fee or deposit receipt issued by the Houston Permitting Center. This fee shall apply regardless of whether the fee or deposit is payable pursuant to this code or the <i>City Code</i> . This fee shall be in addition to all other applicable fees or deposits. When paid for a deposit or fee receipt, this fee shall neither constitute nor be refundable as a part of the deposit. This fee shall not apply when a permit or license is issued and the fee specified in Section 113.1.1 above is imposed. Moved to 107.1.4.2			Previous Houston amendment relocated to Section 107.
113.1.4.3 Correction fee. The correction fee stated in the city fee schedule shall be charged for correction of any license or permit in those instances where the license or permit is initially issued with an error caused by incorrect information having been furnished by the applicant. A reinspection fee shall also be imposed as provided in Section 113.1.3 when the error causes a reinspection to be required. Moved to 107.1.4.3			Previous Houston amendment relocated to Section 107.
113.1.4.4 Replacement fee. The replacement fee stated in the city fee schedule shall be charged for replacement of any permit that is lost or requires replacement for other reasons, such as a change of the permit holder's name. Moved to 107.1.4.4			Previous Houston amendment relocated to Section 107.
[A] 113.2 Schedule of permit fees. A fee for each permit or service shall be paid as required, in accordance with the city fee schedule as established by the applicable governing authority. Moved to 107.2	~~411.2~~ 112.2 113.2 Issuance. A The stop work order shall be in writing and shall be given to the <i>owner</i> of the property, or to the <i>owner's</i> authorized agent, or to the person ~~doing~~ performing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work is authorized to resume.		Base code renumbering and minor wordsmithing changes. Previous Houston amendment relocated to Section 107.2.
	~~411.3~~ ~~112.3~~ 113.3 Emergencies.		Base code renumbering.
	~~411.4~~ ~~112.4~~ 113.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars. subject to fines established by the authority having jurisdiction.	[A] 113.4 Failure to comply. It shall be unlawful to fail to comply with any stop work order. ~~Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars. subject to fines established by the authority having jurisdiction.~~	Base code renumbering and minor changes. No changes to Houston amendment, relocated from Section 111.4.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
[A] 113.5 Refunds. ~~The applicable governing authority is authorized to establish a refund policy. The fire code official or building official, as applicable, may authorize a refund of any fee paid hereunder that was erroneously paid or collected due to an error by a jurisdiction employee. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.~~ ~~The fire code official or building official, as applicable, may authorize a refund of not more than 90 percent of the amount in excess of the minimum permit fee paid when no inspection has been performed under a permit issued in accordance with this code. If an inspection has been performed under the permit, no refund shall be authorized. The originally paid administrative fee shall be nonrefundable.~~ ~~The fire code official or building official, as applicable, shall not authorize a refund of any fee paid except on written application filed by the original permit holder not later than 180 calendar days after the date of fee payment.~~ Moved to 107.6			Previous Houston amendment relocated to Section 107.6.
113.6 Exemption from permits and fees. ~~To the extent that the state and the federal government are exempt as a matter of law from compliance with this code, neither the state nor the federal government shall be required to obtain a permit for work undertaken for, by or on the premises of either of them. However, the fees set forth in this code shall be applicable to the extent that the state or the federal government elects to obtain a permit for exempt work.~~ ~~Except for work undertaken for, by or on the premises of the state or the federal government, permits shall be required for work undertaken for, by or on the premises of any political subdivision or unit of government (including, but not limited to, the jurisdiction) in the same manner and to the same extent as for work performed by or for other persons. The fees prescribed in this code shall be applicable to all permits issued to or for governmental agencies except counties and the jurisdiction. The jurisdiction and counties are exempted from the payment of fees. The exemption for the jurisdiction and for counties shall extend only to work to be undertaken for, by or on the premises of the jurisdiction or a county itself as a body corporate and politic. Furthermore, the exemption for a county shall not extend to work undertaken for, by or on the premises of units of government that, although affiliated with a county, have separate governmental existence from the county, including but not limited to, hospital districts and flood control districts.~~ Moved to 107.7			Previous Houston amendment relocated to Section 107.7.
113.7 Annual fee increase. ~~Notwithstanding any maximum fee established by this section, the fees established in this code, as adjusted according to this provision, shall be automatically increased on the first day of each subsequent calendar year as provided in Section 1-13 of the City Code.~~ Moved to 107.8			Previous Houston amendment relocated to Section 107.8.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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SECTION 114 STANDBY PERSONNEL 114.1 General. The <i>fire code official</i> is authorized to require that standby inspectors be provided when deemed necessary to ensure public safety due to the number of persons present, or the nature of a performance, exhibition, display, contest or activity. The <i>fire code official</i> is also authorized to require standby personnel as a condition for: 1. The approval of any permit required in Section 105. 2. The issuance of a temporary certificate of occupancy by the building official. 3. The maintenance of exits and keeping watch for fires and other safety hazards. 4. The use of a building where required fire protection or life safety systems are impaired or out of service, in accordance with Section 901.7. 5. The use of a temporary membrane structure, tent or canopy, as provided for in Section 3104.20.	SECTION 440-114 114 UNSAFE BUILDINGS STRUCTURES OR EQUIPMENT 440.4 114.4 114.1 General. If during the inspection of a premises, a building or structure, or any building system, in whole or in part, constitutes a clear and inimical threat to human life, safety or health, the fire code official shall issue such notice or orders to remove or remedy the conditions as shall be deemed necessary in accordance with this section, and shall refer the building to the building department official for any repairs, alterations , remodeling, removing or demolition required.	[A] 114.1 General authority. ~~If during the inspection of a premises, a building or structure, or any building system, in whole or in part, constitutes a clear and inimical threat to human life, safety or health, the fire code official shall issue such notice or orders to remove or remedy the conditions as shall be deemed necessary in accordance with this section, and shall refer the building to the building official for any repairs, alterations, remodeling, removing or demolition required.~~ If all or part of a property or structure violates this code and constitutes a threat to public health or safety, the <i>fire code official</i> shall issue such notices or orders to abate the threat as are reasonable under the circumstances. Such notices may include one or more placards posted conspicuously at the property stating that the property is a threat to public health or safety, that the fire marshal may order an evacuation of the structure or take other action against the property, and that persons who continue to use the building do so at their own risk. The wording of the placard shall be factually accurate, but no particular wording is prescribed.	Base code renumbering. Previous Houston amendment relocated to Section 115. 2021 Houston amendment relocated from Section 110.1, no changes.
	440.1.1 114.1.1 114.1.1 Unsafe conditions. Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress , or which that inadequate light and ventilation, or that constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or which involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as the fire code official deems necessary and as provided for in this section. A vacant structure that is not secured against unauthorized entry as required by Section 344 shall be deemed unsafe.		Base code renumbering with additional changes to wording of section.
	440.1.2 114.1.2 114.1.2 Structural hazards.	[A] 114.1.2 Structural hazards. Administrative hearing under City Code. Where an apparent structural hazard is caused by the faulty installation, operation or malfunction of any of the items or devices governed by this code, the <i>fire code official</i> shall immediately notify the building code official in accordance with Section 110.1. The fire code official may schedule a public hearing before a hearing officer as provided by Chapter 10, Article IX, Division 2, of the City Code and request any relief authorized by the said Article IX.	Base code renumbering. No change to Houston amendment, relocated from Section 110.1.2.
114.2 Standby inspectors. When required by the <i>fire code official</i>, standby inspectors shall be provided to ensure compliance with this code and/or other laws, including ordinances of the jurisdiction. Standby inspectors shall be classified state-certified fire inspectors who are assigned to the Fire Prevention Bureau of the Houston Fire Department. See Section 113.1.2 for fees for the provision of standby inspectors. Moved to 115.2	440.2 114.2 114.2 Evacuation. The fire code official or the fire department official in charge of an incident shall be authorized to order the immediate evacuation of any occupied building structure deemed unsafe where such ~~building~~ structure has hazardous conditions that pose an imminent danger to ~~building~~ structure occupants. Persons so notified shall immediately leave the structure or premises and shall not enter or re-enter until authorized to do so by the fire code official or the fire department official in charge of the incident		Base code renumbering. Previous Houston amendment relocated to Section 115.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	114.3 Record. The fire code official shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.		New base code provisions for recording/reporting unsafe conditions.
	114.4 Notice. If an unsafe condition is found, the fire code official shall serve on the owner of the structure or the owner's authorized agent a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the fire code official acceptance or rejection of the terms of the order.		New base code provisions for giving notice of unsafe conditions that are found.
	114.5 Method of service. Such notice shall be deemed properly served where a copy thereof is served in accordance with one of the following methods: 1. A copy is delivered to the owner personally. 2. A copy is sent by certified or registered mail addressed to the owner at the last known address with return receipt requested. 3. A copy is delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner on the owner's authorized agent constitute service of notice on the owner .		New base code provisions for method of delivering notice.
	~~110.4~~ ~~111.4~~ 114.6 Abatement. Restoration or abatement. The structure or equipment determined to be unsafe by the fire code official is permitted to be restored to a safe condition. The owner , the owner's authorized agent, operator or occupant of a building structure , or premises or equipment deemed unsafe by the fire code official shall abate or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other approved corrective action. To the extent that repairs, alterations or additions are made or a change of occupancy occurs during the restoration of the structure, such repairs, alterations , additions or change of occupancy shall comply with the requirements of Section 105.1.5 and the <i>International Existing Building Code</i> .		New language included in base code for restoring or abating unsafe conditions found by the fire code official.
	~~110.3~~ ~~111.3~~ 114.7 Summary abatement.	[A] 114.7 Summary abatement. ~~Where conditions exist that are deemed hazardous to life and property, the fire code official or fire department official in charge of the incident is authorized to abate summarily such hazardous conditions that are in violation of this code.~~ If all or part of a property or structure constitutes a serious and immediate fire hazard, the fire code official or a fire department official in charge of an incident may abate or otherwise remedy the said hazard without prior notice or hearing. In such a circumstance, however, the fire code official must provide each owner, lienholder, and mortgagee of the subject property with an opportunity for a post-	Base code renumbering. No change to Houston amendment, relocated from Section 110.3.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		abatement hearing in the manner prescribed by Chapter 10, Article IX, Division 8, of the <i>City Code</i> .	
		SECTION 115 STANDBY PERSONNEL 115.1 General. The <i>fire code official</i> is authorized to require that standby inspectors be provided when deemed necessary to ensure public safety due to the number of persons present, or the nature of a performance, exhibition, display, contest or activity. The <i>fire code official</i> is also authorized to require standby personnel as a condition for: 1. The approval of any permit required in Section 105. 2. The issuance of a temporary certificate of occupancy by the building official. 3. The maintenance of exits and keeping watch for fires and other safety hazards. 4. The use of a building where required fire protection or life safety systems are impaired or out of service, in accordance with Section 901.7. 5. The use of a temporary membrane structure, tent or canopy, as provided for in Section 3104.20.	No change to Houston amendment, relocated from Section 114.1.
		115.2 Standby inspectors. When required by the <i>fire code official</i> , standby inspectors shall be provided to ensure compliance with this code and/or other laws, including ordinances of the jurisdiction. Standby inspectors shall be classified state-certified fire inspectors who are assigned to the Fire Prevention Bureau of the Houston Fire Department. See Section 113.1.2 for fees for the provision of standby inspectors.	No change to Houston amendment, relocated from Section 114.2.
2015 Houston IFC – Chapter 2 Definitions	2021 IFC – Chapter 2 – Definitions	2021 Houston IFC Amendments	Code Change Summary
CHAPTER 2 DEFINITIONS 201.3 Specific construction and terms defined in other codes. Where specific construction or terms are not addressed or defined in this code and are <u>addressed or defined by the <i>City Code</i> or another volume of the <i>Construction Code</i> in the <i>International Building Code</i>, <i>International Fuel Gas Code</i>, <i>International Mechanical Code</i> or <i>International Plumbing Code</i></u> , such terms or specific constructions shall have the meanings ascribed to them ~~as in those codes~~ other volumes, as applicable to the construction and proposed scope of work hereunder.		CHAPTER 2 DEFINITIONS 201.3 Specific construction and terms defined in other codes. Where specific construction or terms are not addressed or defined in this code and are <u>addressed or defined by the <i>City Code</i> or another volume of the <i>Construction Code</i> in the <i>International Building Code</i>, <i>International Fuel Gas Code</i>, <i>International Mechanical Code</i> or <i>International Plumbing Code</i></u> , such terms or specific constructions shall have the meanings ascribed to them <u>as in those codes</u> other volumes, as applicable to the construction and proposed scope of work hereunder.	No change to Houston amendment.
SECTION 202 DEFINITIONS { EDITORIAL NOTE: ALL PORTIONS OF SECTION 202 NOT SHOWN REMAIN AS SET FORTH IN THE 2015 IFC.}		SECTION 202 DEFINITIONS { EDITORIAL NOTE: ALL PORTIONS OF SECTION 202 NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IFC.}	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3D PRINTER. A machine used in the additive manufacturing process for fabricating objects through the deposition of a material using a print head, nozzle or other printer technology.		New base code definition.
	ACCESS (TO). That which enables a device, appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction [see also "Ready access (to)"].		New base code definition.
	ACTIVE RF EMITTING DEVICE. Any type of circuit component that requires an AC or DC power source with the ability to electrically control electron flow and/or amplification of RF signal, including but not limited to signal boosters, repeaters, bidirectional amplifiers and fiber-distributed antenna systems.		New base code definition.
	ADDITIVE MANUFACTURING. A process of joining materials to make objects from 3D model data, usually layer upon layer, sometimes referring to as 3D printing. This code recognizes two types of additive manufacturing: Industrial additive manufacturing. 3D printing operations that typically utilize combustible powders or metals, an inert gas supply, a <i>combustible dust</i> collection system, or that create a hazardous (classified) location area or zone outside the equipment. Nonindustrial additive manufacturing. 3D printing operations that do create a hazardous (classified) location area outside the equipment and do not utilize an inert gas supply or a <i>combustible dust</i> collection system.		New base code definition.
	AEROSOL CONTAINER. A metal can or plastic container up to a maximum size of 33.8 fluid ounces (1000 ml) or a glass bottle up to a maximum size of 4 fluid ounces (118 ml) designed and intended to dispense an aerosol.		New base code definition.
	AEROSOL COOKING SPRAY PRODUCTS. Aerosol cooking spray products are those aerosol products designed to deliver a vegetable oil or a solid or nonflammable liquid to reduce sticking on cooking and baking surfaces, or to be applied to food, or both. These products have a chemical heat of combustion that is greater than 8600 Btu/lb. (20 kJ/g) and contain no more than 18 percent by weight of flammable propellant.		New base code definition.
	~~AEROSOL PRODUCT. A product that is dispensed from an aerosol container by a propellant.~~ A combination of a container, a propellant and a material that is dispensed. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.		Wordsmithing changes to base code definition.
	~~AEROSOL CONTAINER. A metal can, or a glass or plastic bottle designed to dispense an aerosol.~~		Base code definition removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	AEROSOL PRODUCT WAREHOUSE. A building used for warehousing aerosol products.		Wordsmithing changes to base code definition.
	ALCOHOL-BLENDED FUELS. Flammable liquids consisting of greater than 10-percent or ~~greater~~ , by volume, ethanol or other alcohols blended with gasoline.	-	Wordsmithing changes to base code definition.
ALLEY. A public or private right-of-way that is not used primarily for through traffic and that provides vehicular access to rear entrances to buildings or properties that front on an adjacent street.		ALLEY. A public or private right-of-way that is not used primarily for through traffic and that provides vehicular access to rear entrances to buildings or properties that front on an adjacent street.	No change to Houston amendment.
	AMBULATORY CARE FACILITY. Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less-than-24-hour basis to persons who are rendered incapable of self-preservation by the services provided or staff has accepted responsibility for care recipients already incapable.		Wordsmithing changes to base code definition.
	ATTIC. The space between the ceiling ~~beams~~ framing of the top story and the ~~roof rafters~~ underside of the roof .		Wordsmithing changes to base code definition.
AUTHORITY HAVING JURISDICTION. The City of Houston. This definition shall include the City of Houston's duly authorized representatives and shall specifically include the fire chief as the chief <i>fire code official</i> over the <i>Fire Code</i> .		AUTHORITY HAVING JURISDICTION. The City of Houston. This definition shall include the City of Houston's duly authorized representatives and shall specifically include the fire chief as the chief <i>fire code official</i> over the <i>Fire Code</i> .	No change to Houston amendment.
BATTERY SYSTEM, STATIONARY LEAD-ACID STORAGE. ~~A system which consists of three interconnected subsystems: A rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.~~ 1. ~~A lead-acid battery.~~ 2. ~~A battery charger.~~ 3. ~~A collection of rectifiers, inverters, converters and associated electrical equipment as required for a particular application.~~	BATTERY SYSTEM, STATIONARY LEAD-ACID STORAGE. A system which consists of three interconnected subsystems: A rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities. 1. A lead-acid battery. 2. A battery charger. 3. ~~A collection of rectifiers, inverters, converters and associated electrical equipment as required for a particular application.~~		Updates to base code definition for battery storage based on NFPA. Previous Houston amendment removed as definition is now base code.
BATTERY TYPES. <u>Flow battery. A type of storage battery that includes chemical components dissolved in two different liquids. Ion exchange, which provides the flow of electrical current, occurs through the membrane while both liquids circulate in their respective spaces.</u> <u>Lead-acid battery. A storage battery that is comprised of lead electrodes immersed in sulphuric acid electrolyte.</u>	BATTERY TYPES. For the purposes of this code, certain types are defined as follows: Flow battery. A type of storage battery that includes chemical components dissolved in two different liquids. Ion exchange, which provides the flow of electrical current, occurs through the membrane while both liquids circulate in their respective spaces.		Updates to base code definition for battery storage based on NFPA. Previous Houston amendment removed as definition is now base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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~~Lithium-ion battery. A storage battery that consists of lithium ions embedded in a carbon graphite or nickel metal oxide substrate. The electrolyte is a carbonate mixture or a gelled polymer. The with lithium ions serving as are the charge carriers of the battery. The electrolyte is a polymer mixture of carbonates with an inorganic salt and can be in a liquid or a gelled polymer form. Lithiated metal oxide is typically a cathode and forms of carbon or graphite typically form the anode.~~ ~~Lithium metal polymer battery. A storage battery that is comprised of nonaqueous liquid or polymerized electrolytes, which provide ionic conductivity between lithiated positive active material electrically separated from metallic lithium or lithiated negative active material.~~ Nickel-cadmium (Ni-Cd) battery. An alkaline storage battery in which the positive active material is nickel oxide, the negative contains cadmium and the electrolyte is potassium hydroxide. ~~Nonrecombinant battery. A storage battery in which, under conditions of normal use, hydrogen and oxygen gasses created by electrolysis are vented into the air outside of the battery.~~ <u>Preengineered stationary storage battery system. An energy storage system consisting of batteries, a battery management system, components and modules that are produced in a factory, designed to comprise the system when assembled on the job site.</u> <u>Prepackaged stationary storage battery system. An energy storage system consisting of batteries, a battery management system, components and modules that is factory assembled and shipped as a complete unit for installation at the job site.</u> ~~Recombinant battery. A storage battery in which, under conditions of normal use, hydrogen and oxygen gases created by electrolysis are converted back into water inside the battery instead of venting into the air outside of the battery.~~ <u>Sodium-beta storage battery. A storage battery, also referred to as a Na-beta battery or NBB, which uses a solid beta-alumina electrolyte membrane that selectively allows sodium ion transport between a positive electrode such as metal halide and a negative sodium electrode.</u> Stationary storage battery. A group of electrochemical cells interconnected to supply a nominal voltage of DC power to a suitably connected electrical load, designed for service in a permanent location. The number of cells connected in a series determines the nominal voltage rating of the battery. The size of the cells determines the discharge capacity of the entire battery. After discharge, it may be restored to a fully charged condition by an electric current flowing in a direction opposite to the flow of current when the battery is discharged. ~~Valve-regulated lead-acid (VRLA) battery. A lead-acid battery consisting of sealed cells furnished with a valve that opens to vent the battery whenever the internal pressure of the battery exceeds the ambient pressure by a set amount. In VRLA batteries, the liquid electrolyte in the cells is immobilized in an absorptive glass mat (AGM cells or batteries) or by the addition of a gelling agent (gel cells or gelled batteries).~~	Lead-acid battery. A storage battery that is comprised of lead electrodes immersed in a solution of water and sulphuric acid electrolyte. ~~Lithium metal polymer battery. A storage battery that is comprised of nonaqueous liquid or polymerized electrolytes, which provide ionic conductivity between lithiated positive active material electrically separated from metallic lithium or lithiated negative active material.~~ Lithium metal polymer battery. A storage battery that is similar to the lithium ion battery except that it has a lithium metal anode in the place of the traditional carbon or graphite anode. ~~Lithium-ion battery. A storage battery that consists of lithium ions embedded in a carbon graphite or nickel metal oxide substrate. The electrolyte is a carbonate mixture or a gelled polymer. The lithium ions are the charge carriers of the battery.~~A storage battery with lithium ions serving as the charge carriers of the battery. The electrolyte is a polymer mixture of carbonates with an inorganic salt and can be in a liquid or a gelled polymer form. Lithiated metal oxide is typically a cathode and forms of carbon or graphite typically form the anode. Nickel-cadmium (Ni-Cd) battery. An alkaline storage battery in which the positive active material is nickel oxide, the negative electrode contains cadmium and the electrolyte is a solution of water and potassium hydroxide. Nickel-metal hydride (Ni-MH). An alkaline storage battery in which the positive active material is nickel oxide, the negative electrode is an intermetallic compound and the electrolyte is usually potassium hydroxide. ~~Nonrecombinant battery. A storage battery in which, under conditions of normal use, hydrogen and oxygen gasses created by electrolysis are vented into the air outside of the battery.~~ ~~Recombinant battery. A storage battery in which, under conditions of normal use, hydrogen and oxygen gases created by electrolysis are converted back into water inside the battery instead of venting into the air outside of the battery.~~ Preengineered stationary storage battery system. An energy storage system consisting of batteries, a battery management system, components and modules that are produced in a factory, designed to comprise the system when assembled on the job site. Prepackaged stationary storage battery system. An energy storage system consisting of batteries, a battery management system, components and modules that is factory assembled and shipped as a complete unit for installation at the job site. Sodium-beta storage battery. A storage battery, also referred to as a Na-beta battery or NBB, which uses a solid beta-alumina electrolyte membrane that selectively allows		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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~~Vented (flooded) lead-acid battery. A lead-acid battery consisting of cells that have electrodes immersed in liquid electrolyte. Flooded lead-acid batteries have a provision for the user to add water to the cell and are equipped with a flame-arresting vent which permits the escape of hydrogen and oxygen gas from the cell in a diffused manner such that a spark, or other ignition source, outside the cell will not ignite the gases inside the cell.~~	sodium ion transport between a positive electrode such as metal halide and a negative sodium electrode. Stationary storage battery. A group of electrochemical cells interconnected to supply a nominal voltage of DC power to a suitably connected electrical load, designed for service in a permanent location. The number of cells connected in a series determines the nominal voltage rating of the battery. The size of the cells determines the discharge capacity of the entire battery. After discharge, it may be restored to a fully charged condition by an electric current flowing in a direction opposite to the flow of current when the battery is discharged. ~~Valve-regulated lead-acid (VRLA) battery. A lead-acid battery consisting of sealed cells furnished with a valve that opens to vent the battery whenever the internal pressure of the battery exceeds the ambient pressure by a set amount. In VRLA batteries, the liquid electrolyte in the cells is immobilized in an absorptive glass mat (AGM cells or batteries) or by the addition of a gelling agent (gel cells or gelled batteries).~~ ~~Vented (flooded) lead-acid battery. A lead-acid battery consisting of cells that have electrodes immersed in liquid electrolyte. Flooded lead-acid batteries have a provision for the user to add water to the cell and are equipped with a flame-arresting vent which permits the escape of hydrogen and oxygen gas from the cell in a diffused manner such that a spark, or other ignition source, outside the cell will not ignite the gases inside the cell.~~		
	BUILDING. Any structure ~~used~~ utilized or intended for supporting or sheltering any use or occupancy.		Wordsmithing changes to base code definition.
<u>BUILDING CODE.</u> The <i>City of Houston Building Code</i> , as adopted and amended by this jurisdiction.	N/A	<u>BUILDING CODE.</u> The <i>City of Houston Building Code</i> , as adopted and amended by this jurisdiction.	No change to Houston amendment.
~~[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of the <i>International Building Code</i> director of Houston Public Works or a the duly authorized representative designated by the director to act as the chief construction code enforcement official of the jurisdiction; also known as <i>chief building official</i>. The term also includes the Houston Airport Systems building official who may be designated by the building official to perform <i>Construction Code</i> permitting and enforcement activities on Houston Airport Systems premises.~~	No change.	[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of the <i>International Building Code</i> director of Houston Public Works or a the duly authorized representative designated by the director to act as the chief construction code enforcement official of the jurisdiction; also known as <i>chief building official</i>. The term also includes the Houston Airport Systems building official who may be designated by the building official to perform <i>Construction Code</i> permitting and enforcement activities on Houston Airport Systems premises.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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CAPACITOR ARRAY. An arrangement of individual capacitor modules in close proximity to each other, mounted on storage racks or in cabinets or other enclosures.	~~CAPACITOR ARRAY. An arrangement of individual capacitor modules in close proximity to each other, mounted on storage racks or in cabinets or other enclosures.~~		Previous Houston amendment no longer required, base code definitions have been updated.
CAPACITOR ENERGY STORAGE SYSTEM. A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities. Preengineered capacitor energy storage system. A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that are produced in a factory, designed to comprise the system when assembled on the job site. Prepackaged capacitor energy storage system. A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that is factory assembled and then shipped as a complete unit for installation at the job site.	~~CAPACITOR ENERGY STORAGE SYSTEM. A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities. Preengineered capacitor energy storage system. A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that are produced in a factory, designed to comprise the system when assembled on the job site. Prepackaged capacitor energy storage system. A capacitor energy storage system consisting of capacitors, an energy management system, components and modules that is factory assembled and then shipped as a complete unit for installation at the job site.~~		Updates to base code definition for battery storage based on NFPA. Previous Houston amendment removed as definition is now base code.
	CARBON DIOXIDE ENRICHMENT SYSTEM. A system where carbon dioxide gas is intentionally introduced into an indoor environment, typically for the purpose of stimulating plant growth.		New base code definition.
	CARBON MONOXIDE ALARM. A single- or multiple-station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.		New base code definition.
	CARBON MONOXIDE DETECTOR. A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.		New base code definition.
CERTIFICATE OF COMPLIANCE. A certificate stating that materials and products meet specified standards or that the scope of work under a specific permit was done in compliance with approved construction documents. Any reference in the <i>Construction Code</i> to a “CC”, certificate of completion, or a certificate of inspection issued by this jurisdiction, is a reference to a certificate of compliance as defined herein.	N/A	~~CERTIFICATE OF COMPLIANCE. A certificate stating that materials and products meet specified standards or that the scope of work under a specific permit was done in compliance with approved construction documents. Any reference in the <i>Construction Code</i> to a “CC”, certificate of completion, or a certificate of inspection issued by this jurisdiction, is a reference to a certificate of compliance as defined herein.~~	No change to Houston amendment.
	~~[A] CHANGE OF OCCUPANCY. A change in the use of a building or a portion of a building. A change of occupancy shall include any change of occupancy classification, any change from one group to another group within an occupancy classification or any change in use within a group for a specific occupancy classification, that results in any of the following:~~ Either of the following shall be considered as a change of		Wordsmithing changes to base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	occupancy where this code requires a greater degree of safety, accessibility, structural strength, fire protection, <i>means of egress</i> , ventilation or sanitation than is existing in the current building or structure: 1. ~~A change of occupancy classification.~~ Any change in the occupancy classification of a building or structure. 2. ~~A change from one group within an occupancy classification.~~ Any change in the purpose of, or a change in the level of activity within, a building or structure. 3. Any change in use within a group for which there is a change in the application of the requirements of this code.		
	CHEMICAL FUME HOOD. A ventilated enclosure designed to contain and exhaust fumes, gases, vapors, mists and particulate matter generated within the hood.		New base code definition.
CITY CODE. <i>The Code of Ordinances, City of Houston, Texas.</i>	N/A	CITY CODE. <i>The Code of Ordinances, City of Houston, Texas.</i>	No change to Houston amendment.
CITY FEE SCHEDULE. The schedule of fees charged by the city for various permits, licenses, authorizations and services, which is maintained on the city's website.	N/A	CITY FEE SCHEDULE. The schedule of fees charged by the city for various permits, licenses, authorizations and services, which is maintained on the city's website.	No change to Houston amendment.
CODE OFFICIAL. The Houston Fire Department and Building Code Enforcement employees, including but not limited to, plan analysts, field inspectors, and other technical staff charged with the administration and enforcement of this code as specifically delegated by the <i>Authority Having Jurisdiction</i> . The <i>code official</i> is authorized to approve designs, construction, equipment, materials, installations, processes, procedures, practices, and other duties necessary to administer, verify and document compliance with the <i>Houston Construction Code</i> , ordinances, and other laws and policies as specifically delegated by the <i>chief building official</i> , <i>fire chief</i> , and the <i>Authority Having Jurisdiction</i> .	N/A	CODE OFFICIAL. The Houston Fire Department and Building Code Enforcement employees, including but not limited to, plan analysts, field inspectors, and other technical staff charged with the administration and enforcement of this code as specifically delegated by the <i>Authority Having Jurisdiction</i> . The <i>code official</i> is authorized to approve designs, construction, equipment, materials, installations, processes, procedures, practices, and other duties necessary to administer, verify and document compliance with the <i>Houston Construction Code</i> , ordinances, and other laws and policies as specifically delegated by the <i>chief building official</i> , <i>fire chief</i> , and the <i>Authority Having Jurisdiction</i> .	No change to Houston amendment.
	COMBUSTIBLE LIQUID. A liquid having a closed cup <i>flash point</i> at or above 100°F (38°C). Combustible liquids shall be subdivided as followings: The category of combustible liquids does not include <i>compressed gases</i> or <i>cryogenic fluids</i> or liquids that do not have a fire point when tested in accordance with ASTM D92. Class II. Liquids having a closed cup <i>flash point</i> at or above 100°F (38°C) and below 140°F (60°C). Class IIIA. Liquids having a closed cup <i>flash point</i> at or above 140°F (60°C) and below 200°F (93°C). Class IIIB. Liquids having closed cup <i>flash points</i> at or above 200°F (93°C).		Wordsmithing changes to base code definition.
	COMMON PATH OF EGRESS TRAVEL. That portion of the <i>exit access</i> travel distance measured from the most remote point within a story of each room, area or space to that point where the occupants have separate and distinct access to two <i>exits</i> or <i>exit access</i> doorways.		Wordsmithing changes to base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
[BG] CONGREGATE LIVING FACILITIES. A building or part thereof that contains ~~sleeping units where residents share bathroom and/or kitchen~~ facilities for living, sleeping and sanitation, as required by this code, and may include facilities for eating and cooking, for occupancy by other than a family. A congregate living facility may be a shelter, convent, monastery, dormitory, fraternity house, or sorority house, but does not include jails, hospitals, nursing homes, hotels or boarding houses.		[BG] CONGREGATE LIVING FACILITIES. A building or part thereof that contains sleeping units where residents share bathroom and/or kitchen facilities for living, sleeping and sanitation, as required by this code, and may include facilities for eating and cooking, for occupancy by other than a family. A congregate living facility may be a shelter, convent, monastery, dormitory, fraternity house, or sorority house, but does not include jails, hospitals, nursing homes, hotels or boarding houses.	No change to Houston amendment.
CONSTRUCTION CODE. Has the meaning ascribed in Section 1-2 of the <i>City Code</i> .		CONSTRUCTION CODE. Has the meaning ascribed in Section 1-2 of the <i>City Code</i> .	No change to Houston amendment.
	~~CONTINUOUS GAS DETECTION SYSTEM. A gas detection system where the analytical instrument is maintained in continuous operation and sampling is performed without interruption. Analysis is allowed to be performed on a cyclical basis at intervals not to exceed 30 minutes.~~		Base code definition removed, now referred to as "Gas Detection System"
	CRITICAL AREAS. Areas that are designated for the highest level of emergency responder radio coverage including but not limited to areas such as exit stairs, exit passageways , elevator lobbies, fire protection equipment room and control valve locations, and <i>fire command centers</i> .		New base code definition.
	CURRENT TAP. An electrical device that, where connected to a permanently installed receptacle outlet, provides multiple receptacle outlet configurations.		New base code definition.
[BS] DANGEROUS. Any building meeting the definition of a dangerous building as defined in <i>Chapter 10, Article IX</i> , of the <i>City Code</i> , or any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous: 1. The building or structure has collapsed, has partially collapsed, has moved off its foundation, or lacks the necessary support of the ground. 2. There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under service loads.		[BS] DANGEROUS BUILDING. Has the meaning ascribed in section 10-371 of the City Code	Simplified Houston amendment to coincide with City Ordinances.
	DELIVERED AUDIO QUALITY (DAQ). A measure of audio quality over a transmission medium. This metric is often used to quantify the quality of audio heard over a radio system. DAQ levels are defined by the following scale: DAQ 1 = unusable. Speech is present but not understandable. DAQ 2 = speech is understandable with considerable effort. Requires frequent repetition due to noise or distortion. DAQ 3 = speech understandable with slight effort. Requires occasional repetition due to noise or distortion. DAQ 3.4 = speech understandable without repetition. Some noise or distortion present.		New base code definition for ERRC system measurements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	DAQ 4 = speech easily understandable. Little noise or distortion. DAQ 5 = perfect. No distortion or noise discernible.		
	DESOLVENTIZING. The act of removing a solvent from a material.		New base code definition.
	DUST COLLECTION SYSTEM. A combination of equipment designed to contain, capture and collect airborne <i>combustible dusts</i> .		New base code definition.
[BE] EGRESS COURT. A court or <i>yard</i> with a minimum width of 36 inches which provides access to a <i>public way</i> for one or more <i>exits</i> or <i>emergency escape and rescue openings</i> .			Houston amendment removed as it's no longer necessary.
ELECTRICAL CODE. The <i>City of Houston Electrical Code</i> , as adopted and amended by this jurisdiction.		ELECTRICAL CODE. The <i>City of Houston Electrical Code</i> , as adopted and amended by this jurisdiction.	No change to Houston amendment.
	[BE] EMERGENCY ESCAPE AND RESCUE OPENING. An operable exterior window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.		Minor wordsmithing changes to definition.
ENERGY MANAGEMENT SYSTEM. An electronic system that protects stationary storage batteries from operating outside their safe operating parameters, and generates an alarm and trouble signal for off normal conditions.	~~ENERGY MANAGEMENT SYSTEMS.~~ ENERGY STORAGE MANAGEMENT SYSTEM. An electronic system that protects stationary energy storage batteries systems from operating outside their safe operating parameters and generates an alarm and trouble signal off normal conditions. disconnects electrical power to the ESS or places it in a safe condition if potentially hazardous temperatures or other conditions are detected.		Updates to base code definition for battery storage based on NFPA. Previous Houston amendment removed as definition is now base code.
	ENERGY STORAGE SYSTEM (ESS). One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time.		Updates to base code definition for energy storage based on NFPA.
	ENERGY STORAGE SYSTEM, ELECTROCHEMICAL. An energy storage system that stores energy and produces electricity using chemical reactions. It includes, among others, battery ESS and capacity ESS.		Updates to base code definition for energy storage based on NFPA.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	ENERGY STORAGE SYSTEM, MOBILE. An energy storage system capable of being moved and utilized for temporary energy storage applications, and not installed as fixed or stationary electrical equipment. The system can include integral wheels for transportation or be loaded on a trailer and unloaded for charging, storage and deployment.		Updates to base code definition for energy storage based on NFPA.
	ENERGY STORAGE SYSTEM, STATIONARY. An energy storage system installed as fixed or stationary electrical equipment in a permanent location.		Updates to base code definition for energy storage based on NFPA.
	ENERGY STORAGE SYSTEM, WALK-IN UNIT. A prefabricated building that contains energy storage systems. It includes doors that provide walk-in access for personnel to maintain, test and service the equipment, and is typically used in outdoor and mobile ESS applications.		Updates to base code definition for energy storage based on NFPA.
	ENERGY STORAGE SYSTEM CABINET. A cabinet containing components of the energy storage system that is included in the 9540—2016 listing for the system. Personnel are not able to enter the enclosure other than reaching in to access components for maintenance purposes.		Updates to base code definition for energy storage based on NFPA.
	ENERGY STORAGE SYSTEM COMMISSIONING. A systematic process that provides documented confirmation that an energy storage system functions according to the intended design criteria and complies with applicable code requirements.		Updates to base code definition for energy storage based on NFPA.
	ENERGY STORAGE SYSTEM DECOMMISSIONING. A systematic process that provides documentation and procedures that allow an energy storage system to be safely de-energized, disassembled, readied for shipment or storage, and removed from the premises in accordance with applicable code requirements.		Updates to base code definition for energy storage based on NFPA.
ENTERPRISE. A use or activity on, or of, a tract of land or within a building or structure, in whole or in part, that includes inside and outside storage or use of hazardous materials exceeding the maximum allowable quantity limits (MAQs) per control area that constitutes a Group H-1, H-2 or H-3 occupancy as described in Section 307 of the Building Code. The term also includes any Group H-4 occupancy, in whole or in part, that includes storage (both interior and exterior) of hazardous materials exceeding the MAQs per control area as described in the previously identified Building Code Section 307 if any highly toxic material is manufactured, processed, generated, stored or used. Otherwise, Group H-4 occupancies are not included. The term also does not include: 1. Any public water or wastewater treatment facility that is being operated under regulations promulgated by state or federal agencies, including but not limited to the United States Environmental Protection Agency and the Texas Commission on Environmental Quality; 2. Areas or spaces up to 500 square feet each in research labs operated under the authority of a hospital, college, or university,		ENTERPRISE. A use or activity on, or of, a tract of land or within a building or structure, in whole or in part, that includes inside and outside storage or use of hazardous materials exceeding the maximum allowable quantity limits (MAQs) per control area that constitutes a Group H-1, H-2 or H-3 occupancy as described in Section 307 of the Building Code. The term also includes any Group H-4 occupancy, in whole or in part, that includes storage (both interior and exterior) of hazardous materials exceeding the MAQs per control area as described in the previously identified Building Code Section 307 if any highly toxic material is manufactured, processed, generated, stored or used. Otherwise, Group H-4 occupancies are not included. The term also does not include: 1. Any public water or wastewater treatment facility that is being operated under regulations promulgated by state or federal agencies, including but not limited to the United States Environmental Protection Agency and the Texas Commission on Environmental Quality; 2. Areas or spaces up to 500 square feet each in research labs operated under the authority of a hospital, college, or university,	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
and classified as H-2, H-3 or H-4, with an aggregate maximum area of ten percent on each floor; or 3. Any area or space containing fuel storage for generators, fire pumps, above or underground fuel storage associated with motor fuel-dispensing facilities.		and classified as H-2, H-3 or H-4, with an aggregate maximum area of ten percent on each floor; or 3. Any area or space containing fuel storage for generators, fire pumps, above or underground fuel storage associated with motor fuel-dispensing facilities.	
ENTERPRISE PERMIT. A current and valid license or document issued by the jurisdiction's director of planning and development authorizing the holder to operate an enterprise issued under Chapter 28, Article VII, of the <i>City Code</i> . Except where specific reference is made to a restricted permit or an unrestricted permit, the term "permit" includes a registration of a nonconforming enterprise prior to February 16, 1997.		ENTERPRISE PERMIT. A current and valid license or document issued by the jurisdiction's director of planning and development authorizing the holder to operate an enterprise issued under Chapter 28, Article VII, of the <i>City Code</i> . Except where specific reference is made to a restricted permit or an unrestricted permit, the term "permit" includes a registration of a nonconforming enterprise prior to February 16, 1997.	No change to Houston amendment.
EXISTING BUILDING CODE. The <i>City of Houston Existing Building Code</i> , as adopted and amended by this jurisdiction.		EXISTING BUILDING CODE. The <i>City of Houston Existing Building Code</i> , as adopted and amended by this jurisdiction.	No change to Houston amendment.
	EXPLOSIVE. A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, and igniters ~~and display fireworks, 1.3G.~~ The term "Explosive" includes any material determined to be within the scope of USC Title 18: Chapter 40 and also includes any material classified as an explosive ~~other than consumer fireworks, 1.4G~~ by the hazardous materials regulations of DOTn 49 CFR Parts 100-185. Low explosive. <i>Explosive material</i> that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low <i>explosives</i> include, but are not limited to, black powder, safety fuse, igniters, igniter cord, fuse lighters, fireworks, 4.3G and propellants, 1.3C.		Minor wordsmithing change to base code definition.
FAMILY. An individual or two or more persons related by blood or marriage or a group of not more than 10 persons (excluding live in personnel hired to assist the family) who need not be related by blood or marriage living together in a dwelling unit.			Houston amendment removed as it's no longer necessary.
FIRE CHIEF. ~~The chief officer of the fire department serving the jurisdiction, or a duly authorized representative. Has the meaning ascribed in Section 34-53 of the City Code.~~		FIRE CHIEF. ~~The chief officer of the fire department serving the jurisdiction, or a duly authorized representative. Has the meaning ascribed in Section 34-53 of the City Code.~~	No change to Houston amendment.
FIRE CODE OFFICIAL. ~~The fire chief or other designated authority The jurisdiction's fire marshal, who is charged with the administration and enforcement of the this code, or a duly authorized representative.~~		FIRE CODE OFFICIAL. ~~The fire chief or other designated authority The jurisdiction's fire marshal, who is charged with the administration and enforcement of the this code, or a duly authorized representative.~~	No change to Houston amendment.
	FIRE RESISTANCE RATING. ~~The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703 of the International Building Code.~~		Base code definition removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E 1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.~~		Base code definition removed.
	FIRE-RESISTANCE RATING. The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703 of the International Building Code.		New base code definition.
	FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E 1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.		New base code definition.
	FLAMMABLE LIQUID. A liquid having a closed cup <i>flash point</i> below 100°F (38°C). <i>Flammable liquids</i> are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows: Class IA. Liquids having a <i>flash point</i> below 73°F (23°C) and having a <i>boiling point</i> below 100°F (38°C). Class IB. Liquids having a <i>flash point</i> below 73°F (23°C) and having a <i>boiling point</i> at or above 100°F (38°C). Class IC. Liquids having a <i>flash point</i> at or above 73°F (23°C) and below 100°F (38°C). The category of <i>flammable liquids</i> does not include <i>compressed gases</i> or <i>cryogenic fluids</i> or liquids that do not have a <i>fire point</i> when tested in accordance with ASTM D92.		No Houston amendment.
FUEL CELL POWER SYSTEM, STATIONARY. A stationary energy generation system that converts the chemical energy of a fuel and oxidant to electric energy (DC or AC electricity) by an electrochemical process. Field-fabricated fuel cell power system. A stationary fuel cell power system that is assembled at the job site and is not a preengineered or prepackaged factory-assembled fuel cell power system. Preengineered fuel cell power system. A stationary fuel cell power system consisting of components and modules that are produced in a factory, and shipped to the job site for assembly. Prepackaged fuel cell power system. A stationary fuel cell power system that is factory assembled as a single, complete unit and shipped as a complete unit for installation at the job site.	FUEL CELL POWER SYSTEM, STATIONARY. A stationary energy generation system that converts the chemical energy of a fuel and oxidant to electric energy (DC or AC electricity) by an electrochemical process. Field-fabricated fuel cell power system. A stationary fuel cell power system that is assembled at the job site and is not a preengineered or prepackaged factory-assembled fuel cell power system. Preengineered fuel cell power system. A stationary fuel cell power system consisting of components and modules that are produced in a factory, and shipped to the job site for assembly. Prepackaged fuel cell power system. A stationary fuel cell power system that is factory assembled as a single, complete unit and shipped as a complete unit for installation at the job site.		Updates to base code definition for energy storage based on NFPA. Previous Houston amendment removed as it's now part of base code provisions.
GAS DETECTION SYSTEM. A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or	GAS DETECTION SYSTEM. A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-		Previous Houston removed as it's now part of base code definitions.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.	contained gas detection and alarm device is not classified as a gas detection system. GAS DETECTION SYSTEM, CONTINUOUS. See “Continuous gas detection system.”		
	GLOVE BOX. A sealed enclosure in which items inside the box are handled exclusively using long gloves sealed to ports in the enclosure.		New base code definition.
	[BE] GRADE FLOOR EMERGENCY ESCAPE AND RESCUE OPENING. An emergency escape and rescue opening located such that the bottom of the clear opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.		Minor changes to base code definition.
<u>GRADE, ROUGH.</u> The stage at which the grade approximately conforms to the approved plan.			Removed Houston amendment as it's only applicable to the Building Code.
<u>GRADING.</u> To level to a smooth horizontal or sloping surface.			Removed Houston amendment as it's only applicable to the Building Code.
<u>GRADING, ENGINEERED.</u> Any <i>grading</i> in excess of 1,000 cubic yards.			Removed Houston amendment as it's only applicable to the Building Code.
<u>GRADING, REGULAR.</u> Any <i>grading</i> less than or equal to 1000 cubic yards.			Removed Houston amendment as it's only applicable to the Building Code.
	HIGHER EDUCATION LABORATORY. Laboratories in Group B occupancies used for educational purposes above the 12th grade. Storage, use and handling of chemicals in such laboratories shall be limited to purposes related to testing, analysis, teaching, research or developmental activities on a nonproduction basis.		New base code definition.
[BG] HIGH-RISE BUILDING. A building with ~~an occupied~~ floors located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access. <u>Exception:</u> For the purpose of establishing a building as a high-rise, the uppermost floor located more than 75 feet above the lowest level of fire department access used for housing building systems mechanical equipment is exempt.		[BG] HIGH-RISE BUILDING. A building with an occupied floors located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access. <u>Exception:</u> For the purpose of establishing a building as a high-rise, the uppermost floor located more than 75 feet above the lowest level of fire department access used for housing building systems mechanical equipment is exempt.	No change to Houston amendment.
HIGHWAY. A public street, public alley or public road.			Previous Houston amendment removed as it's no longer necessary for the Fire Code.

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HIGHWAY, STREET OR ROAD. A general term denoting a public way for the purpose of vehicle travel, including the entire area within the right-of-way.			Previous Houston amendment removed as it's no longer necessary for the Fire Code.
	HISTORIC BUILDINGS. Buildings that are listed in or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate state or local law. Any building or structure that is one or more of the following: 1. Listed, or certified as eligible for listing by the state historic preservation officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places. 2. Designated as historic under an applicable state or local law. 3. Certified as a contributing resource within a national register, state designated or locally designated historic district.		Updates to base code definition for historic buildings to match other ICC codes.
	INTEGRATED TESTING (FIRE PROTECTION AND LIFE SAFETY SYSTEM). A testing procedure to establish the operational status, interaction and coordination of two or more fire protection and safety systems.		New base code definition.
INTERNATIONAL BUILDING CODE. Any reference herein to the <i>International Building Code</i> shall be construed as referring to the <i>City of Houston Building Code</i> , as adopted and amended by this jurisdiction.		INTERNATIONAL BUILDING CODE. The City of Houston Building Code, as adopted and amended by this jurisdiction.	Minor change to simplify Houston definition.
		INTERNATIONAL ENERGY CONSERVATION CODE. The City of Houston Residential Energy Conservation Code or the City of Houston Commercial Energy Conservation Code, both as adopted and amended by this jurisdiction.	New Houston amendment for International Energy Conservation Code.
INTERNATIONAL EXISTING BUILDING CODE. Any reference herein to the <i>International Existing Building Code</i> shall be construed as referring to the <i>City of Houston Existing Building Code</i> , as adopted and amended by this jurisdiction.		INTERNATIONAL EXISTING BUILDING CODE. The City of Houston Existing Building Code, as adopted and amended by this jurisdiction.	Minor change to simplify Houston definition.
INTERNATIONAL FIRE CODE. Any reference herein to the <i>International Fire Code</i> shall be construed as referring to the <i>City of Houston Fire Code</i> , as adopted and amended by this jurisdiction.		INTERNATIONAL FIRE CODE. The City of Houston Fire Code, as adopted and amended by this jurisdiction.	Minor change to simplify Houston definition.
INTERNATIONAL FUEL GAS CODE. Any reference herein to the <i>International Fuel Gas Code</i> shall be construed as referring to the <i>City of Houston Plumbing Code</i> , as adopted and amended by this jurisdiction.		INTERNATIONAL FUEL GAS CODE. The City of Houston Plumbing Code, as adopted and amended by this jurisdiction.	Minor change to simplify Houston definition.

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INTERNATIONAL MECHANICAL CODE. Any reference herein to the <i>International Mechanical Code</i> shall be construed referring to the <i>City of Houston Mechanical Code</i> , as adopted and amended by this jurisdiction.		INTERNATIONAL MECHANICAL CODE. The <i>City of Houston Mechanical Code</i> , as adopted and amended by this <i>jurisdiction</i> .	Minor change to simplify Houston definition.
INTERNATIONAL PLUMBING CODE. Any reference herein to the <i>International Plumbing Code</i> shall be construed referring to the <i>City of Houston Plumbing Code</i> , as adopted and amended by this jurisdiction.		INTERNATIONAL PLUMBING CODE. The <i>City of Houston Plumbing Code</i> , as adopted and amended by this <i>jurisdiction</i> .	Minor change to simplify Houston definition.
		INTERNATIONAL PROPERTY MAINTENANCE CODE. Any reference herein to the <i>International Property Maintenance Code</i> shall be construed as referring to Chapter 10, Article IX, of the <i>City Code</i> , which is also known as the <i>Houston Building Standards Code</i> .	New Houston amendment for Property Maintenance Code definition.
INTERNATIONAL RESIDENTIAL CODE. Any reference herein to the <i>International Residential Code</i> shall be construed referring to the <i>City of Houston Residential Code</i> adopted and amended by this jurisdiction.		INTERNATIONAL RESIDENTIAL CODE. The <i>City of Houston Residential Code</i> adopted and amended by this <i>jurisdiction</i> .	Minor change to simplify Houston definition.
		INTERNATIONAL SWIMMING POOL AND SPA CODE. Any reference herein to the <i>International Swimming Pool and Spa Code</i> shall be construed as referring to the <i>City of Houston Swimming Pool and Spa Code</i> , as adopted and amended by this <i>jurisdiction</i> .	New Houston amendment for International Swimming Pool and Spa Code definition.
[A] JURISDICTION. ~~The City of Houston. The governmental unit that has adopted this code under due legislative authority.~~	JURISDICTION. The governmental unit that has adopted this code ~~under due legislative authority.~~	[A] JURISDICTION. The City of Houston. ~~The governmental unit that has adopted this code under due legislative authority.~~	Minor wordsmithing to base code definition. No change to Houston amendment.
	LABELED. Equipment, materials or products to which have been affixed a label,-seal, symbol or other identifying mark of a nationally recognized testing laboratory, <i>approved</i> agency or other organization concerned with product evaluation that maintains periodic inspection of the production of ~~the~~ such labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.		Minor wordsmithing to base code definition.
	LABORATORY SUITE. A fire-rated enclosed laboratory area that will provide one or more laboratory spaces, within a Group B educational occupancy, that are permitted to include ancillary uses such as offices, bathrooms and corridors that are contiguous with the laboratory area, and are constructed in accordance with Chapter 38.		New base code definition.
	LIFE SAFETY SYSTEMS. Systems, devices and equipment that enhance or facilitate evacuation, smoke control, compartmentation and/or isolation.		New base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	LOW ENERGY POWER-OPERATED DOOR. Swinging, sliding or folding door which opens automatically upon an action by a pedestrian such as pressing a push plate or waving a hand in front of a sensor. The door closes automatically, and operates with decreased forces and decreased speeds. See also "Power-assisted door" and "Power-operated door."		Minor wordsmithing to base code definition.
	~~MATERIAL SAFETY DATA SHEET (MSDS). Information concerning a hazardous material which is prepared in accordance with the provisions of DOL 29 CFR Part 1910.1200 or in accordance with the provisions of a federally approved state OSHA plan.~~		Base code definition removed.
MECHANICAL CODE. <u>The City of Houston Mechanical Code, as adopted and amended by this jurisdiction.</u>		MECHANICAL CODE. <u>The City of Houston Mechanical Code, as adopted and amended by this jurisdiction.</u>	No change to Houston amendment.
	MEMBRANE-PENETRATION FIRESTOP SYSTEM. An assemblage consisting of a fire-resistance-rated floor-ceiling, roof-ceiling or wall assembly, one or more penetrating items installed into or passing through the breach in one side of the assembly and the materials or devices, or both, installed to resist the spread of fire into the assembly for a prescribed period of time.		New base code definition.
	MISCELLA. A mixture, in any proportion, of the extracted oil or fat and the extracting solvent.		New base code definition.
MOBILE FOOD PREPARATION VEHICLES. Vehicles that contain cooking equipment that produce smoke or grease-laden vapors for the purpose of preparing and serving food to the public including mobile food units as defined in Chapter 20 of the <i>City Code</i> . For the purpose of this code, vehicles intended for private recreation shall not be considered a mobile food unit or mobile food preparation vehicles.	MOBILE FOOD PREPARATION VEHICLES. Vehicles that contain cooking equipment that produce smoke or grease-laden vapors for the purpose of preparing and serving food to the public. Vehicles intended for private recreation shall not be considered mobile food preparation vehicles.	MOBILE FOOD PREPARATION VEHICLES. Vehicles that contain cooking equipment that produce smoke or grease-laden vapors for the purpose of preparing and serving food to the public, <u>including mobile food units as defined in Chapter 20 of the City Code.</u> For the purpose of this code, ~~vehicles~~ intended for private recreation shall not be considered a mobile food unit or mobile food preparation vehicles.	New base code definition. Previous Houston amendment for definition no longer needed as definition is base code; Houston language for City Ordinances remains unchanged.
MOBILE FOOD UNIT. A food service establishment that is vehicle-mounted or wheeled and is capable of being readily moveable.		MOBILE FOOD UNIT. <u>Has the meaning ascribed in Section 20-18 of the City Code</u>	Houston amendment updated to reference City Ordinances.
MULTI-FAMILY RESIDENTIAL STRUCTURE. A structure constructed with three or more attached single-family residences', dwelling units, townhouses, apartments or condominiums.		MULTI-FAMILY RESIDENTIAL STRUCTURE. A structure constructed with three or more attached single-family residences', dwelling units, townhouses, apartments or condominiums.	No change to Houston amendment.
OCCUPANCY CLASSIFICATION. For the purpose of this code, certain occupancies are defined as follows: {EDITORIAL NOTE: PORTIONS OF THIS DEFINITION NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IFC.} [BG] Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a	OCCUPANCY CLASSIFICATION. For the purposes of this code, certain occupancies are defined as follows: [BG] Group A, Assembly. Assembly Group A occupancy... ... [BG] Assembly Group A-3...	OCCUPANCY CLASSIFICATION. For the purposes of this code, certain occupancies are defined as follows: {EDITORIAL NOTE: PORTIONS OF THIS DEFINITION NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2021 IFC.}	Base code changes to occupancy classifications to coincide with other ICC codes. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. [BG] Accessory to places of religious worship. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 508.3.1 of the <i>International Building Code</i> and have <i>occupant loads</i> of less than 100 per room or space shall be classified as Group A-3 occupancies. [BG] Group E, day care facilities. This group includes buildings and structures or portions thereof occupied by more than five children older than 2½ years of age who receive educational, supervision or <i>personal care services</i> for less than 24 hours per day. [BG] Within places of worship. Rooms and spaces within places of worship providing such care during religious functions shall be classified as part of the primary occupancy. [BG] Five or fewer children. A facility having five or fewer children receiving such care shall be classified as part of the primary occupancy. [BG] Five or fewer children in a dwelling unit. A facility such as the above within a dwelling unit and having five or fewer children receiving such care shall be classified as a Group R-3 occupancy or shall comply with the <i>International Residential Code</i>. Specific requirements. Daycare and educational occupancies shall not allow children of second grade or lower above the <i>level of exit discharge</i> unless the following provisions are met: 1. The building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1; and 2. When children above the second grade are located on the same level, the children of the second grade or lower shall have at least two means of egress to the exterior for the exclusive use of those children.	Greenhouses with public access for the conservation and exhibition of plants [BG] Special amusement areas. Special amusement areas shall comply with Section 411 of the <i>International Building Code</i>. [BG] Group B, Business. Business Group B... ... [BG] Airport traffic control towers. Airport traffic control towers shall comply with Section 412.2 of the <i>International Building Code</i>. [BG] Ambulatory care facilities. Ambulatory care facilities shall comply with Section 422 of the <i>International Building Code</i>. [BG] Higher education laboratories. Higher education laboratories shall comply with Section 428 of the <i>International Building Code</i>. [BG] Group E, Educational. Educational Group E... ... [BG] Accessory to places of religious worship. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 508.3.1 303.1.4 of the <i>International Building Code</i> and have <i>occupant loads</i> of less than 100 per room or space shall be classified as Group A-3 occupancies. [BG] Storm shelters in Group E occupancies. Storm shelters shall be provided for Group E occupancies where required by Section 423.4 of the <i>International Building Code</i>. [BG] Group F, Factory Industrial. Factory Industrial Group... [BG] Factory Industrial F-1 Moderate-hazard occupancy. Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following: - Aircraft (manufacturing, not to include repair) - Appliances ... - Energy storage systems (ESS) in dedicated-use buildings - Engines (including rebuilding) ... - Water/sewer treatment facilities - Wood; distillation - Woodworking (cabinet) [BG] Aircraft manufacturing facilities. Aircraft manufacturing facilities shall comply with Section 412.6 of the <i>International Building Code</i>. ...	[BG] Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. [BG] Accessory to places of religious worship. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 303.1.4 of the <i>International Building Code</i> and have <i>occupant loads</i> of less than 100 per room or space shall be classified as Group A-3 occupancies. [BG] Group E, day care facilities. This group includes buildings and structures or portions thereof occupied by more than five children older than 2½ years of age who receive educational, supervision or <i>personal care services</i> for less than 24 hours per day. [BG] Five or fewer children. A facility having five or fewer children receiving such care shall be classified as part of the primary occupancy. [BG] Five or fewer children in a dwelling unit. A facility such as the above within a <i>dwelling unit</i> and having five or fewer children receiving such care shall be classified as a Group R-3 occupancy or shall comply with the <i>International Residential Code</i>. [BG] Within places of worship. Rooms and spaces within places of worship providing such care during religious functions shall be classified as part of the primary occupancy. Specific requirements. Daycare and educational occupancies shall not allow children of second grade or lower above the <i>level of exit discharge</i> unless the following provisions are met: 1. The building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1; and 2. When children above the second grade are located on the same level, the children of the second grade or lower shall have at least two means of egress to the exterior for the exclusive use of those children.	

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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High-hazard Group H. High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or <i>health hazard</i> in quantities in excess of those allowed in <i>control areas</i> complying with Section 5003.8.3, based on the maximum allowable quantity limits ~~for per~~ <i>control areas</i> set forth in Tables 5003.1.1(1) and 5003.1.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this code and the requirements of Section 415 of the <i>International Building Code</i>. Hazardous materials stored or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with this code. Uses other than Group H. The storage, use or handling of hazardous materials as described in one or more of the following items shall not cause the occupancy to be classified as Group H, but it shall be classified as the occupancy that it most nearly resembles: 1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Chapter 24 of this code and Section 416 of the <i>International Building Code</i>. 2. Wholesale and retail sales and storage of flammable and <i>combustible liquids</i> in mercantile occupancies conforming to Chapter 57. 3. Closed piping system containing flammable or <i>combustible liquids</i> or gases utilized for the operation of machinery or equipment. 4. Cleaning establishments that utilize <i>combustible liquid</i> solvents having a <i>flash point</i> of 140°F (60°C) or higher in <i>closed systems</i> employing equipment <i>listed</i> by an <i>approved</i> testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour <i>fire barriers</i> in accordance with Section 707 of the <i>International Building Code</i> or 1-hour <i>horizontal assemblies</i> in accordance with Section 711 of the <i>International Building Code</i>, or both. 5. Cleaning establishments that utilize a liquid solvent having a <i>flash point</i> at or above 200°F (93°C). 6. Liquor stores and distributors without bulk storage. 7. Refrigeration systems. 8. The storage or utilization of materials for agricultural purposes on the premises. 9. Stationary batteries utilized for facility emergency power, uninterruptible power supply or telecommunication facilities, provided that the batteries are equipped with safety venting caps and ventilation is provided in accordance with the <i>International Mechanical Code</i>. 10. Corrosive personal or household products in their original packaging used in retail display. 11. Commonly used <i>corrosive</i> building materials. 12. Buildings and structures occupied for aerosol storage shall be classified as Group S-1, provided that such buildings conform to the requirements of Chapter 51.	Uses other than Group H. The storage, use or handling of hazardous materials as described in one or more of the following items shall not cause the occupancy to be classified as Group H, but it shall be classified as the occupancy that it most nearly resembles: 1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Chapter 24 of this code and Section 416 of the <i>International Building Code</i>. 2. Wholesale and retail sales and storage of flammable and <i>combustible liquids</i> in mercantile occupancies conforming to Chapter 57. 3. Closed piping system containing flammable or <i>combustible liquids</i> or gases utilized for the operation of machinery or equipment. 4. Cleaning establishments that utilize <i>combustible liquid</i> solvents having a <i>flash point</i> of 140°F (60°C) or higher in <i>closed systems</i> employing equipment <i>listed</i> by an <i>approved</i> testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour <i>fire barriers</i> in accordance with Section 707 of the <i>International Building Code</i> or 1-hour <i>horizontal assemblies</i> in accordance with Section 711 of the <i>International Building Code</i>, or both. 5. Cleaning establishments that utilize a liquid solvent having a <i>flash point</i> at or above 200°F (93°C). 6. Liquor stores and distributors without bulk storage. 7. Refrigeration systems. 8. The storage or utilization of materials for agricultural purposes on the premises. 9. Stationary batteries utilized for facility emergency power, uninterruptible power supply or telecommunication facilities, provided that the batteries are equipped with safety venting caps and ventilation is provided in accordance with the <i>International Mechanical Code</i>. 10. Corrosive personal or household products in their original packaging used in retail display. 11. Commonly used <i>corrosive</i> building materials. 12. Buildings and structures occupied for aerosol storage, aerosol cooking spray products or plastic aerosol products shall be classified as Group S-1, provided that such buildings conform to the requirements of Chapter 51. 13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the <i>maximum allowable quantity per control area</i> in Group M or S occupancies complying with Section 5003.8.3.5.1. 14. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided that such storage conforms to the quantity limits and requirements of this code.	Group H, High-hazard. High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or <i>health hazard</i> in quantities in excess of those allowed in <i>control areas</i> complying with Section 5003.8.3, based on the maximum allowable quantity limits ~~for per~~ <i>control areas</i> set forth in Tables 5003.1.1(1) and 5003.1.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this code and the requirements of Section 415 of the <i>International Building Code</i>. Hazardous materials stored or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with this code. Uses other than Group H. The storage, use or handling of hazardous materials as described in one or more of the following items shall not cause the occupancy to be classified as Group H, but it shall be classified as the occupancy that it most nearly resembles: 1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Chapter 24 of this code and Section 416 of the <i>International Building Code</i>. 2. Wholesale and retail sales and storage of flammable and <i>combustible liquids</i> in mercantile occupancies conforming to Chapter 57. 3. Closed piping system containing flammable or <i>combustible liquids</i> or gases utilized for the operation of machinery or equipment. 4. Cleaning establishments that utilize <i>combustible liquid</i> solvents having a <i>flash point</i> of 140°F (60°C) or higher in <i>closed systems</i> employing equipment <i>listed</i> by an <i>approved</i> testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour <i>fire barriers</i> in accordance with Section 707 of the <i>International Building Code</i> or 1-hour <i>horizontal assemblies</i> in accordance with Section 711 of the <i>International Building Code</i>, or both. 5. Cleaning establishments that utilize a liquid solvent having a <i>flash point</i> at or above 200°F (93°C). 6. Liquor stores and distributors without bulk storage. 7. Refrigeration systems. 8. The storage or utilization of materials for agricultural purposes on the premises.	Minor changes to base code definition. No change Houston amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the <i>maximum allowable quantity per control area</i> in Group M or S occupancies complying with Section 5003.8.3.5. 14. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements of this code. 15. Stationary fuel cell power systems installed in accordance with this code. 16. <i>Capacitor energy storage systems</i> in accordance with this code. 17. Group B higher education laboratory occupancies complying with Section 428 of the Building Code and Chapter 38 of this code. 18. Any building owned by the jurisdiction, located on any city airport, that is leased and used by a certificated air carrier for the in-transit storage of hazardous materials for a period of time that does not exceed 72 hours from the time such hazardous material is placed in the building until it is permanently removed. NOTES: 1. <i>Certificated air carrier</i> is defined as: a U.S. or foreign airline operating scheduled or non-scheduled commercial services pursuant to certificates or exemptions issued by the United States Department of Transportation pursuant to 49 USC Sections 40109, 41102, 41103, or 41302, and certificates or exemptions issued by the United States Federal Aviation Administration pursuant to 14 CFR Parts 121, 125, 129 or 135. 2. <i>City airport</i> is defined in Chapter 9 of the <i>City Code</i>. 3. <i>In-transit storage</i> is defined as: the storage of materials which will be on-loaded onto or off-loaded from an aircraft owned, leased or operated by a certificated air carrier.	15. Stationary fuel cell power systems installed in accordance with this code. 16. <i>Capacitor energy storage systems</i> in accordance with this code. 17. Group B higher education laboratory occupancies complying with Section 428 of the <i>International Building Code</i> and Chapter 38 of this code. 18. Distilling or brewing of beverages conforming to the requirements of this code. 19. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of this code.	9. Stationary batteries systems installed in accordance with Section 1207. 10. <i>Corrosive</i> personal or household products in their original packaging used in retail display. 11. Commonly used <i>corrosive</i> building materials. 12. Buildings and structures occupied for aerosol product storage, aerosol cooking spray products or plastic aerosol 3 products shall be classified as Group S-1, provided that such buildings conform to the requirements of Chapter 51. 13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the <i>maximum allowable quantity per control area</i> in Group M or S occupancies complying with Section 5003.8.3.5.1. 14. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided that such storage conforms to the quantity limits and requirements of this code. 15. Stationary fuel cell power systems installed in accordance with this code. 16. <i>Capacitor energy storage systems</i> in accordance with this code. 17. Group B higher education laboratory occupancies complying with Section 428 of the <i>International Building Code</i> and Chapter 38 of this code. 18. Distilling or brewing of beverages conforming to the requirements of this code. 19. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of this code. 20. Any building owned by the jurisdiction, located on any city airport, that is leased and used by a certificated air carrier for the in-transit storage of hazardous materials for a period of time that does not exceed 72 hours from the time such hazardous material is placed in the building until it is permanently removed. NOTES: 1. <i>Certificated air carrier</i> is defined as: a U.S. or foreign airline operating scheduled or non-scheduled commercial services pursuant to certificates or exemptions issued by the United States Department of Transportation pursuant to 49 USC Sections 40109, 41102, 41103,	

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		or 41302, and certificates or exemptions issued by the United States Federal Aviation Administration pursuant to 14 CFR Parts 121, 125, 129 or 135. 2. <i>City airport</i> is defined in Chapter 9 of the <i>City Code</i> . 3. <i>In-transit storage</i> is defined as: the storage of materials which will be on-loaded onto or off-loaded from an aircraft owned, leased or operated by a certificated air carrier.	
	[BG] Institutional Group I-1. Institutional Group I-1 occupancy shall include buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care. Buildings of Group I-1 shall be classified as one of the occupancy conditions indicated below and shall comply with Section 420 of the <i>International Building Code</i>. This group shall include, but not be limited to, the following:		Minor changes to base code definition.
	[BG] Occupancy Conditions. Buildings of Group I-2 shall be classified as one of the following occupancy conditions and shall comply with Section 407 of the <i>International Building Code</i>:		Minor changes to base code definition.
	[BG] Institutional Group I-3. Institutional Group I-3 occupancy shall include buildings and structures which are inhabited by more than five persons who are under restraint or security. A Group I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. This group shall include, but not be limited to, the following: Correctional centers Detention centers Jails Prerelease centers Prisons Reformatories Buildings of Group I-3 shall be classified as one of the following occupancy conditions and shall comply with Section 408 of the <i>International Building Code</i>:		Minor changes to base code definition.
[BG] Institutional Group I-4, day care facilities. Institutional Group I-4 shall include buildings and structures occupied by more than five persons of any age who receive custodial care for less than 24 hours by persons other than parents or guardians, relatives by blood, marriage, or adoption, and in a place other than the home of the person cared for. This group shall include, but not be limited to, the following: Adult day care Child day care [BG] Classification as Group E. A child day care facility that provides care for more than five but not more than 100 children 2½ years or less of age, where the rooms in which the children are cared for are located on a <i>level of exit discharge</i> serving		[BG] Institutional Group I-4, day care facilities. Institutional Group I-4 shall include buildings and structures occupied by more than five persons of any age who receive custodial care for less than 24 hours by persons other than parents or guardians, relatives by blood, marriage, or adoption, and in a place other than the home of the person cared for. This group shall include, but not be limited to, the following: Adult day care Child day care [BG] Classification as Group E. A child day care facility that provides care for more than five but not more than 100 children 2½ years or less of age, where the rooms in which the children are cared for are located on a <i>level of exit discharge</i> serving such rooms and each of these child care rooms has an <i>exit</i> door directly to the exterior, shall be classified as Group E.	No change Houston amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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such rooms and each of these child care rooms has an <i>exit</i> door directly to the exterior, shall be classified as Group E. [BG] Within a place of religious worship. Rooms and spaces within places of religious worship providing such care during religious functions shall be classified as part of the primary occupancy. [BG] Five or fewer occupants receiving care. A facility having five or fewer persons receiving custodial care shall be classified as part of the primary occupancy. [BG] Five or fewer occupants receiving care in a dwelling unit. A facility such as the above within a <i>dwelling unit</i> and having five or fewer persons receiving custodial care shall be classified as a Group R-3 occupancy or shall comply with the <i>International Residential Code</i> . Specific requirements. Daycare and educational occupancies shall not allow children of second grade or lower above the <i>level of exit discharge</i> unless the following provisions are met: 1. The building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1; and 2. When children above the second grade are located on the same level, the children of the second grade or lower shall have at least two means of egress to the exterior for the exclusive use of those children.		[BG] Within a place of religious worship. Rooms and spaces within places of religious worship providing such care during religious functions shall be classified as part of the primary occupancy. [BG] Five or fewer occupants receiving care. A facility having five or fewer persons receiving custodial care shall be classified as part of the primary occupancy. [BG] Five or fewer occupants receiving care in a dwelling unit. A facility such as the above within a <i>dwelling unit</i> and having five or fewer persons receiving custodial care shall be classified as a Group R-3 occupancy or shall comply with the <i>International Residential Code</i> . Specific requirements. Daycare and educational occupancies shall not allow children of second grade or lower above the <i>level of exit discharge</i> unless the following provisions are met: 1. The building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1; and 2. When children above the second grade are located on the same level, the children of the second grade or lower shall have at least two means of egress to the exterior for the exclusive use of those children.	
	[BG] Group M, Mercantile. Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following: [BG] Motor fuel-dispensing facilities. Motor fuel-dispensing facilities shall comply with Section 406.7 of the <i>International Building Code</i> .		Base code definition updated for fuel-dispensing facilities.
	[BG] Group R, Residential. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the <i>International Residential Code</i> in accordance with Section 101.2 of the <i>International Building Code</i> . Group R occupancies not constructed in accordance with the <i>International Residential Code</i> as permitted by Sections 310.4.1 and 310.4.2 of the <i>International Building Code</i> shall comply with Section 420 of the <i>International Building Code</i>. [BG] Residential Group R-2. ... Apartment houses ~~Boarding houses (nontransient) with more than 16 occupants~~ Congregate living facilities (nontransient) with more than 16 occupants Boarding houses (nontransient) Convents Dormitories Fraternities and sororities Monasteries		Base code definition updated for Group R occupancies.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	Hotels (nontransient) Live/work units ~~Monasteries~~ Motels (nontransient) Vacation timeshare properties		
[BG] Residential Group R-3. Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including: Boarding houses (nontransient) with 16 or fewer occupants Boarding houses (transient) with 10- or fewer occupants Buildings that do not contain more than two <i>dwelling units</i> Care facilities that provide accommodations for five or fewer persons receiving care Congregate living facilities (nontransient) with 16 or fewer occupants Congregate living facilities (transient) with 10 or fewer occupants Lodging houses with five or fewer guest rooms [BG] Care facilities within a dwelling. Care facilities for five or fewer persons receiving care, including licensed and registered in home day cares, that are within a single-family dwelling are permitted to comply with the <i>International Residential Code</i> provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section P2904 of the <i>International Residential Code</i>. [BG] Lodging houses. Owner-occupied <i>lodging houses</i> with five or fewer guest rooms shall be permitted to be constructed in accordance with the <i>International Residential Code</i>.	[BG] Residential Group R-3. ... ~~Boarding houses (nontransient) with 16 or fewer occupants~~ ~~Boarding houses (transient) with 10 or fewer occupants~~ Congregate living facilities (nontransient) with 16 or fewer occupants Boarding houses (nontransient) Convents Dormitories Fraternities and sororities Monasteries Congregate living facilities (transient) with 10 or fewer occupants Boarding houses (transient) Lodging houses (transient) with five or fewer guest rooms and 10 or fewer occupants	[BG] Residential Group R-3. Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including: Buildings that do not contain more than two <i>dwelling units</i> Care facilities that provide accommodations for five or fewer persons receiving care <i>Congregate living facilities</i> (nontransient) with 16 or fewer occupants Boarding houses (nontransient) with 16 or fewer occupants Convents Dormitories Fraternities and sororities Monasteries <i>Congregate living facilities (transient)</i> with 10 or fewer occupants Boarding houses (transient) with 10 or fewer occupants <i>Lodging houses (transient)</i> with five or fewer guest rooms and 10 or fewer occupants [BG] Care facilities within a dwelling. Care facilities for five or fewer persons receiving care, including licensed and registered in home day cares, that are within a single-family dwelling are permitted to comply with the <i>International Residential Code</i> provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section P2904 of the <i>International Residential Code</i>. [BG] Lodging houses. Owner-occupied <i>lodging houses</i> with five or fewer guest rooms and 10 or fewer total occupants shall be permitted to be constructed in accordance with the <i>International Residential Code</i> provided that an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section P2904 of the <i>International Residential Code</i>.	Base code definition updated for Group R occupancies. No change to Houston amendment.
	[BG] Lodging houses. Owner-occupied <i>lodging houses</i> with five or fewer guestrooms and 10 or fewer total occupants shall be permitted to be constructed in accordance with the <i>International Residential Code</i> provided that an automatic sprinkler system is installed in accordance with Section 903.3.1.3 or Section P2904 of the <i>International Residential Code</i>.		Base code definition updated for lodging occupancies.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	[BG] Group S-1 moderate-hazard storage. Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following: ... Beverages over 16-percent alcohol content ... [BG] Aircraft hangars.Aircraft hangars used for storage or repair shall comply with Section 412.3 of the <i>International Building Code</i>. [BG] Motor vehicle repair garages.Motor vehicle repair garages shall comply with Section 406.8 of the <i>International Building Code</i>. ... Self-service storage facility (mini-storage)		Base code definition updated for Group S-1 occupancies.
	[BG] Group S-2 low-hazard storage. Storage Group S-2 occupancies include, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. Storage uses shall include, but not be limited to, storage of the following: ... Beverages up to and including 16-percent alcohol in metal, glass or ceramic containers ... Parking Public parking garages, open or enclosed ... [BG] Public parking garages.Public parking garages shall comply with Section 406.4 of the <i>International Building Code</i> and the additional requirements of Section 406.5 of the <i>International Building Code</i> for open parking garages or Section 406.6 of the <i>International Building Code</i> for enclosed parking garages. [BG] Combustible storage.High-piled stock or rack storage, or attic, under-floor and concealed spaces used for storage of combustible materials, shall be in accordance with Section 413 of the <i>International Building Code</i>.		Base code definition updated for Group S-2 occupancies.
	[BG] Group U, Miscellaneous. Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following: ... Communication equipment structures with a gross floor area of less than 1,500 square feet (139 m³) ... Fences more than ~~6 feet (1829 mm)~~ 7 feet (2134 mm) in height ...		Base code definition updated for Group U occupancies.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Greenhouses ... [BG] Private garages and carports.Private garages and carports shall comply with Section 406.3 of the <i>International Building Code</i>. [BG] Residential aircraft hangars.Aircraft hangars accessory to a one- or two-family residence shall comply with Section 412.4 of the <i>International Building Code</i>.		
ONE- AND TWO-FAMILY DWELLING. An individual free-standing structure containing not more than two <i>dwelling units</i> , also referred to as a <i>dwelling</i> , duplex or <i>single-family dwelling</i> depending on the number of <i>dwelling units</i> within.		ONE- AND TWO-FAMILY DWELLING. An individual free-standing structure containing not more than two <i>dwelling units</i> , also referred to as a <i>dwelling</i> , duplex or <i>single-family dwelling</i> depending on the number of <i>dwelling units</i> within.	No change to Houston Amendment
OPEN BUILDING (For Chapter 9). A building having each perimeter wall at least 80 percent open.		OPEN BUILDING (For Chapter 9). A building having each perimeter wall at least 80 percent open.	No change to Houston Amendment
	OPEN-ENDED CORRIDOR. An interior corridor that is open on each end and connects to an exterior stairway or ramp at each end with no intervening doors or separation from the corridor.		Base code definition removed in the 2021 edition.
	OPEN-AIR ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure and is open to the atmosphere.		New base code definition.
	OPENING PROTECTIVE. A fire door assembly, fire shutter assembly, fire window assembly or glass-block assembly in a fire-resistance-rated wall or partition.		New base code definition.
	OUTDOOR ASSEMBLY EVENT. An outdoor gathering of persons for any purpose.		New base code definition.
	PASSIVE RF EMITTING DEVICE. A device that does not require an external AC or DC source of power for its operation, and does not provide amplification of the RF signal, including but not limited to coax, couplers, splitters and passive antennas.		New base code definition.
PLUMBING CODE. The <i>City of Houston Plumbing Code</i> , as adopted and amended by this jurisdiction.		PLUMBING CODE. The <i>City of Houston Plumbing Code</i> , as adopted and amended by this jurisdiction.	No change to Houston Amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	PORTABLE GENERATOR. A mobile internal combustion engine-driven device that provides temporary electrical power. This includes hand portable, wheeled, trailer mounted, and motor vehicle-mounted generator sets. It does not include generators in permanent, fixed installations.		New base code definition.
	PRIVATE GARAGE. A building or portion of a building in which motor vehicles used by the owner or tenants of the building or buildings on the premises are stored or kept, without provisions for repairing or servicing such vehicles for profit.		Minor change to base code definition.
PUBLIC WAY. A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 40 <u>20</u> feet (3048 6,096 mm).			Houston amendment removed to return to base code provisions.
	RADIO FREQUENCY (RF). A measurement representing the oscillation rate of the electromagnetic radiation spectrum, or electromagnetic radio waves, from public safety frequency bands as specified by the fire code official.		New base code definition.
	READY ACCESS (TO). That which enables a device, appliance or equipment to be directly reached, without requiring the removal or movement of any panel, door or similar obstruction [see "Access (to)"].		New base code definition.
	RELOCATABLE POWER TAP. A relocatable electrical enclosure that provides one or more receptacle outlets and that is provided with an attached power supply cord and attachment plug for connection to a permanently installed receptacle outlet (also called a “multiplug adaptor”).		New base code definition.
RESIDENTIAL CODE. The <i>City of Houston Residential Code</i> , as adopted and amended by this jurisdiction.		RESIDENTIAL CODE. The <i>City of Houston Residential Code</i> , as adopted and amended by this jurisdiction.	No change to Houston Amendment
RIGHT-OF-WAY. The entire area between the property boundary lines of every way (including but not limited to roads, streets, alleys, highways, boulevards, bridges, tunnels, or similar thoroughfares), whether acquired by purchase, grant, or dedication by the state or federal government, or acceptance by the authority having jurisdiction, for public use.			Houston amendment removed as it's not applicable to the Fire Code.
	SAFETY DATA SHEET (SDS). Information concerning a hazardous material which is prepared in accordance with the provisions of DOL 29 CFR Part 1910.1200 or in accordance with the provisions of a federally approved state OSHA plan. A document titled as a Material Safety Data Sheet (MSDS) is equivalent to an SDS for the purposes of this code.		New base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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SECTION 105 HEARING OFFICIAL. The person or persons designated in writing by the mayor of the jurisdiction to consider (a) applications by the <i>fire code official</i> to revoke permits issued under authority of Section 105; (b) appeals of denials of permits authorized by Section 105; and (c) appeals of orders issued under authority of Section 105, <i>except that</i> appeals of orders issued under authority of Section 105.5.3 shall be considered as provided elsewhere in this code. A Section 105 hearing official may be an employee of the Houston Fire Department, except that no person who has taken part, directly or indirectly, in any decision, order, or investigation related to the subject of the hearing shall serve as a Section 105 hearing official. A Section 105 hearing official shall act without bias for or against any hearing participant, including the jurisdiction's fire department.		SECTION 105 HEARING OFFICIAL. The person or persons designated in writing by the mayor of the jurisdiction to consider (a) applications by the <i>fire code official</i> to revoke permits issued under authority of Section 105; (b) appeals of denials of permits authorized by Section 105; and (c) appeals of orders issued under authority of Section 105, <i>except that</i> appeals of orders issued under authority of Section 105.5.3 shall be considered as provided elsewhere in this code. A Section 105 hearing official may be an employee of the Houston Fire Department, except that no person who has taken part, directly or indirectly, in any decision, order, or investigation related to the subject of the hearing shall serve as a Section 105 hearing official. A Section 105 hearing official shall act without bias for or against any hearing participant, including the jurisdiction's fire department.	No change to Houston Amendment
SERIOUS AND IMMEDIATE FIRE HAZARD. A condition that violates this code and that in the absence of immediate action by the <i>fire code official</i> or a fire department official in charge of an incident presents a reasonable likelihood of causing serious bodily injury to a human being.		SERIOUS AND IMMEDIATE FIRE HAZARD. A condition that violates this code and that in the absence of immediate action by the <i>fire code official</i> or a fire department official in charge of an incident presents a reasonable likelihood of causing serious bodily injury to a human being.	No change to Houston Amendment
SINGLE-FAMILY DWELLING. An individual free-standing residential structure intended to serve a single-family, or household, as a <i>dwelling</i> and/or other uses authorized by the <i>Building Code</i> and <i>Residential Code</i> .		SINGLE-FAMILY DWELLING. An individual free-standing residential structure intended to serve a single-family, or household, as a <i>dwelling</i> and/or other uses authorized by the <i>Building Code</i> and <i>Residential Code</i> .	No change to Houston Amendment
	SITE SAFETY PLAN. A plan developed to establish a fire prevention program at a construction site.		New base code definition.
	SITE-FABRICATED STRETCH SYSTEM. ... 1. A frame constructed of plastic, wood, metal or other material used to hold fabric in place; 2. A core material (infill, with the correct properties for the application); and ...	=	Minor changes to base code definition.
	SLEEPING UNIT. A room or space in which people sleep, which can also include single unit providing rooms or spaces for one or more persons that includes permanent provisions for sleeping and can include permanent provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a <i>dwelling unit</i> are not sleeping units.		Wordsmithing to base code definition.
SMOKE DETECTOR: A <i>listed</i> device that senses visible or invisible particles of combustion. A smoke alarm with sealed 10-year lithium batteries. A sealed long-life (10 years or more) battery smoke alarm.	No change.	SMOKE DETECTOR: A <i>listed</i> device that senses visible or invisible particles of combustion. A smoke alarm with sealed 10-year lithium batteries. A sealed long-life (10 years or more) battery smoke alarm.	No change to Houston Amendment
	SMOKE PARTITION. A wall assembly that extends from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.		New base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SMOKE-PROTECTED ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure for a specified design time by means of passive design or by mechanical ventilation.		Minor changes to base code definition.
	SPECIAL EXPERT. An individual who has demonstrated qualifications in a specific area, outside the practice of architecture or engineering, through education, training and experience.		New base code definition.
	SPRAY ROOM. A room designed to accommodate spraying operations, constructed in accordance with the <i>International Building Code</i> and separated from the remainder of the building by a minimum 1-hour fire barrier.		Minor changes to base code definition.
STANDBY INSPECTOR. A state-certified fire inspector assigned by the <i>fire code official</i> as deemed necessary to ensure public safety and compliance with this code in accordance with Section 114.	N/A	STANDBY INSPECTOR. A state-certified fire inspector assigned by the <i>fire code official</i> as deemed necessary to ensure public safety and compliance with this code in accordance with Section 115.	No changes to Houston amendment.
STATIONARY BATTERY ARRAY. An arrangement of individual stationary storage batteries in close proximity to each other, mounted on storage racks or in modules, battery cabinets or other enclosures.	~~STATIONARY BATTERY ARRAY. An arrangement of individual stationary storage batteries in close proximity to each other, mounted on storage racks or in modules, battery cabinets or other enclosures.~~		Base code definition removed in 2021 edition. Houston amendment for definition removed to go with base code.
	SUBORDINATE (FIRE PROTECTION AND LIFE SAFETY SYSTEM). A system that is activated by another fire protection or life safety system. For example, where a fire alarm system activates a smoke removal or elevator recall system, the smoke removal or elevator recall system is considered to be "subordinate" to the fire alarm system.		New base code definition.
	SUPERVISORY SERVICE. The service required to monitor performance of guard tours and the operative condition of fire protection system or other systems for the protection of life and property.		Minor changes to base code definition.
	SUPERVISORY SIGNAL. A signal indicating the need of action in connection with the supervision of guard tours, the fire protection systems or equipment, or the maintenance features of related systems.		Minor changes to base code definition.
	TANK, MOTOR VEHICLE FUEL. A tank permanently mounted on a motor vehicle to store a gas or liquid fuel that is used for propulsion.		New base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~TEMPORARY STAGE CANOPY. A temporary ground-supported membrane-covered frame structure used to cover stage areas and support equipment in the production of outdoor entertainment events.~~		Base code definition removed.
	TEMPORARY SPECIAL EVENT STRUCTURE. Any temporary ground-supported structure, platform, stage, stage scaffolding or rigging, canopy, tower supporting audio or visual effects equipment or similar structures not regulated within the scope of the <i>International Building Code</i> .		New base code definition.
	~~[BG] TENT.~~ A structure, enclosure, umbrella structure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported ~~by~~ in any manner except by air or the contents ~~that~~ it protects (see "Umbrella structure").		Minor changes to base code definition.
TEXAS ACCESSIBILITY STANDARDS (TAS). The accessibility standard applicable to buildings and facilities constructed within the state of Texas as promulgated by the Texas Department of Licensing and Regulation pursuant to <i>Texas Government Code</i> Chapter 469.		TEXAS ACCESSIBILITY STANDARDS (TAS). The accessibility standard applicable to buildings and facilities constructed within the state of Texas as promulgated by the Texas Department of Licensing and Regulation pursuant to <i>Texas Government Code</i> Chapter 469.	No change to Houston Amendment
	THROUGH-PENETRATION FIRESTOP SYSTEM. An assemblage consisting of a fire- resistance-rated floor, floor-ceiling or wall assembly, one or more penetrating items passing through the breaches in both sides of the assembly and the materials or devices, or both, installed to resist the spread of fire through the assembly for a prescribed period of time.		New base code definition.
[A] TOWNHOUSE. A <i>multi-family residential structure</i> constructed with three or more attached single-family <i>dwelling units</i> ~~constructed in a group of three or more attached units~~ in which each unit extends from the foundation to roof and with open space on not less than two sides, which may or may not include lot lines or property lines separating the dwelling units.		[A] TOWNHOUSE. A <i>multi-family residential structure</i> constructed with three or more attached single-family <i>dwelling units</i> ~~constructed in a group of three or more attached units~~ in which each unit extends from the foundation to roof and with open space on not less than two sides, which may or may not include lot lines or property lines separating the dwelling units.	No change to Houston Amendment
TRADE SHOW. A temporary commercial exhibition or show for the purpose of display of manufactured products to prospective customers. See Section 105.6.5.		TRADE SHOW. A temporary commercial exhibition or show for the purpose of display of manufactured products to prospective customers. See Section 105. 5.5 .	No change to Houston amendment.
	UMBRELLA STRUCTURE. A structure, enclosure or shelter with or without sidewalls or drops, constructed of fabric or pliable material supported by a central pole or poles (see "Tent").		New base code definition.
SECTION 203 <u>DISTRICTS OF LIMITATIONS</u> 203.1 General. The districts referred to in this code in which the storage of explosives and blasting agents, flammable and combustible liquids, compressed and liquefied natural gases, cryogenic fluids and LP-gases may be prohibited or restricted, are hereby established.		SECTION 203 <u>DISTRICTS OF LIMITATIONS</u> 203.1 General. The districts referred to in this code in which the storage of explosives and blasting agents, flammable and combustible liquids, compressed and liquefied natural gases, cryogenic fluids and LP-gases may be prohibited or restricted, are hereby established.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
203.1.1 District of Limitations No. 1. Beginning at the intersection of US Highway 59 with Pierce Street; thence, northerly along US Highway 59 to the centerline of Buffalo Bayou; thence, westerly following the meanders of the centerline of Buffalo Bayou to Franklin Street; thence, westerly along Franklin Street to Interstate Highway 45; thence, southerly along Interstate Highway 45 to Pierce Street; thence, easterly along Pierce Street to U. S. Highway 59, the place of beginning.		203.1.1 District of Limitations No. 1. Beginning at the intersection of US Highway 59 with Pierce Street; thence, northerly along US Highway 59 to the centerline of Buffalo Bayou; thence, westerly following the meanders of the centerline of Buffalo Bayou to Franklin Street; thence, westerly along Franklin Street to Interstate Highway 45; thence, southerly along Interstate Highway 45 to Pierce Street; thence, easterly along Pierce Street to U. S. Highway 59, the place of beginning.	No change to Houston amendment.
203.1.2 District of Limitations No. 2. Beginning at the intersection of Main Street with Cambridge Street; thence, southerly along Main Street to Holcombe Boulevard; thence easterly along Holcombe Boulevard to Braeswood Boulevard; thence northerly along Braeswood Boulevard to North MacGregor Drive; thence northerly along North MacGregor Drive to Cambridge Street; thence westerly along Cambridge Street to Main Street, the place of beginning.		203.1.2 District of Limitations No. 2. Beginning at the intersection of Main Street with Cambridge Street; thence, southerly along Main Street to Holcombe Boulevard; thence easterly along Holcombe Boulevard to Braeswood Boulevard; thence northerly along Braeswood Boulevard to North MacGregor Drive; thence northerly along North MacGregor Drive to Cambridge Street; thence westerly along Cambridge Street to Main Street, the place of beginning.	No change to Houston amendment.
2015 Houston IFC – Chapter 3 General Requirements	2021 IFC – Chapter 3 General Requirements	2021 Houston IFC Amendments	Code Change Summary
301.2 Permits. Permits shall be required as set forth in Section 105.6, along with the permit fees required in Section 113, in the city fee schedule for the activities or uses regulated by Sections 303, 304, 306, 307, 308 and 315.		SECTION 301 GENERAL 301.2 Permits. Permits shall be required as set forth in Section 105.5, along with the permit fees required in Section 107, in the city fee schedule for the activities or uses regulated by Sections 303, 304, 306, 307, 308, 315 and 320.	No change to Houston amendment.
	SECTION 302 DEFINITIONS 302.1 Definitions. The following terms are defined in Chapter 2: 3D PRINTER. ADDITIVE MANUFACTURING. BONFIRE. HI-BOY. HIGH-VOLTAGE TRANSMISSION LINE. OPEN BURNING. PORTABLE OUTDOOR FIREPLACE. POWERED INDUSTRIAL TRUCK. RECREATIONAL FIRE.		New base code definitions included.
303.1 Transporting. Asphalt (tar) kettles shall not be transported over any highway, road or street when the heat source for the kettle is operating. Kettle lids shall be closed and latched while in transit. Kettle contents shall be cooled to a viscosity such that they cannot spill should the kettle overturn while in transit. Exception: Asphalt (tar) kettles in the process of patching road surfaces.	SECTION 303 ASPHALT KETTLES	303.1 Transporting. Asphalt (tar) kettles shall not be transported over any highway, road or street when the heat source for the kettle is operating. Kettle lids shall be closed and latched while in transit. Kettle contents shall be cooled to a viscosity such that they cannot spill should the kettle overturn while in transit. Exception: Asphalt (tar) kettles in the process of patching road surfaces.	No change to Houston amendment
303.2 Location. Asphalt (tar) kettles shall not be located within 20 feet (6,096 mm) of any combustible material, combustible building surface or any building opening and within a controlled area identified by the use of traffic cones, barriers or other approved means. Asphalt (tar) kettles and pots shall not be utilized inside or on the roof of a building or structure. Asphalt (tar) kettles shall not be used on the roof of a building or structure, except in accordance with Houston Fire Department LSB Standard No. 11, “Roofing		303.2 Location. Asphalt (tar) kettles shall not be located within 20 feet (6,096 mm) of any combustible material, combustible building surface or any building opening and within a controlled area identified by the use of traffic cones, barriers or other approved means. Asphalt (tar) kettles and pots shall not be utilized inside or on the roof of a building or structure. Asphalt (tar) kettles shall not be used on the roof of a building or structure, except in accordance with Houston Fire Department LSB Standard No. 11, “Roofing Operations.” Roofing	No change to Houston amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
Operations.” Roofing kettles and operating asphalt (tar) kettles shall not block <i>means of egress</i> , gates, roadways or entrances.		kettles and operating asphalt (tar) kettles shall not block <i>means of egress</i> , gates, roadways or entrances.	
303.3 Location of fuel containers. Fuel containers shall be located not less than 10 feet (3,048 mm) from the burner. <u>All portable fuel containers shall be adequately secured to prevent containers from falling or being knocked over.</u> Exceptions: 1. Containers properly insulated from heat or flame are allowed to be within 2 feet (610 mm) of the burner. 2. LP-gas containers connected for use shall be kept a minimum of 15 feet (4,572 mm) from burners. LP-gas containers not connected for use shall be kept a minimum of 25 feet (7,620 mm) from burners.		303.3 Location of fuel containers. Fuel containers shall be located not less than 10 feet (3,048 mm) from the burner. <u>All portable fuel containers shall be adequately secured to prevent containers from falling or being knocked over.</u> Exceptions: 1. Containers properly insulated from heat or flame are allowed to be within 2 feet (610 mm) of the burner. 2. LP-gas containers connected for use shall be kept a minimum of 15 feet (4,572 mm) from burners. LP-gas containers not connected for use shall be kept a minimum of 25 feet (7,620 mm) from burners.	No change to Houston amendment
	304.1.3 Space underneath seats. Spaces underneath grandstand and bleacher seats shall be kept free from combustible and flammable materials. Except where enclosed in not less than 1-hour <i>fire-resistance-rated</i> construction in accordance with the <i>International Building Code</i> , ~~spaces underneath grandstand and bleacher seats shall not be occupied or utilized for purposes other than means of egress.~~		Base code section removes requirement for underneath grandstand/bleacher seats.
	304.1.3.1 Spaces underneath grandstands and bleachers. Spaces underneath grandstands and bleachers shall not be occupied or utilized for purposes other than means of egress except where equipped with an automatic sprinkler system in accordance with Section 903.2.1.5.1, or separated with fire barriers and horizontal assemblies in accordance with Section 1029.1.1.1.		
304.3.3 Capacity exceeding 1.5 cubic yards. Dumpsters and containers with an individual capacity ~~of between~~ 1.5 cubic yards [40.5 cubic feet (1.15 m³)] ~~and 15 cubic yards [405 cubic feet (12 m³)] or more~~ shall not be stored in buildings or placed within 5 feet (1,524 mm) of combustible walls, <u>metals walls</u> , building openings or ~~combustible~~ roof eave lines. <u>Dumpsters and containers 15 cubic yards [405 cubic feet (12 m³)] capacity, or more, shall be a minimum of 10 feet (3,048 mm) from combustible walls, metal walls, building openings, or roof eave lines. Dumpsters and containers shall not be placed on public sidewalks, streets, or other public property. No rubbish or combustible waste shall be placed, stored, or allowed to accumulate outside of dumpsters or containers. Lids of dumpsters shall be kept closed at all times.</u> Exceptions: 1. Dumpsters or containers in areas protected by an approved automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3. 2. Storage in a structure shall not be prohibited where the structure is of Type I or IIA construction, located not less than 10 feet (3,048 mm) from other buildings and used exclusively for dumpster or container storage.	304.3.3 Capacity exceeding 1.5 cubic yards. Dumpsters and containers with an individual capacity of 1.5 cubic yards [40.5 cubic feet (1.15 m³)] or more shall not be stored in buildings or placed within 5 feet (1524 mm) of combustible walls, openings or combustible roof eave lines. Exceptions: 1. Dumpsters or containers ~~that are placed inside buildings~~ in areas protected by an approved automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3. 2. Storage in a structure shall not be prohibited where the structure is of Type I or IIA construction, located not less than 10 feet (3048 mm) from other buildings and used exclusively for dumpster or container storage. 3. ~~Dumpsters or containers that are located adjacent to buildings where the exterior area is protected by an approved automatic sprinkler system.~~	304.3.3 Capacity exceeding 1.5 cubic yards. Dumpsters and containers with an individual capacity ~~of between~~ 1.5 cubic yards [40.5 cubic feet (1.15 m³)] ~~and 15 cubic yards [405 cubic feet (12 m³)] or more~~ shall not be stored in buildings or placed within 5 feet (1,524 mm) of combustible walls, <u>metals walls</u> , building openings or <u>combustible</u> roof eave lines. <u>Dumpsters and containers 15 cubic yards [405 cubic feet (12 m³)] capacity, or more, shall be a minimum of 10 feet (3,048 mm) from combustible walls, metal walls, building openings, or roof eave lines. Dumpsters and containers shall not be placed on public sidewalks, streets, or other public property. No rubbish or combustible waste shall be placed, stored, or allowed to accumulate outside of dumpsters or containers. Lids of dumpsters shall be kept closed at all times.</u> Exceptions: 1. Dumpsters or containers ~~that are placed inside buildings~~ in areas protected by an approved automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3. 2. Storage in a structure shall not be prohibited where the structure is of Type I or IIA construction, located not less than 10 feet (3,048 mm) from other buildings and used exclusively for dumpster or container storage.	Minor changes to base code exceptions. Edits made to clarify code, no major change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
less than 10 feet (3,048 mm) from other buildings and used exclusively for dumpster or container storage. 3. Dumpsters placed in the street right-of-way by government authorities on a temporary basis for neighborhood clean-up campaigns, provided neither the roadway, nor fire apparatus access, nor fire hydrants are obstructed and no other location is practicably available. 4. Dumpsters placed on a temporary basis for demolition or construction work under a valid building permit, provided neither the roadway, nor fire apparatus access, nor fire hydrants are obstructed and no other location is practicably available. 5. Approved containers placed for collection on street right-of-way as authorized by Chapter 39 of the City Code.		3. Dumpsters or containers that are located adjacent to buildings where the exterior area is protected by an approved automatic sprinkler system. 4. Dumpsters placed in the street right-of-way by government authorities on a temporary basis for neighborhood clean-up campaigns, provided neither the roadway, nor fire apparatus access, nor fire hydrants are obstructed and no other location is practicably available. 5. Dumpsters placed on a temporary basis for demolition or construction work under a valid construction permit, provided neither the roadway, nor fire apparatus access, nor fire hydrants are obstructed and no other location is practicably available. 6. Approved containers placed for collection on street right-of-way as authorized by Chapter 39 of the City Code.	
304.4 Dumpster information required. The name of the dumpster company or responsible party and a contact telephone number shall be placed on dumpsters and other bulk containers as provided by Section 39-97 of the <i>City Code</i>.		304.4 Dumpster information required. The name of the dumpster company or responsible party and a contact telephone number shall be placed on dumpsters and other bulk containers as provided by Section 39-97 of the <i>City Code</i>.	No change to Houston amendment
305.1 Clearance from ignition sources. Clearance between ignition sources, such as luminaires, heaters, flame-producing devices and combustible materials, shall be maintained in an <i>approved</i> manner. The clearance between combustible materials and unit heaters, radiant heaters, duct furnaces, flues and other heat producing devices shall be in accordance with the clearance shown on the product listing, but in no case shall be less than 3 feet (914.4 mm) in all directions, except as provided for in the <i>Building Code</i>.		305.1 Clearance from ignition sources. Clearance between ignition sources, such as luminaires, heaters, flame-producing devices and combustible materials, shall be maintained in an <i>approved</i> manner. The clearance between combustible materials and unit heaters, radiant heaters, duct furnaces, flues and other heat producing devices shall be in accordance with the clearance shown on the product listing, but in no case shall be less than 3 feet (914.4 mm) in all directions, except as provided for in the <i>Building Code</i>.	No change to Houston amendment
307.1 General. A person shall not kindle or maintain or authorize to be kindled or maintained any <i>open burning</i> or recreational fire unless conducted and <i>approved</i> in accordance with Sections 307.1.1 through 307.5. Exception: When <i>approved</i> by the <i>fire code official</i>, and where consistent with state, federal and local environmental laws and regulations, <i>open burning</i> shall be conducted in accordance with Houston Fire Department LSB Standard No. 16, “Open Burning and Recreational Fires.” A permit is required for any fire authorized under this exception.		307.1 General. A person shall not kindle or maintain or authorize to be kindled or maintained any <i>open burning</i> or recreational fire unless conducted and <i>approved</i> in accordance with Sections 307.1.1 through 307.5. Exception: When <i>approved</i> by the <i>fire code official</i>, and where consistent with state, federal and local environmental laws and regulations, <i>open burning</i> shall be conducted in accordance with Houston Fire Department LSB Standard No. 16, “Open Burning and Recreational Fires.” A permit is required for any fire authorized under this exception.	No change to Houston amendment
307.1.1 Prohibited open burning. Open burning that is offensive or objectionable because of smoke or odor emissions or shall be prohibited when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited. Exception: Prescribed burning for the purpose of reducing the impact of wildland fire when authorized by the <i>fire code official</i>.		307.1.1 Prohibited open burning. Open burning that is offensive or objectionable because of smoke or odor emissions or shall be prohibited when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited. Exception: Prescribed burning for the purpose of reducing the impact of wildland fire when authorized by the <i>fire code official</i>.	No change to Houston amendment
	307.2 Permit required. A permit shall be obtained from the fire code official in accordance with Section 105.6 prior to kindling a fire for recognized silvicultural or range or wildlife management practices, prevention or control of disease or pests, or a bonfire. Application for such approval shall only be presented by and permits issued to the owner of the land upon which the fire is to be kindled.		Minor wordsmithing changes to base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	307.5 Attendance. Open burning, bonfires, recreational fires and use of portable outdoor fireplaces shall be constantly attended until the fire is extinguished. ~~A minimum of~~ Not fewer than one portable fire extinguisher complying with Section 906 with a minimum 4-A rating or other approved on-site fire-extinguishing equipment, such as dirt, sand, water barrel, garden hose or water truck, shall be available for immediate utilization.		Minor wordsmithing changes to base code.
	308.1.6 Open-flame devices. Torches and other devices, machines or processes liable to start or cause fire shall not be operated or used in or ~~upon~~ in wildfire risk areas, except by a permit in accordance with Section 105.6 secured from the fire code official. Exception: Use within inhabited premises or designated campsites that are not less than 30 feet (9144 mm) from grass-, grain-, brush- or forest-covered areas.		Minor wordsmithing changes to base code.
	308.1.6.1 Signals and markers. Flame-employing devices, such as lanterns or kerosene road flares, shall not be operated or used as a signal or marker in or ~~upon~~ in wildfire risk areas. Exception: The proper use of fusees at the scenes of emergencies or as required by standard railroad operating procedures.		Minor wordsmithing changes to base code.
	308.1.7 Religious ceremonies. ~~When-Where,~~ in the opinion of the fire code official, adequate safeguards have been taken, participants in religious ceremonies are allowed to carry hand-held candles. Hand-held ~~candles shall not be passed from one person to another while lighted.~~		Minor wordsmithing changes to base code.
	308.2 Permits required. Permits shall be obtained from the fire code official in accordance with Section 105.6 prior to engaging in the following activities involving open flame, fire and burning: 1. Use of a torch or flame-producing device to remove paint from a structure. 2. Use of open flame, fire or burning in connection with Group A or E occupancies. 3. Use or operation of torches and other devices, machines or processes liable to start or cause fire in or ~~upon~~ in wildfire risk areas.		Minor wordsmithing changes to base code.
	308.3 Group A occupancies. Open-flame devices shall not be used in a Group A occupancy. Exceptions: 1. Open-flame devices are allowed to be used in the following situations, provided ~~that~~ that approved precautions are taken to prevent ignition of a combustible material or injury to occupants: 1.1. Where necessary for ceremonial or religious purposes in accordance with Section 308.1.7. 1.2. On stages and platforms as a necessary part of a performance in accordance with Section 308.3.2. 1.3. Where candles on tables are securely supported on substantial noncombustible bases and the candle flames are protected. 2. Heat-producing equipment complying with Chapter 6 and the International Mechanical Code.		Minor wordsmithing changes to base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Gas lights are allowed to be used provided ~~that~~ adequate precautions satisfactory to the fire code official are taken to prevent ignition of combustible materials.		
	308.3.2 Theatrical performances. Where approved, open-flame devices used in conjunction with theatrical performances are allowed to be used ~~when~~ where adequate safety precautions have been taken in accordance with NFPA 160.		Minor wordsmithing changes to base code.
	SECTION 309 POWERED INDUSTRIAL TRUCKS AND EQUIPMENT 309.1 General. Powered industrial trucks and similar equipment including, but not limited to, floor scrubbers and floor buffers, shall be operated and maintained in accordance with Section 309.2 through ~~309.6~~ 309.7.		Base code reference section has been updated.
	309.2 Use in hazardous (classified) locations. Powered industrial trucks used in areas designated as hazardous (classified) locations in accordance with NFPA 70 shall be listed and labeled for use in the environment intended in accordance with NFPA 505.		New base code section for powered industrial truck utilization in certain hazardous locations.
	~~309.2~~ 309.3 Battery chargers. Battery chargers shall be of an approved type. Combustible storage shall be kept not less than 3 feet (915 mm) from battery chargers. Battery charging shall not be conducted in areas ~~accessible~~ open to the public.		Minor wordsmithing changes to base code.
	~~309.3~~ 309.4 Ventilation.		Base code renumbering.
	~~309.4~~ 309.5 Fire extinguishers.		Base code renumbering.
	~~309.5~~ 309.6 Refueling.		Base code renumbering.
	~~309.6~~ 309.7 Repairs.		Base code renumbering.
	310.2 Prohibited areas. Smoking shall be prohibited where conditions are such as to make smoking a hazard, and in spaces where flammable or combustible materials are stored or handled.		New base code exception for Group I-2 occupancies.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	Exception: In Group I-2 occupancies, patients shall be permitted to smoke in designated patient care areas based on the clinical needs of the patient.		
	310.2.1 Group I-2. In Group I-2 occupancies, smoking shall be prohibited in patient care areas or where oxygen is used, stored or handled.		New base code section prohibiting smoking in Group I-1 occupancy care areas.
	310.3 “No Smoking” signs. The fire code official is authorized to order the posting of “No Smoking” signs <u>or the international symbol for no smoking</u> in a conspicuous location in each structure or location in which smoking is prohibited. The content, lettering, size, color and location of required “No Smoking” signs shall be <i>approved</i> . Exception: “No Smoking” signs are not required in interior locations of the facility where signs are displayed at all major entrances into the facility.		Minor changes to base code provisions.
	310.6 Ash trays. Where smoking is permitted, suitable noncombustible ash trays or match receivers shall be provided on each table and at other appropriate locations. <u>In Group I-2 occupancies, noncombustible metal containers with self-closing covers shall be provided in areas where smoking is permitted.</u>		New requirements for ashtrays in Group I-2 occupancies.
311.1.1 Abandoned premises. Buildings, structures and premises for which an owner cannot be identified or located by dispatch of a certificate of mailing to the last known or registered address, which persistently or repeatedly become unprotected or unsecured, which have been occupied by unauthorized persons or for illegal purposes, or which present a danger of structural collapse or fire spread to adjacent properties shall be considered abandoned, declared unsafe and abated by demolition or rehabilitation in accordance with the ~~International Property Maintenance Code and the International Building Code~~ procedures set forth in Chapter 10, Articles VIII and IX, of the City Code.	311.1.1 Abandoned premises. Buildings, structures and premises for which an owner cannot be identified or located by dispatch of a certificate of mailing to the last known or registered address, which persistently or repeatedly become unprotected or unsecured, which have been occupied by unauthorized persons or for illegal purposes, or which present a danger of structural collapse or fire spread to adjacent properties shall be considered to be abandoned, declared unsafe and abated by demolition or rehabilitation in accordance with the International Property Maintenance Code and the International Building Code.	311.1.1 Abandoned premises. Buildings, structures and premises for which an owner cannot be identified or located by <u>dispatch of a certificate of mailing to the last known or registered address</u> , which persistently or repeatedly become unprotected or unsecured, which have been occupied by unauthorized persons or for illegal purposes, or which present a danger of structural collapse or fire spread to adjacent properties shall be considered <u>to be</u> abandoned, declared unsafe and abated by demolition or rehabilitation in accordance with the <u>International Property Maintenance Code and the International Building Code</u> procedures set forth in Chapter 10, Articles VIII and IX, of the City Code.	Minor wordsmithing to base code language. No change to Houston amendment
	311.2.1 Security. Exterior and interior openings accessible open to other tenants or unauthorized persons shall be boarded, locked, blocked or otherwise protected to prevent entry by unauthorized <u>individuals. The fire code official is authorized to placard, post signs, erect barrier tape or take similar measures as necessary to secure public safety.</u>		Minor wordsmithing to base code language. Base code updated to authorize fire code official to take certain steps to ensure public safety.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	311.2.2 Fire protection. Fire alarm, sprinkler and stand-pipe protection systems shall be maintained in an operable condition at all times. Exceptions: 1. Where the premises have been cleared of all combustible materials and debris and, in the opinion of the <i>fire code official</i>, the type of construction, <i>fire separation distance</i> and security of the premises do not create a fire hazard. 2. Where <i>approved</i> by the fire ~~chief~~ code official , buildings that will not be heated and where <i>fire protection systems</i> will be exposed to freezing temperatures, fire alarm and automatic <i>sprinkler systems</i> are permitted to be placed out of service and standpipes are permitted to be maintained as dry systems (without an automatic water supply), provided ~~that~~ the building ~~has no~~ does not have contents or storage, and windows, doors and other openings are secured to prohibit entry by unauthorized persons. 3. Where <i>approved</i> by the <i>fire code official</i> , fire alarm and automatic <i>sprinkler systems</i> are permitted to be placed out of service in seasonally occupied buildings: that will not be heated; where fire protection systems will be exposed to freezing temperatures; where <i>fire areas</i> do not exceed 12,000 square feet (1115 m²); and that do not store motor vehicles or hazardous materials.		Minor wordsmithing to base code language. New exception for sprinkler systems being placed out of service.
	314.4 Vehicles. Liquid-fueled or gaseous-fueled vehicles, aircraft, boats or other motorcraft shall not be located indoors except as follows: 1. The engine starting system is made inoperable or batteries are disconnected except where the <i>fire code official</i> requires that the batteries remain connected to maintain safety features. 2. Fuel in fuel tanks does not exceed one-quarter tank or 5 gallons (19 L) (whichever is least). 3. Fuel tanks and fill openings are closed and sealed to prevent tampering. 4. Vehicles, aircraft, boats or other motorcraft equipment are not fueled or defueled within the building.		Updates to base code provisions.
	SECTION 315 GENERAL STORAGE 315.1 General. Storage shall be in accordance with Sections 315.2 through ~~315.5~~ 315.6. Outdoor pallet storage shall be in accordance with Sections 315.2 and 315.7. Exception: Wood and wood composite pallets stored outdoors at pallet manufacturing and recycling facilities and complying with Section 2810.		Updates to base code provisions for outdoor storage.

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	315.3.1 Ceiling clearance. Storage shall be maintained 2 feet (610 mm) or more below the ceiling in nonsprinklered areas of buildings or not less than 18 inches (457 mm) below sprinkler head deflectors in sprinklered areas of buildings. Exceptions: 1. The 2-foot (610 mm) ceiling clearance is not required for storage along walls in nonsprinklered areas of buildings. 2. The 18-inch (457 mm) ceiling clearance is not required for storage along walls in areas of buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3		Updates to base code provisions for exceptions to ceiling clearance for indoor storage.
	315.4.1 Storage beneath overhead projections from buildings. Where buildings are protected by an automatic sprinklers system, the outdoor storage, display and handling of combustible materials under eaves, canopies or other projections or overhangs are prohibited except where automatic sprinklers are installed under such eaves, canopies or other projections or overhangs.		Minor wordsmithing changes to base code.
	315.4 Outside storage. Outside storage of combustible materials shall not be located within 10 feet (3048 mm) of a lot line. Exceptions: 1. The separation distance is allowed to be reduced to 3 feet (914 mm) for storage not exceeding 6 feet (1829 mm) in height. 2. The separation distance is allowed to be reduced where the fire code official determines that no hazard to the adjoining property does not exists.		Minor wordsmithing changes to base code.
	315.6 Storage in plenums. Storage shall not be permitted is prohibited in plenums. Abandoned material in plenums shall be deemed to be storage and shall be removed. Where located in plenums, the accessible portion of abandoned cables that are not able to be accessed without causing damage, or requiring demolition to the building shall be identified for future use with a tag or shall be deemed storage and shall be removed.		Minor wordsmithing changes to base code.
315.7 Outdoor pallet storage. Pallets stored outdoors shall comply with Sections 315.7 through 315.7.7. Pallets stored within a building shall be protected in accordance with Chapter 32.	315.7 Outdoor pallet storage. Pallets stored outdoors shall comply with Sections 315.7 through 315.7.7. Pallets stored within a building shall be protected in accordance with Chapter 32.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.
315.7.1 Storage beneath overhead projections from buildings. Where buildings are equipped throughout with an automatic sprinkler system, the outdoor storage of pallets under eaves, canopies or other projections or overhangs is prohibited except where automatic sprinklers are installed under such eaves, canopies or other projections or overhangs.	315.7.1 Storage beneath overhead projections from buildings. Where buildings are equipped throughout with an automatic sprinkler system, the outdoor storage of pallets under eaves, canopies or other projections or overhangs are prohibited except where automatic sprinklers are installed under such eaves, canopies or other projections or overhangs.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.

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315.7.2 Distance to lot line. Pallet storage shall not be located within 10 feet (3,048 mm) of a <i>lot line</i> .	315.7.2 Distance to lot line. Pallet storage shall not be located within 10 feet (3048 mm) of a <i>lot line</i> .		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.3 Storage height. Pallet storage shall not exceed 20 feet (6,096 mm) in height.	315.7.3 Storage height. Pallet storage shall not exceed 20 feet (6096 mm) in height.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.4 Pallet pile stability and size. Pallet stacks shall be arranged to form stable piles. Individual pallet piles shall cover an area not greater than 400 square feet (37 m²).	315.7.4 Pallet pile stability and size. Pallet stacks shall be arranged to form stable piles. Individual pallet piles shall cover an area not greater than 400 square feet (37 m²).		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.5 Pallet types. Pallets shall be all wood, with slatted or solid top or bottom, with metal fasteners, or shall be plastic or composite pallets, listed and labeled in accordance with UL 2335 or FM 4996. Plastic pallets shall be both solid and gridded deck, independent of the pallet manufacturing process, type of resin used in fabrication or geometry of the pallet.	315.7.5 Pallet types. Pallets shall be all wood, with slatted or solid top or bottom, with metal fasteners, or shall be plastic or composite pallets, <i>listed</i> and <i>labeled</i> in accordance with UL 2335 or FM 4996. Plastic pallets shall be both solid and gridded deck, independent of the pallet manufacturing process, type of resin used in fabrication or geometry of the pallet.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.6 Pile separation distance. In addition to the other requirements of this section, pallet stacks and piles shall be separated in accordance with Sections 315.7.6.1 and 315.7.6.2.	315.7.6 Pile separation distances. In addition to the other requirements of this section, pallet stacks and piles shall be separated in accordance with Sections 315.7.6.1 and 315.7.6.2.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.6.1 Building separation. Pallets stacks and piles shall be separated from buildings in accordance with Table 315.7.6(1) for wood pallets and Table 315.7.6(2) for plastic pallets.	315.7.6.1 Building separation. Pallet stacks and piles shall be separated from buildings in accordance with Table 315.7.6(1) for wood pallets and Table 315.7.6(2) for plastic pallets.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.6.2 Separation from other pallets and on-site storage. Pallets shall be separated from other pallet piles and other storage in accordance with Table 315.7.6(3) for wood pallets and Table 315.7.6(4) for plastic pallets.	315.7.6.2 Separation from other pallets and on-site storage. Pallets shall be separated from other pallet piles and other storage in accordance with Table 315.7.6(3) for wood pallets and Table 315.7.6(4) for plastic pallets.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
315.7.7 Prohibited locations. Pallets shall not be stored underneath high-voltage transmission lines, elevated roadways or elevated railways.	315.7.7 Prohibited locations. Pallets shall not be stored underneath high-voltage transmission lines, elevated roadways or elevated railways.		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.																																																
TABLE 315.7.6(1) SEPARATION DISTANCE BETWEEN WOOD PALLET STACKS AND BUILDINGS	TABLE 315.7.6(1) SEPARATION DISTANCE BETWEEN WOOD PALLET STACKS AND BUILDINGS SEPARATION DISTANCE BETWEEN WOOD PALLET STACKS AND BUILDINGS<table><tr><th rowspan="2">WALL CONSTRUCTION</th><th rowspan="2">OPENING TYPE</th><th colspan="3">WOOD PALLET SEPARATION DISTANCE (feet)</th></tr><tr><th>≤ 50 Pallets</th><th>51 to 200 Pallets</th><th>> 200 Pallets</th></tr><tr><td>Masonry</td><td>None</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Masonry</td><td>Fire-rated glazing with open sprinklers</td><td>2</td><td>5</td><td>20</td></tr><tr><td>Masonry</td><td>Fire-rated glazing</td><td>4@ 5</td><td>5 10</td><td>20</td></tr><tr><td>Masonry</td><td>Plain glass with open sprinklers</td><td>4@ 5</td><td>5 10</td><td>20</td></tr><tr><td>Noncombustible</td><td>None</td><td>4@ 5</td><td>5 10</td><td>20</td></tr><tr><td>Wood with open sprinklers</td><td>—</td><td>4@ 5</td><td>5 10</td><td>20</td></tr><tr><td>Wood</td><td>None</td><td>15</td><td>30</td><td>90</td></tr><tr><td>Any</td><td>Plain glass</td><td>15</td><td>30</td><td>90</td></tr></table>For SI: 1 foot = 304.8 mm.	WALL CONSTRUCTION	OPENING TYPE	WOOD PALLET SEPARATION DISTANCE (feet)			≤ 50 Pallets	51 to 200 Pallets	> 200 Pallets	Masonry	None	2	2	2	Masonry	Fire-rated glazing with open sprinklers	2	5	20	Masonry	Fire-rated glazing	4@ 5	5 10	20	Masonry	Plain glass with open sprinklers	4@ 5	5 10	20	Noncombustible	None	4@ 5	5 10	20	Wood with open sprinklers	—	4@ 5	5 10	20	Wood	None	15	30	90	Any	Plain glass	15	30	90		New base code section for outdoor pallet storage. Previous Houston removed as provision is now base code.
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	SECTION 316 HAZARDS TO FIRE FIGHTERS		No Houston amendment.																
	316.2.1 Exterior access to shaftways. Outside openings accessible to that can be reached by the fire department and that open directly on a hoistway or shaftway communicating between two or more floors in a building shall be plainly marked with the word SHAFTWAY in red letters not less than 6 inches (152 mm) high on a white background. Such warning signs shall be placed so as to be readily discernible from the outside of the building.		Minor wordsmithing to base code language.																
	SECTION 317 ROOFTOP GARDENS AND LANDSCAPED ROOFS 317.1 General. Landscaped roofs shall be installed and maintained in accordance with Sections 317.2 through 317.5 and Sections 1505 and 1507.16 of the International Building Code.		Minor changes to base code.																
	317.2 Landscaped roof size. Landscaped roof areas shall not exceed 15,625 square feet (1450 m²) in size for any single area with a maximum dimension of 125 feet (39 m) in length or width. A minimum 6-foot-wide (1.8 m) clearance consisting of a listed Class A roof assembly tested in accordance with ASTM E108 or UL 790 shall be provided between adjacent landscaped roof areas.		Minor changes to base code.																
	317.3 Rooftop structure and equipment clearance. For all vegetative roofs abutting combustible vertical surfaces, a Class A-rated roof system complying with ASTM E108 or 790—2004 shall be achieved for a minimum 6-foot-wide (1829 mm) continuous border placed around rooftop structures and all rooftop equipment including, but not limited to, mechanical and machine rooms, penthouses, skylights, roof vents, solar panels, antenna supports and building service equipment.		Minor changes to base code.																
SECTION 319 MOBILE FOOD UNITS AND OTHER MOBILE FOOD PREPARATION VEHICLES 319.1 General. Mobile food units, and other mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors shall comply with this section, the provisions of the Houston Health Code and Chapter 20 of the City Code, whichever is more restrictive.	SECTION 319 MOBILE FOOD PREPARATION VEHICLES 319.1 General. Mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors shall comply with this section.	SECTION 319 MOBILE FOOD UNITS AND OTHER MOBILE FOOD PREPARATION VEHICLES 319.1 General. Mobile food units and other mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors shall comply with this section, the provisions of the Houston Health Code and Chapter 20 of the City Code, whichever is more restrictive.	New base code section for mobile food vehicles. No changes to Houston amendment, incorporated into base code language.																

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319.1.1 Filling. Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the <i>fire code official</i> .		319.1.1 Filling. Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the <i>fire code official</i> .	No change to Houston amendment
319.1.2 Spacing. The operator of a mobile food unit in, on, or in conjunction with which any amount of LP-gas is used to prepare food shall not operate such unit within 25 feet of another mobile food unit.		319.1.2 Spacing. The operator of a mobile food unit in, on, or in conjunction with which any amount of LP-gas is used to prepare food shall not operate such unit within 25 feet of another mobile food unit.	No change to Houston amendment
319.1.3 Transport. The <i>fire code official</i> is authorized and directed to take action as may be reasonably necessary to protect the public health, safety and welfare where any operator of a mobile food unit engaged in the transportation of LP-gas within the city is suspected of violating any state or federal laws, rules and regulations, as amended from time to time, specifically Title 49, Part 173.6 of the Federal Code of Regulations.		319.1.3 Transport. The <i>fire code official</i> is authorized and directed to take action as may be reasonably necessary to protect the public health, safety and welfare where any operator of a mobile food unit engaged in the transportation of LP-gas within the city is suspected of violating any state or federal laws, rules and regulations, as amended from time to time, specifically Title 49, Part 173.6 of the Federal Code of Regulations.	No change to Houston amendment
319.2 Permit required. Permits shall be required as set forth in Section 105.6 and Chapter 20 of the <i>City Code</i> .	319.2 Permit required. Permits shall be required as set forth in Section 105.5.	319.2 Permit required. Permits shall be required as set forth in Section 105.5 and Chapter 20 of the <i>City Code</i> . No permit for the use of LP-gas in connection with a mobile food unit shall be issued unless the operator provides to the fire department a detailed description of the means and methods by which the operator will secure the LP-gas container against shifting (bracing) and will protect the LP-gas container against damage (blocking) by third parties, which means and methods are approved by the fire code official, and pays the administrative and permit fees required in Section 107. In addition to complying with the applicable requirements of this chapter, the operator of a mobile food unit in, on, or in conjunction with which LP-gas is used to cook or otherwise prepare food shall obtain from the fire department a permit for the use of LP-gas and LP-gas equipment for each mobile food unit and shall make the permit available for inspection and/or copying upon the request of any peace officer, fire code official, or health officer.	Wording added to Houston amendment to clarify its intent and HFD enforcement.
319.3 Exhaust hood. Cooking equipment that produces grease-laden vapors shall be provided with a kitchen exhaust hood in accordance with Section 609.	319.3 Exhaust hood. Cooking equipment that produces grease-laden vapors shall be provided with a kitchen exhaust hood in accordance with Section 606.		Removed Houston amendment, no covered in base code.
319.4 Fire protection. Fire protection shall be provided in accordance with Sections 319.4.1 and 319.4.2.	319.4 Fire protection. Fire protection shall be provided in accordance with Sections 319.4.1 and 319.4.2.		Removed Houston amendment, no covered in base code.
319.4.1 Fire protection for cooking equipment. Cooking equipment shall be protected by automatic fire extinguishing systems in accordance with Section 904.12. All systems shall be in place one year after adoption of this code.	319.4.1 Fire protection for cooking equipment. Cooking equipment shall be protected by automatic fire extinguishing systems in accordance with Section 904.13.		Removed Houston amendment, no covered in base code.
319.4.2 Fire extinguisher. Portable fire extinguishers shall be provided in accordance with Section 904.12.5.	319.4.2 Fire extinguisher. Portable fire extinguishers shall be provided in accordance with Section 904.12.5.		Removed Houston amendment, no covered in base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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319.5 Appliance connection to fuel supply piping. Gas cooking appliances shall be secured in place and connected to fuel-supply piping with an appliance connector complying with ANSI Z21.69/CSA 6.16. The connector installation shall be configured in accordance with the manufacturer's installation instructions. Movement of appliances shall be limited by restraining devices installed in accordance with the connector and appliance manufacturers' instructions.	319.5 Appliance connection to fuel supply piping. Gas cooking appliances shall be secured in place and connected to fuel-supply piping with an appliance connector complying with ANSI Z21.69/CSA 6.16. The connector installation shall be configured in accordance with the manufacturer's installation instructions. Movement of appliances shall be limited by restraining devices installed in accordance with the connector and appliance manufacturers' instructions.		Removed Houston amendment, no covered in base code.
319.6 Cooking oil storage containers. Cooking oil storage containers within mobile food preparation vehicles shall have a maximum aggregate volume not more than 120 gallons (454 L), and shall be stored in such a way as to not be toppled or damaged during transport.	319.6 Cooking oil storage containers. Cooking oil storage containers within mobile food preparation vehicles shall have a maximum aggregate volume not more than 120 gallons (454 L), and shall be stored in such a way as to not be toppled or damaged during transport.		Removed Houston amendment, no covered in base code.
319.7 Cooking oil storage tanks. Cooking oil storage tanks within mobile food preparation vehicles shall comply with Sections 319.7.1 through 319.7.5.2.	319.7 Cooking oil storage tanks. Cooking oil storage tanks within mobile food preparation vehicles shall comply with Sections 319.7.1 through 319.7.5.2.		Removed Houston amendment, no covered in base code.
319.7.1 Metallic storage tanks. Metallic cooking oil storage tanks shall be <i>listed</i> in accordance with UL 80 or UL 142 and shall be installed in accordance with the tank manufacturer's instructions.	319.7.1 Metallic storage tanks. Metallic cooking oil storage tanks shall be <i>listed</i> in accordance with UL 80 or UL 142 and shall be installed in accordance with the tank manufacturer's instructions.		Removed Houston amendment, no covered in base code.
319.7.2 Nonmetallic storage tanks. Nonmetallic cooking oil storage tanks shall be installed in accordance with the tank manufacturer's instructions and shall comply with both of the following: 1. Tanks shall be <i>listed</i> for use with cooking oil, including maximum temperature to which the tank will be exposed during use. 2. Tank capacity shall not exceed 200 gallons (757 L) per tank.	319.7.2 Nonmetallic storage tanks. Nonmetallic cooking oil storage tanks shall be installed in accordance with the tank manufacturer's instructions and shall comply with both of the following: 1. Tanks shall be <i>listed</i> for use with cooking oil, including maximum temperature to which the tank will be exposed during use. 2. Tank capacity shall not exceed 200 gallons (757 L) per tank.		Removed Houston amendment, no covered in base code.
319.7.3 Cooking oil storage system components. Metallic and nonmetallic cooking oil storage system components shall include, but are not limited to, piping, connections, fittings, valves, tubing, hose, pumps, vents and other related components used for the transfer of cooking oil.	319.7.3 Cooking oil storage system components. Metallic and nonmetallic cooking oil storage system components shall include, but are not limited to, piping, connections, fittings, valves, tubing, hose, pumps, vents and other related components used for the transfer of cooking oil.		Removed Houston amendment, no covered in base code.
319.7.4 Design criteria. The design, fabrication and assembly of system components shall be suitable for the working pressures, temperatures and structural stresses to be encountered by the components.	319.7.4 Design criteria. The design, fabrication and assembly of system components shall be suitable for the working pressures, temperatures and structural stresses to be encountered by the components.		Removed Houston amendment, no covered in base code.
319.7.5 Tank venting. Normal and emergency venting shall be provided for cooking oil storage tanks.	319.7.5 Tank venting. Normal and emergency venting shall be provided for cooking oil storage tanks.		Removed Houston amendment, no covered in base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
319.7.5.1 Normal vents. Normal vents shall be located above the maximum normal liquid line and shall have a minimum effective area not smaller than the largest filling or withdrawal connection. Normal vents are not required to vent to the exterior.	319.7.5.1 Normal vents. Normal vents shall be located above the maximum normal liquid line and shall have a minimum effective area not smaller than the largest filling or withdrawal connection. Normal vents are not required to vent to the exterior.		Removed Houston amendment, no covered in base code.
319.7.5.2 Emergency vents. Emergency relief vents shall be located above the maximum normal liquid line and shall be in the form of a device or devices that will relieve excessive internal pressure caused by an exposure fire. For nonmetallic tanks, the emergency relief vent shall be allowed to be in the form of construction. Emergency vents are not required to discharge to the exterior.	319.7.5.2 Emergency vents. Emergency relief vents shall be located above the maximum normal liquid line and shall be in the form of a device or devices that will relieve excessive internal pressure caused by an exposure fire. For nonmetallic tanks, the emergency relief vent shall be allowed to be in the form of construction. Emergency vents are not required to discharge to the exterior.		Removed Houston amendment, no covered in base code.
319.8 LP-gas systems. Where LP-gas systems are used to provide fuel for cooking appliances, such systems shall comply with Chapter 61 and Sections 319.8.1 through 319.8.5.	319.8 LP-gas systems. Where LP-gas systems are used to provide fuel for cooking appliances, such systems shall comply with Chapter 61 and Sections 319.8.1 through 319.8.5.		Removed Houston amendment, no covered in base code.
319.8.1 Maximum aggregate volume. The maximum aggregate capacity of LP-gas containers transported on the vehicle and used to fuel cooking appliances only shall not exceed 200 pounds (91 kg) propane capacity.	319.8.1 Maximum aggregate volume. The maximum aggregate capacity of LP-gas containers transported on the vehicle and used to fuel cooking appliances only shall not exceed 200 pounds (91 kg) propane capacity.		Removed Houston amendment, no covered in base code.
319.8.2 Protection of container. LP-gas containers installed on the vehicle shall be securely mounted and restrained to prevent movement.	319.8.2 Protection of container. LP-gas containers installed on the vehicle shall be securely mounted and restrained to prevent movement.		Removed Houston amendment, no covered in base code.
319.8.3 LP-gas container construction. LP-gas containers shall be manufactured in compliance with the requirements of NFPA 58.	319.8.3 LP-gas container construction. LP-gas containers shall be manufactured in compliance with the requirements of NFPA 58.		Removed Houston amendment, no covered in base code.
319.8.4 Protection of system piping. LP-gas system piping, including valves and fittings, shall be adequately protected to prevent tampering, impact damage, and damage from vibration.	319.8.4 Protection of system piping. LP-gas system piping, including valves and fittings, shall be adequately protected to prevent tampering, impact damage, and damage from vibration.		Removed Houston amendment, no covered in base code.
319.8.5 LP-gas alarms. A <i>listed</i> LP-gas alarm shall be installed within the vehicle in the vicinity of LP-gas systems components, in accordance with the manufacturer's instructions.	319.8.5 LP-gas alarms. A <i>listed</i> LP-gas alarm shall be installed within the vehicle in the vicinity of LP-gas systems components, in accordance with the manufacturer's instructions.		Removed Houston amendment, no covered in base code.
319.9 CNG systems. Where CNG systems are used to provide fuel for cooking appliances, such systems shall comply with Sections 319.9.1 through 319.9.4.	319.9 CNG systems. Where CNG systems are used to provide fuel for cooking appliances, such systems shall comply with Sections 319.9.1 through 319.9.4.		Removed Houston amendment, no covered in base code.
319.9.1 CNG containers supplying only cooking fuel. CNG containers installed solely to provide fuel for cooking purposes shall be in accordance with Sections 319.9.1.1 through 319.9.1.3.	319.9.1 CNG containers supplying only cooking fuel. CNG containers installed solely to provide fuel for cooking purposes shall be in accordance with Sections 319.9.1.1 through 319.9.1.3.		Removed Houston amendment, no covered in base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
319.9.1.1 Maximum aggregate volume. The maximum aggregate capacity of CNG containers transported on the vehicle shall not exceed 1,300 pounds (590 kg) water capacity.	319.9.1.1 Maximum aggregate volume. The maximum aggregate capacity of CNG containers transported on the vehicle shall not exceed 1,300 pounds (590 kg) water capacity.		Removed Houston amendment, no covered in base code.
319.9.1.2 Protection of container. CNG containers shall be securely mounted and restrained to prevent movement. Containers shall not be installed in locations subject to a direct vehicle impact.	319.9.1.2 Protection of container. CNG containers shall be securely mounted and restrained to prevent movement. Containers shall not be installed in locations subject to a direct vehicle impact.		Removed Houston amendment, no covered in base code.
319.9.1.3 CNG container construction. CNG containers shall be an NGV-2 cylinder.	319.9.1.3 CNG container construction. CNG containers shall be an NGV-2 cylinder.		Removed Houston amendment, no covered in base code.
319.9.2 CNG containers supplying transportation and cooking fuel. Where CNG containers and systems are used to supply fuel for cooking purposes in addition to being used for transportation fuel, the installation shall be in accordance with NFPA 52.	319.9.2 CNG containers supplying transportation and cooking fuel. Where CNG containers and systems are used to supply fuel for cooking purposes in addition to being used for transportation fuel, the installation shall be in accordance with NFPA 52.		Removed Houston amendment, no covered in base code.
319.9.3 Protection of system piping. CNG system piping, including valves and fittings, shall be adequately protected to prevent tampering, impact damage and damage from vibration.	319.9.3 Protection of system piping. CNG system piping, including valves and fittings, shall be adequately protected to prevent tampering, impact damage and damage from vibration.		Removed Houston amendment, no covered in base code.
319.9.4 Methane alarms. A listed methane gas alarm shall be installed within the vehicle in accordance with manufacturer's instructions.	319.9.4 Methane alarms. A listed methane gas alarm shall be installed within the vehicle in accordance with manufacturer's instructions.		Removed Houston amendment, no covered in base code.
319.10 Maintenance. Maintenance of systems on mobile food preparation vehicles shall be in accordance with Sections 319.10.1 through 319.10.3.	319.10 Maintenance. Maintenance of systems on mobile food preparation vehicles shall be in accordance with Sections 319.10.1 through 319.10.3.		Removed Houston amendment, no covered in base code.
319.10.1 Exhaust system. The exhaust system, including hood, grease-removal devices, fans, ducts and other appurtenances, shall be inspected and cleaned in accordance with Section 609.3.	319.10.1 Exhaust system. The exhaust system, including hood, grease-removal devices, fans, ducts and other appurtenances, shall be inspected and cleaned in accordance with Section 609.3.		Removed Houston amendment, no covered in base code.
319.10.2 Fire protection systems and devices. Fire protection systems and devices shall be maintained in accordance with Section 901.6.	319.10.2 Fire protection systems and devices. Fire protection systems and devices shall be maintained in accordance with Section 901.6.		Removed Houston amendment, no covered in base code.
319.10.3 Fuel gas systems. LP-gas containers installed on the vehicle and fuel-gas piping systems shall be inspected annually by an <i>approved</i> inspection agency or a company that is registered with the U.S. Department of Transportation to requalify LP-gas cylinders to ensure that system components are free from damage, suitable	319.10.3 Fuel gas systems. LP-gas containers installed on the vehicle and fuel-gas piping systems shall be inspected annually by an <i>approved</i> inspection agency or a company that is registered with the U.S. Department of Transportation to requalify LP-gas cylinders to ensure that system		Removed Houston amendment, no covered in base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
for the intended service and not subject to leaking. CNG containers shall be inspected every 3 years in a qualified service facility. CNG containers shall not be used past their expiration date as listed on the manufacturer's container label. Upon satisfactory inspection, the <i>approved</i> inspection agency shall affix a tag on the fuel gas system or within the vehicle indicating the name of the inspection agency and the date of satisfactory inspection.	components are free from damage, suitable for the intended service and not subject to leaking. CNG containers shall be inspected every 3 years in a qualified service facility. CNG containers shall not be used past their expiration date as listed on the manufacturer's container label. Upon satisfactory inspection, the <i>approved</i> inspection agency shall affix a tag on the fuel gas system or within the vehicle indicating the name of the inspection agency and the date of satisfactory inspection.		
SECTION 320 ENERGY SYSTEMS 320.1 General. Energy systems shall be installed in accordance with NFPA 70, 111, 855, and the most restrictive provisions specified in the most current edition of the International Codes.	SECTION 320 ADDITIVE MANUFACTURING (3D PRINTING) 320.1 General. Additive manufacturing equipment and operations shall comply with Section 320.		New base code section to provide requirements for 3D printing operations. Previous Houston amendment relocated to Section 322.
	320.1.1 Scope. Additive manufacturing shall comply with one of the following: 1. Nonindustrial additive manufacturing shall comply with Section 320.2. 2. Industrial additive manufacturing shall comply with Section 320.3.		New base code section to provide requirements for 3D printing operations.
	320.1.2 Installation, operation and maintenance. 3D printers and associated additive manufacturing equipment shall be installed, operated and maintained in accordance with this code, the listing and the manufacturer's instructions.		New base code section to provide requirements for 3D printing operations.
	320.1.3 Production materials. Only the production materials <i>listed</i> for use with the equipment and included in the manufacturer's instructions shall be used.		New base code section to provide requirements for 3D printing operations.
	320.2 Nonindustrial additive manufacturing. Nonindustrial additive manufacturing equipment and operations shall comply with Sections 320.2.1 and 320.2.2. Additive manufacturing equipment and operations that do not comply with Section 320.2 shall comply with Section 320.3.		New base code section to provide requirements for 3D printing operations.
	320.2.1 Listing. 3D printers used in nonindustrial additive manufacturing shall be <i>listed</i> and <i>labeled</i> in accordance with UL 2011, UL 60950-1 or UL 62368-1. The listing shall also verify: 1. The 3D printers are self-contained and utilize maximum 30-liter prepackaged production materials. 2. The operation of the 3D printers shall not create a hazardous (classified) electrical area or zone outside the unit. 3. If any hazardous (classified) electrical area or zone exists inside the unit's outer enclosure, the area shall be protected by intrinsically safe electrical construction or other acceptable protection methods. 4. The 3D printers shall not utilize inert gas or an external <i>combustible dust</i> collection system.		New base code section to provide requirements for 3D printing operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	320.2.2 Occupancies. Nonindustrial additive manufacturing shall be permitted in all occupancy groups.		New base code section to provide requirements for 3D printing operations.
	320.3 Industrial additive manufacturing. Industrial additive manufacturing equipment and operations shall comply with Sections 320.3.1 through 320.3.12.		New base code section to provide requirements for 3D printing operations.
	320.3.1 Permits required. Permits shall be obtained from the <i>fire code official</i> in accordance with Section 105.5 prior to engaging in industrial additive manufacturing operations.		New base code section to provide requirements for 3D printing operations.
	320.3.2 Listing. 3D printers used in industrial additive manufacturing shall be <i>listed</i> and <i>labeled</i> in accordance with UL 2011 or <i>approved</i> for the application based on a field evaluation conducted by an <i>approved</i> agency.		New base code section to provide requirements for 3D printing operations.
	320.3.3 Combustible ducts and metals. Industrial additive manufacturing operations that store, use or produce <i>combustible dust</i> , combustible particulate solids or combustible metals shall comply with Chapter 22 and this section.		New base code section to provide requirements for 3D printing operations.
	320.3.4 Powder evaluation. Printing powders used in industrial additive manufacturing operations shall be tested for combustibility in accordance with NFPA 484 or NFPA 652 as applicable. A copy of the test reports shall be provided to the <i>fire code official</i> upon request.		New base code section to provide requirements for 3D printing operations.
	320.3.5 Combustible (nonmetallic) dusts. Industrial additive manufacturing operations that store, use or produce combustible (nonmetallic) dusts shall comply with NFPA 654.		New base code section to provide requirements for 3D printing operations.
	320.3.6 Combustible metals. Industrial additive manufacturing operations that store or use combustible metals shall comply with NFPA 484.		New base code section to provide requirements for 3D printing operations.
	320.3.7 Ancillary equipment. Ancillary equipment provided for recycling, sieving, vacuuming or handling combustible powders shall be designed and <i>approved</i> for such use.		New base code section to provide requirements for 3D printing operations.
	320.3.8 Hazardous materials. Industrial additive manufacturing operations that store or use hazardous materials exceeding the maximum allowable quantity limits shall comply with Chapter 50.		New base code section to provide requirements for 3D printing operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	320.3.9 Inert gas. Additive manufacturing processes that utilize inert gases shall comply with Chapter 53. Ventilation or gas detection shall be provided in accordance with Section 5307.		New base code section to provide requirements for 3D printing operations.
	320.3.10 Technical assistance. Where required by the <i>fire code official</i> , a report evaluating the acceptability of technologies, processes, products, facilities, materials and uses associated with the operation shall be provided in accordance with Section 104.8.2 and <i>approved</i> .		New base code section to provide requirements for 3D printing operations.
	320.3.11 Performance-based design alternative. Where <i>approved</i> by the <i>fire code official</i> , buildings and facilities where industrial additive manufacturing is performed shall be permitted to comply with the performance-based design options in Section 5001.3 as an alternative to compliance with the other requirements set forth in this section.		New base code section to provide requirements for 3D printing operations.
	320.3.12 Occupancies. Industrial additive manufacturing shall be conducted only in the occupancy groups associated with manufacturing operation and permitted by the Chapter 50 maximum allowable quantity tables. Where <i>approved</i> , the requirements of Section 320.3.6 shall be permitted to provide the technical basis for determining compliance with Table 5003.1.1(1), Note q.		New base code section to provide requirements for 3D printing operations.
	SECTION 321 ARTIFICIAL COMBUSTIBLE VEGETATION 321.1 Artificial combustible vegetation on roofs and near buildings. Artificial combustible vegetation exceeding 6 feet (1829 mm) in height and permanently installed outdoors within 5 feet (1524 mm) of a building or on the roof of a building shall comply with Section 807.4.1. The placement of artificial combustible vegetation shall also comply with Sections 806.3 and 807.4.2. Exception: Artificial decorative vegetation located more than 30 feet (9144 mm) from the exterior wall of a building.		New base code section to provide requirements for 3D printing operations.
		SECTION 322 ENERGY SYSTEMS 322.1 General. Energy systems shall be installed in accordance with this code and NFPA 70, 111, 855.	No change to Houston amendment, relocated from Section 320.
2015 Houston IFC – Chapter 4 Emergency Planning and Preparedness	2021 IFC – Chapter 4 – Emergency Planning and Preparedness	2021 Houston IFC Amendments	Code Change Summary
	SECTION 403 EMERGENCY PREPAREDNESS REQUIREMENTS 403.1 General. In addition to the requirements of Section 401, occupancies, uses and outdoor locations shall comply with the emergency preparedness requirements set forth in Sections 403.2 through 403.12.3.3. Where a fire safety and evacuation plan is required by Sections 403.2 through ~~403.11.4~~ 403.11.5 , evacuation drills shall be in accordance with Section 405 and employee training shall be in accordance with Section 406.		Base code referenced section has been updated.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
403.2.1 Seating plan and permits. In addition to the requirements of Section 404.2, the fire safety and evacuation plans for assembly occupancies, including carnivals, festivals, fair grounds, and trade show exhibitions, shall be submitted when required by the <i>fire code official</i> . Plans shall include a detailed seating plan, <i>occupant load</i> and <i>occupant load</i> limit. Deviations from the <i>approved</i> plans shall be allowed <u>when approved by the <i>fire code official</i></u> , provided the <i>occupant load</i> limit for the occupancy is not exceeded and the <i>aisles</i> and exit accessways remain unobstructed. <u>Permits and plans are required to operate a place of assembly, or a carnival, festival or fair, to use liquid- or gas-fueled vehicles or equipment for competition or display inside an assembly occupancy, to use an assembly area for trade show exhibition purposes, or to use candles or other open-flame devices in assembly areas.</u>	403.2.1 Seating plan. In addition to the requirements of Section 404.2, the fire safety and evacuation plans for assembly occupancies shall include a detailed seating plan, occupant load and occupant load limit. Deviations from the approved plans shall be allowed provided that the occupant load limit for the occupancy is not exceeded and the aisles and exit accessways remain unobstructed.	403.2.1 Seating plan and permits. In addition to the requirements of Section 404.2, the fire safety and evacuation plans for assembly occupancies, including carnivals, festivals, fair grounds, and trade show exhibitions, shall be submitted when required by the <i>fire code official</i> . Plans shall include a detailed seating plan, <i>occupant load</i> and <i>occupant load</i> limit. Deviations from the <i>approved</i> plans shall be allowed <u>when approved by the <i>fire code official</i></u> , provided that the <i>occupant load</i> limit for the occupancy is not exceeded and the <i>aisles</i> and <i>exit</i> accessways remain unobstructed. <u>Permits and plans are required to operate a place of assembly, or a carnival, festival or fair, to use liquid- or gas-fueled vehicles or equipment for competition or display inside an assembly occupancy, to use an assembly area for trade show exhibition purposes, or to use candles or other open-flame devices in assembly areas.</u>	Minor wordsmithing to base code language. No change to Houston amendment.
	403.2.2 Announcements. In theaters, motion picture theaters, auditoriums and similar assembly occupancies in Group A used for noncontinuous programs, an audible announcement shall be made not more than 10 minutes prior to the start of each program to notify the occupants of the location of the exits to be used in the event of a fire or other emergency. Exception: In motion picture theaters, the announcement is allowed to be projected up the screen in a manner approved by the fire code official.		Minor wordsmithing to base code language.
	403.3 Ambulatory care facilities. Ambulatory care facilities shall comply with the requirements of Sections 401 , 403.3.1 through ~~403.3.3-403.3.4~~ as well as 404 and 404 through 406.		Base code referenced section has been updated.
	403.3.4 Emergency evacuation drills. Emergency evacuation drills shall comply with Section 405. Emergency evacuation drills shall be conducted not less than four times per year. Exceptions: The movement of patients to safe areas or to the exterior of the building is not required.		Base code provisions for emergency drills updated.
	403.4 ~~403.3~~ Group B occupancies.		Base code renumbering.
	~~403.3~~ 403.3.1 Ambulatory care facilities.		Base code renumbering.
	403.3.1.1 Fire <u>safety and</u> evacuation plan. The fire safety and evacuation plan required by Section 404 shall include a description of special staff actions. This shall include procedures for stabilizing <u>care recipients</u> in a defend-in-place response, staged evacuation, or full evacuation in conjunction with the entire building if part of a multitenant facility.		Base code renumbering and minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	403.3.1.1.1 Fire safety plan. A copy of the fire safety plan shall be maintained at the facility at all times. The plan shall include all of the following in addition to the requirements of Section 404: 1. Locations of care recipients who are rendered incapable of self-preservation. 2. Maximum number of care recipients rendered incapable of self-preservation. 3. Area and extent of each ambulatory care facility. 4. Location of any special locking arrangements.		Base code renumbering and minor wordsmithing change.
	403.3.1.2 Staff training. Staff shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by the staff at intervals not exceeding three months. Training of new staff shall be provided promptly on entrance to duty. Staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.		Base code renumbering with updates to base code provisions for staff training.
	~~403.5~~ 403.4 Group E occupancies.	403.4 Group E occupancies. An <i>approved</i> fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group E occupancies and for buildings containing both a Group E occupancy and an atrium. Group E occupancies shall comply with Sections 403.4.1 through 403.4.3, <u>and Houston Fire Department LSB Standard No. 08, "Fire Drills."</u>	Base code renumbering. No change to Houston amendment, relocated from Section 403.5.
	~~403.5.1~~ 403.4.1 First emergency evacuation drill.		Base code renumbering.
	~~403.5.2~~ 403.4.2 Time of day.		Base code renumbering.
	~~403.5.3~~ 403.4.3 Assembly points.		Base code renumbering.
		~~403.4.4 Emergency evacuation drill deferral.~~ ~~Drills are not required during periods of inclement weather or when state mandated educational assessment testing is being conducted.~~	No change to Houston amendment, relocated from Section 403.5.4.
403.5 Group E occupancies. An <i>approved</i> fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group E occupancies and for buildings containing both a Group E occupancy and an atrium. Group E occupancies shall comply with Sections 403.5.1	~~403.6~~ 403.5 Group F occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for buildings containing a Group F occupancy where any of the following conditions apply:		Base code renumbering with minor updates to Group F occupancy fire safety evacuation provisions. Previous Houston amendment relocated to Section 403.5.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
through 403.5.3, and Houston Fire Department LSB Standard No. 08, "Fire Drills." Moved to 403.5	1. The Group F occupancy has an occupant load of 500 or more persons. 2. The Group F occupancy has an occupant load of more than 100 persons above or below the lowest level of exit discharge. 3. Group F pallet manufacturing and recycling facilities as required by Section 2810.		
403.5.4 Emergency evacuation drill deferral. Drills are not required during periods of inclement weather or when state mandated educational assessment testing is being conducted. Moved to 403.5.4			Previous Houston amendment relocated to Section 403.5.4.
	~~403.7~~ 403.6 Group H occupancies.		Base code renumbering.
	~~403.7.1~~ 403.6.1 Group H-5 occupancies.		Base code renumbering.
	~~403.7.1.2~~ 403.6.1.2 Plan updating.		Base code renumbering.
	~~403.7.1.3~~ 403.6.1.3 Emergency response team.		Base code renumbering.
	~~403.7.1.4~~ 403.6.1.4 Emergency drills.		Base code renumbering.
	~~403.8~~ 403.7 Group I occupancies.		Base code renumbering.
	~~403.8.1~~ 403.7.1 Group I-1 occupancies.	403.7.1 Group I-1 occupancies. Group I-1 occupancies shall comply with Section 403.7.1.1 through 403.7.1.7, and Houston Fire Department LSB Standard No. 08, "Fire Drills."	Base code renumbering. No change to Houston amendment, relocated from Section 403.8.1.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~403.8.1.1~~403.7.1.1 Fire safety and evacuation plan. The fire safety and evacuation plan required by Section 404 shall include ~~special employee actions, including fire protection procedures necessary for residents, and shall~~ a description of special staff actions. Plans shall include all of the following in addition to the requirements of Section 404: Procedures for full evacuation of care recipients. In Group I-1, Condition 2, procedures for staged evacuation of care recipients through a refuge area in an adjacent <i>smoke compartment</i> and then to an exterior assembly point. Shall be amended or revised upon admission of any resident care recipient with unusual needs.		Base code renumbering. New base code provisions for fire evacuation plans in Group I-1, Condition 2 occupancies.
	~~403.8.1.1.2~~403.7.1.1.1 Fire safety planplans. A copy of the fire safety plan shall be maintained at the facility at all times. The plan Plans shall include the following in addition to the requirements of Section 404.2.2 Section 404: 1. Location and number of resident care recipient sleeping rooms. 2. Location of special locking or egress control arrangements.		Base code renumbering, minor changes to base code language.
	~~403.8.1.2~~403.7.1.2 EmployeeStaff training. ~~Employees~~Staff shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by ~~employees~~ staff at intervals not exceeding ~~two~~ three months. Training of new staff shall be provided promptly upon entrance to duty. ~~A copy of the plan shall be readily available at all times within the facility.~~ Staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.		Base code renumbering. New base code provisions for staff training of fire safety plans.
	~~403.8.1.3~~ 403.7.1.3 Resident training. Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. In Group I-1, Condition 2 occupancies, training shall include evacuation through an adjacent <i>smoke compartment</i> and then to an exterior assembly point. The training shall include actions to take if the primary escape route is blocked. ~~Where the resident is given rehabilitation or habilitation training, methods of fire prevention and actions to take in the event of a fire shall be a part of the rehabilitation training program.~~ Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	403.7.1.4 Drill frequency. In addition to the evacuation drills required in Section 405.3, ~~employees~~ staff shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of <u>operation</u> . ~~Drills are not required to comply with the time requirements of Section 405.5.~~	403.7.1.4 Drill frequency. Emergency evacuation drills shall be conducted in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills." ~~In addition to the evacuation drills required in Section 405.3, staff shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of operation.~~	Base code renumbering and minor wordsmithing changes. No change to Houston amendment, relocated from Section 403.8.1.4.
	~~403.8.2~~ 403.7.2 Group I-2 occupancies. Group I-2 occupancies shall comply with Sections 401, 403.7.2.1 through 403.7.2.4, and 404 through 406.	403.7.2 Group I-2 occupancies. Group I-2 occupancies shall comply with Sections 403.7.2.1 through 403.7.2.4, and Houston Fire Department LSB Standard No. 08, "Fire Drills."	Base code renumbering. No change to Houston amendment, relocated from Section 403.8.2.
	~~403.8.2.1~~ 403.7.2.1 Fire safety and evacuation plans. The fire safety and evacuation plans required by Section 404 shall include a description of special staff <i>actions</i> . Plans shall include all of the following in addition to the requirements of Section 404: 1. Procedures for evacuation for ~~patients~~ care recipients with needs for containment or restraint and post-evacuation containment, where present. 2. A written plan for maintenance of the <i>means of egress</i> . 3. Procedure for a defend-in-place strategy. 4. Procedures for a full-floor or building evacuation, where necessary.		Base code renumbering and minor wordsmithing changes.
	~~403.8.2.2~~ 403.7.2.2 Fire safety plan plans. A copy of the fire safety plan shall be maintained at the facility at all times. ~~The plan~~ Plans shall include all of the following in addition to the requirements of Section 404.2.2: 1. Location and number of ~~patient~~ care recipient sleeping rooms and operating rooms. 2. ~~Location of adjacent smoke compartments or refuge areas.~~ 3. ~~Path of travel to adjacent smoke compartments.~~ 4. 2. ~~Location of special locking, delayed egress or access control arrangements.~~ 5. ~~Location of elevators utilized for patient movement in accordance with the fire safety plan, where provided.~~		Base code renumbering and minor wordsmithing changes.
	403.7.2.3 Staff training. Staff shall be periodically <u>instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by staff at intervals not exceeding three months. Training of new staff shall be provided promptly upon entrance to duty. Staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.</u>		New base code section for staff training of fire safety plans.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~403.8.2.3~~403.7.2.4 Emergency evacuation drills. Emergency evacuation drills shall comply with Section 405. Exceptions: ~~1. The movement of patients to safe areas or to the exterior of the building is not required.~~ ~~2. Where emergency evacuation drills are conducted after visiting hours or where patients or residents are expected to be asleep, a coded announcement shall be an acceptable alternative to audible alarms.~~		Base code renumbering.
	403.7.2.5 Fire loss prevention in operating rooms. Fire protection features and procedures for fire loss prevention in surgical operating rooms shall comply with NFPA 99, Section 16.13.		New base code provisions for fire prevention in Group I-2 operating rooms.
	403.7.3.1 Fire safety and evacuation plans. The fire safety and evacuation plans required by Section 404 shall include a description of special staff actions. Plans shall include all of the following in addition to the requirements of Section 404: - Procedures for evacuation of detainees with needs for containment or restraint and post-evacuation containment, where present. - Procedures for a defend-in-place strategy. - Procedures for a full-floor or building evacuation, where necessary.		New base code provisions for fire safety plans for Group I-3 occupancies.
	403.7.3.2 Fire safety plan. A copy of the fire safety plan shall be maintained at the facility at all times. The plan shall include both of the following in addition to the requirements of Section 404.2.2: - Location and number of cells. - Location of special locking arrangements.		New base code provisions for fire safety plans for Group I-3 occupancies.
	403.7.3.3 Staff training. Staff shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by staff at intervals not exceeding three months. Training of new staff shall be provided promptly upon entrance to duty. Staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.		New base code provisions for fire safety plans for Group I-3 occupancies.
	~~403.8.3.2~~ 403.7.3.4 Staffing ~~Employee staffing.~~ Group I-3 occupancies shall be provided with 24-hour staffing. A staff person ~~An employee~~ shall be within three floors or 300 feet (91 440 mm) horizontal distance of the access door of each resident housing area. In Group I-3 Conditions 3, 4 and 5, as defined in Chapter 2, the arrangement shall be such that the ~~employee~~ staff involved can start release of locks necessary for emergency evacuation or rescue and initiate other necessary emergency actions within 2 minutes of an alarm.		Base code renumbering and minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Exception: ~~An employee~~ A staff person shall not be required to be within three floors or 300 feet (91 440 mm) horizontal distance of the access door of each resident housing area in areas in which all locks are unlocked remotely and automatically in accordance with Section 408.4 of the <i>International Building Code</i> .		
	403.7.3.5 Notification. Provisions shall be made for residents in Group I-3 Conditions 3, 4 and 5, as defined in Chapter 2, to readily notify staff of an emergency.		Base code renumbering and minor wordsmithing change.
	~~403.8.3.4~~ 403.7.3.6 Keys. Keys necessary for unlocking doors installed in a <i>means of egress</i> shall be individually identifiable by both touch and sight.		Base code renumbering.
	~~403.9~~ 403.8 Group M occupancies.		Base code renumbering.
403.8.1 Group I-1 occupancies. Group I-1 occupancies shall comply with Section 403.8.1.1 through 403.8.1.7, <u>and Houston Fire Department LSB Standard No. 08, “Fire Drills.”</u> Moved to 403.7.1			Previous Houston amendment relocated to Section 403.7.1.
403.8.1.4 Drill frequency. <u>Emergency evacuation drills shall be conducted in accordance with Houston Fire Department LSB Standard No. 08, “Fire Drills.”</u> ~~In addition to the evacuation drills required in Section 405.2, employees shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of operation. Drills are not required to comply with the time requirements of Section 405.4.~~ Moved to 403.7.1.4			Previous Houston amendment relocated to Section 403.7.1.4.
403.8.2 Group I-2 occupancies. Group I-2 occupancies shall comply with Sections 403.8.2.1 through 403.8.2.3, <u>as well as 401, and 404 through 406, and Houston Fire Department LSB Standard No. 08, “Fire Drills.”</u> Moved to 403.7.2			Previous Houston amendment relocated to Section 403.7.2.
403.8.4 Group I-4 occupancies. Group I-4 occupancies shall conform to Sections 401 through 406 and <u>Houston Fire Department LSB Standard No. 08, “Fire Drills.”</u> Moved to 403.7.4			Previous Houston amendment relocated to Section 403.7.4.
	~~403.10~~ 403.9 Group R occupancies.	403.9 Group R occupancies. Group R occupancies shall comply with Sections 403.9.1 through 403.9.3.6 <u>and Houston Fire Department LSB Standard No. 08, “Fire Drills.”</u>	Base code renumbering. No change to Houston amendment, relocated from Section 403.10.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~403.10.1~~ 403.9.1 Group R-1 occupancies.	403.9.1 Group R-1 occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group R-1 occupancies. Group R-1 occupancies shall comply with Sections 403.9.1.1 through 403.9.1.3. High-rise R-1 occupancies shall also be in accordance with Houston Fire Department LSB Standard No. 07, "High-Rise Fire Safety Plans."	Base code renumbering. No change to Houston amendment, relocated from Section 403.10.1.
	~~403.10.1.1~~ 403.9.1.1 Evacuation diagrams.		Base code renumbering.
	~~403.10.1.2~~ 403.9.1.2 Emergency duties. ...		Base code renumbering.
	~~403.10.1.3~~ 403.9.1.3 Fire safety and evacuation instructions.		Base code renumbering.
	~~403.10.2~~ 403.9.2 Group R-2 occupancies.	403.9.2 Group R-2 occupancies. Group R-2 occupancies shall comply with Sections 403.9.2.1 through 403.9.2.3, and Houston Fire Department LSB Standard No. 08, "Fire Drills."	Base code renumbering. No change to Houston amendment, relocated from Section 403.10.2.
	~~403.10.2.1~~ 403.9.2.1 College and university buildings.		Base code renumbering.
	~~403.10.2.1.1~~ 403.9.2.1.1 First emergency evacuation drill.		Base code renumbering.
	~~403.10.2.1.2~~ 403.9.2.1.2 Time of day.		Base code renumbering.
	~~403.10.2.2~~ 403.9.2.2 Emergency guide.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~403.10.2.2.1~~ 403.9.2.2.1 Guide contents. A fire emergency guide shall describe the location, function and use of fire protection equipment and appliances ~~accessible to~~ available for use by residents, including fire alarm systems, smoke alarms and portable fire extinguishers. Guides shall include an emergency evacuation plan for each dwelling unit.		Base code renumbering and minor wordsmithing.
	~~403.10.2.2.2~~ 403.9.2.2.2 Emergency guide maintenance.		Base code renumbering.
	~~403.10.2.2.3~~ 403.9.2.2.3 Emergency guide distribution.		Base code renumbering.
	~~403.10.2.3~~ 403.9.2.3 Evacuation diagrams for dormitories. A diagram depicting two evacuation routes shall be posted on or immediately adjacent to every required egress door from each dormitory ~~sleeping unit or dwelling unit~~ . Evacuation diagrams shall be reviewed and updated as needed to maintain accuracy.		Base code renumbering and minor wordsmithing.
	~~403.10.3~~ 403.9.3 Group R-4 occupancies.	403.9.3 Group R-4 occupancies. An <i>approved</i> fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group R-4 occupancies. Group R-4 occupancies shall comply with Sections 403.9.3.1 through 403.9.3.6, and Houston Fire Department LSB Standard No. 08, "Fire Drills."	Base code renumbering. No change to Houston amendment, relocated from Section 403.10.3.
	~~403.10.3.1~~ 403.9.3.1 Fire safety and evacuation plan. The fire safety and evacuation plan required by Section 404 shall include ~~special employee actions, including fire protection a description of special staff actions.~~ Plans shall include procedures necessary for residents full evacuation of care recipients, and shall be amended or revised upon admission of a resident ~~care recipients~~ with unusual needs.		Base code renumbering and minor wordsmithing.
	~~403.10.3.1.1~~ 403.9.3.1.1 Fire safety planplans. A copy of the fire safety plan shall be maintained at the facility at all times. ~~The plan~~ Plans shall include the following in addition to the requirements of Section 404.2.2: 1. Location and number of resident ~~care recipient~~ care recipient sleeping rooms. 2. Location of special locking or egress control arrangements.		Base code renumbering and minor wordsmithing.
	~~403.10.3.2~~ 403.9.3.2 Employee Staff training. ~~Employees~~ Staff shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by ~~employees~~ staff at intervals not exceeding two ~~three~~ three months. A copy of the plan shall be readily available at all times within the facility. Training of new staff shall be provided promptly		Base code renumbering and minor wordsmithing.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	upon entrance to duty. Staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.		
	~~403.10.3.3~~ 403.9.3.3 Resident training. Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. The training shall include actions to take if the primary escape route is blocked. ~~Where the resident is given rehabilitation or habilitation training, methods of fire prevention and actions to take in the event of a fire shall be a part of the rehabilitation training program.~~ Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.		Base code renumbering and minor wordsmithing.
	~~403.10.3.4~~ 403.9.3.4 Drill frequency. In addition to the evacuation drills required in Section 405.3, employees staff shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of operation.	403.9.3.4 Drill frequency. Emergency evacuation drills shall be conducted in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills." ~~In addition to the evacuation drills required in Section 405.3, staff shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of operation.~~	Base code renumbering. No change to Houston amendment, relocated from Section 403.10.4.
403.10 Group R occupancies. Group R occupancies shall comply with Sections 403.10.1 through 403.10.3.6 and Houston Fire Department LSB Standard No. 08, "Fire Drills." Moved to 403.9	~~403.11~~ 403.10 Special uses.		Base code renumbering. Previous Houston amendment relocated to Section 403.9.
403.10.1 Group R-1 occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group R-1 occupancies. Group R-1 occupancies shall comply with Sections 403.10.1.1 through 403.10.1.3. <u>High-rise R-1 occupancies shall also be in accordance with Houston Fire Department LSB Standard No. 07, "High-Rise Fire Safety Plans."</u> Moved to 403.9.1	~~403.11.1~~ 403.10.1 Covered and open mall buildings.		Base code renumbering. Previous Houston amendment relocated to Section 403.9.1.
	~~403.11.1.1~~ 403.10.1.1 Malls and mall buildings exceeding 50,000 square feet.		Base code renumbering.
	~~403.11.1.2~~ 403.10.1.2 Lease Plan. In addition to the requirements of Section 404.2.2, a lease plan that includes the following information shall be prepared for each covered and open mall building: 1. Each occupancy, including identification of tenant. 2. Exits from each tenant space. 3. Fire protection features, including the following: 3.1. Fire department connections. 3.2. Fire command center. 3.3. Smoke management system controls. 3.4. Elevators, elevator machine rooms and controls. 3.5. Hose valve outlets. 3.6. Sprinkler and standpipe control valves.		Base code renumbering and minor wordsmithing.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3.7. ~~Areas protected with automatic sprinkler systems and automatic fire-extinguishing systems.~~ 3.8. Automatic fire detector zones. 3.9. Fire barriers.		
	~~403.11.1.3~~ 403.10.1.3 Lease plan approval.	403.10.1.3 Lease plan approval. The lease plan shall be submitted to the fire code official for approval, and shall be maintained on site by the owner for immediate reference by responding fire service personnel and be available upon request by the fire code official.	Base code renumbering. No change to Houston amendment, relocated from Section 403.11.1.3.
	~~403.11.1.4~~ 403.10.1.4 Lease plan revisions.		Base code renumbering.
	~~403.11.1.5~~ 403.10.1.5 Tenant identification.	403.10.1.5 Tenant identification. Tenant identification shall be provided for secondary exits from occupied tenant spaces that lead to an exit corridor or directly to the exterior of the building. Tenant identification, using letters and numbers of durable materials, at least 2 inches (50 mm) in height, shall be posted on the exterior side of the exit or exit access door and shall identify the business name and address using plainly legible letters and numbers that contrast with their background. Exception: Tenant identification is not required for anchor stores.	Base code renumbering. No change to Houston amendment, relocated from Section 403.11.1.5.
	~~403.11.1.6~~ 403.10.1.6 Unoccupied tenant spaces.		Base code renumbering.
403.10.2 Group R-2 occupancies. Group R-2 occupancies shall comply with Sections 403.10.2.1 through 403.10.2.3, and Houston Fire Department LSB Standard No. 08, "Fire Drills." Moved to 403.9.2	~~403.11.2~~ 403.10.2 High-rise buildings.		Base code renumbering. Previous Houston amendment relocated to Section 403.9.2.
403.10.3 Group R-4 occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group R-4 occupancies. Group R-4 occupancies shall comply with Sections 403.10.3.1 through 403.10.3.6, and Houston Fire Department LSB Standard No. 08, "Fire Drills." Moved to 403.9.3	~~403.11.3~~ 403.10.3 Underground buildings.		Base code renumbering. Previous Houston amendment relocated to Section 403.9.3.
403.10.3.4 Drill frequency. Emergency evacuation drills shall be conducted in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills." In addition to the evacuation drills required in Section 405.2, employees shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of operation. Moved to 403.9.3.4			Previous Houston amendment relocated to Section 403.9.3.4.
403.11.1.3 Lease plan approval. The lease plan shall be submitted to the fire code official for approval, and shall be maintained on site by the owner for immediate reference by responding fire service personnel and be available upon request by the fire code official.			Previous Houston amendment relocated to Section 403.10.1.3.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
Moved to 403.10.1.3			
403.11.1.5 Tenant identification. Tenant identification shall be provided for secondary <i>exits</i> from occupied tenant spaces that lead to an <i>exit corridor</i> or directly to the exterior of the building. Tenant identification, using letters and numbers of durable materials, <u>at least 2 inches (50 mm) in height</u> , shall be posted on the exterior side of the <i>exit</i> or exit access door and shall identify the business name and address using plainly legible letters and numbers that contrast with their background. Exception: ~~Tenant identification is not required for anchor stores.~~ Moved to 403.10.1.5			Previous Houston amendment relocated to Section 403.10.1.5.
	~~403.11.4~~ 403.10.4 Buildings using occupant evacuation elevators.		Base code renumbering.
	~~403.11.5~~ 403.10.5 Buildings with high-piled storage. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared for buildings with high-piled combustible storage in any of the following situations: 1. The high-piled storage area exceeds 500,000 square feet (46 450 m ²) for Class I-IV commodities. 2. The high-piled storage area exceeds 300,000 square feet (27 870 m ²) for high-hazard commodities. 3. The high-piled storage is located in a Group H occupancy. 4. The high-piled storage is located in a Group F occupancy with an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. 5. The high-piled storage is located in a Group M occupancy with an occupant load of 500 or more persons or more than than 100 persons above or below the lowest level of exit discharge. 6. Where required by the fire code official for other high-piled storage areas.		New base code provisions for buildings with high-piled storage.
	~~403.12~~ 403.11 Special requirements for public safety.		Base code renumbering.
	~~403.12.1~~ 403.11.1 Fire watch personnel.		Base code renumbering.
	~~403.12.1.1~~ 403.11.1.1 Duty times.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~403.12.1.2~~ 403.11.1.2 Duties.		Base code renumbering.
	~~403.12.2~~ 403.11.2 Public safety plan for gatherings. Where the fire code official determines that an indoor or outdoor gathering of persons has an adverse impact on public safety through diminished access to buildings, structures, fire hydrants and fire apparatus access roads or where such gatherings adversely affect public safety services of any kind, the fire code official shall have the authority to order the development of or prescribe a public safety plan that provides an approved level of public safety and addresses the following items: 1. Emergency vehicle ingress and egress. 2. Fire protection. 3. Emergency egress or escape routes. 4. Emergency medical services. 5. Public assembly areas. 6. The directing of both attendees and vehicles, including the parking of vehicles. 7. Vendor and food concession distribution. 8. The need for the presence of law enforcement. 9. The need for fire and emergency medical services personnel. 10. The need for a weather monitoring person		Base code renumbering. New item to be included on public safety plan.
	~~403.12.3~~ 403.11.3 Crowd managers for gatherings exceeding 1,000 people. Where facilities or events involve a gathering of more than ~~4,000~~ 500 people, crowd managers shall be provided in accordance with Sections 403.12.3.1 through 403.12.3.3		Base code renumbering. Requirement for crowd managers reduced.
	~~403.12.3.1~~ 403.11.3.1 Number of crowd managers. ~~The minimum number of~~ Not fewer than two trained crowd managers, ~~shall be established at a ratio of one and not fewer than one trained crowd manager for every each 250 persons or portion thereof, shall be provided for the gathering.~~ Exceptions: ~~Where approved by the fire code official, the number of crowd managers shall be permitted to be reduced where the facility is equipped throughout with an approved automatic sprinkler system or based upon the nature of the event~~ 1. Outdoor events with fewer than 1,000 persons in attendance shall not require crowd managers. 2. Assembly occupancies used exclusively for religious worship with an occupant load not exceeding 1,000 shall not require crowd managers. 3. The number of crowd managers shall be reduced where, in the opinion of the fire code		Base code renumbering. Requirement for crowd managers has been expanded.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	official, the fire protection provided by the facility and the nature of the event warrant a reduction.		
	~~403.12.3.2~~ 403.11.3.2 Training.		Base code renumbering.
	~~403.12.3.3~~ 403.11.3.3 Duties.		Base code renumbering.
404.1 General. Where required by Section 403, fire safety, evacuation and lockdown plans shall comply with Sections 404.2 through 404.4.1. The fire code official is authorized to require that emergency plans, employee duty assignments, employee training and fire drills be provided in buildings of any occupancy type. When required, emergency plans, employee duty assignments, employee training and fire drills shall be conducted in accordance with this chapter and Houston Fire Department LSB Standard No. 08, "Fire Drills."		404.1 General. Where required by Section 403, fire safety, evacuation and lockdown plans shall comply with Sections 404.2 through 404.4.1. The fire code official is authorized to require that emergency plans, employee duty assignments, employee training and fire drills be provided in buildings of any occupancy type. When required, emergency plans, employee duty assignments, employee training and fire drills shall be conducted in accordance with this chapter and Houston Fire Department LSB Standard No. 08, "Fire Drills."	No change to Houston amendment.
	404.2 Contents. Fire safety and, evacuation and lockdown plan contents shall be in accordance with Sections 404.2.1 and through 404.2.3.2.		Minor wordsmithing to base code language.
404.2.1 Fire evacuation plans. Fire evacuation plans shall include the following: 1. Emergency egress or escape routes, and alternate routes where available and whether evacuation of the building is to be complete by selected floors or areas only or with a defend in place response. 2. Procedures for building employees and security personnel who, when it is safe to do so, must remain to operate critical equipment before evacuating. 3. Procedures for the use of elevators to evacuate the building where occupant evacuation elevators complying with Section 3008 of the ~~International Building Code~~ are provided. 4. Procedures for assisted rescue for persons unable to use the general means of egress unassisted. 5. Procedures for accounting for employees and occupants after evacuation has been completed. 6. Identification and assignment of personnel responsible for rescue or emergency medical aid. 7. The preferred and any alternative means of notifying occupants of a fire or emergency. 8. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.		404.2.1 Fire evacuation plans. Fire evacuation plans shall include the following: 1. Emergency egress or escape routes, and alternate routes where available and whether evacuation of the building is to be complete by selected floors or areas only or with a defend in place response. 2. Procedures for building employees and security personnel who, when it is safe to do so, must remain to operate critical equipment before evacuating. 3. Procedures for the use of elevators to evacuate the building where occupant evacuation elevators complying with Section 3008 of the ~~International Building Code~~ are provided. 4. Procedures for assisted rescue for persons unable to use the general means of egress unassisted. 5. Procedures for accounting for employees and occupants after evacuation has been completed. 6. Identification and assignment of personnel responsible for rescue or emergency medical aid. 7. The preferred and any alternative means of notifying occupants of a fire or emergency. 8. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization. 9. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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9. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan. 10. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided. 11. All high-rise building evacuation plans shall conform to the Houston Fire Department LSB Standard No. 7, "High-Rise Fire Safety Plans." Exception: Group I high-rise occupancies.		10. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided. <u>11. All high-rise building evacuation plans shall conform to the Houston Fire Department LSB Standard No. 7, "High-Rise Fire Safety Plans."</u> Exception: Group I high-rise occupancies.	
	404.2.3 Lockdown plans. ~~Where facilities develop a lockdown plan, it shall be in accordance with Sections 404.2.3.1 through 404.2.3.3. Lockdown plans shall only be permitted where such plans are approved by the fire code official and are in compliance with Sections 404.2.3.1 and 404.2.3.2.~~		Updates to base code language for lockdown plans.
	404.2.3.1 Lockdown plan contents. Lockdown plans shall ~~be approved by the fire code official and shall~~ include the following: ~~1. Initiation. The plan shall include instructions for reporting an emergency that requires a lockdown.~~ Identification of individuals authorized to issue a lockdown order. ~~2. Accountability. The plan shall include accountability procedures for staff to report the presence or absence of occupants.~~ Security measures used during normal operations, when the building is occupied, that could adversely affect egress or fire department operations. ~~3. Recall. The plan shall include a prearranged signal for returning to normal activity.~~ A description of identified emergency and security threats addressed by the plan, including specific lockdown procedures to be implemented for each threat condition. ~~4. Communication and coordination. The plan shall include an approved means of two-way communication between a central location and each secured area.~~ Means and methods of initiating a lockdown plan for each threat, including: 4.1. The means of notifying occupants of a lockdown event, which shall be distinct from the fire alarm signal. 4.2. Identification of each door or other access point that will be secured. 4.3. A description of the means or methods used to secure doors and other access Points. 4.4. A description of how locking means and methods are in compliance with the requirements of this code for egress and accessibility. 5. Procedures for reporting to the fire department any lockdown condition affecting egress or fire department operations.		Updates to base code language for lockdown plans.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	6. Procedures for determining and reporting the presence or absence of occupants to emergency response agencies during a lockdown. 7. Means for providing two-way communication between a central location and each area subject to being secured during a lockdown. 8. Identification of the prearranged signal for terminating the lockdown. 9. Identification of individuals authorized to issue a lockdown termination order. 10. Procedures for unlocking doors and verifying that the means of egress has been returned to normal operations upon termination of the lockdown. 11. Training procedures and frequency of lockdown plan drills.		
	404.2.3.2 Training frequency Drills. ~~The training frequency shall be included in the lockdown plan. The lockdown drills shall not substitute for any of the fire and evacuation drills required in Section 405.2 Lockdown plan drills shall be conducted in accordance with the approved plan. Such drills shall not be substituted for fire and evacuation drills required by Section 405.2~~		Updates to base code language to drills for lockdown plans.
	404.2.3.3 Lockdown notification. ~~The method of notifying building occupants of a lockdown shall be included in the plan. The method of notification shall be separate and distinct from the fire alarm signal.~~		Base code section removed.
404.3 Maintenance. Fire safety and Emergency evacuation plans shall be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy or the physical arrangement of the building. Exception: In high-rise occupancies, the emergency plans within fire depository boxes shall be reviewed and updated every six months to verify mobility impaired persons lists, emergency keys and any other data, in accordance with Houston Fire Department LSB Standard No. 06, "Fire Depository Boxes."	404.3 Maintenance. Fire safety, evacuation and lockdown plans shall be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy or the physical arrangement of the building.	404.3 Maintenance. Fire safety and Emergency evacuation and lockdown plans shall be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy or the physical arrangement of the building. Exception: In high-rise occupancies, the emergency plans within fire depository boxes shall be reviewed and updated every six months to verify mobility impaired persons lists, emergency keys and any other data, in accordance with Houston Fire Department LSB Standard No. 06, "Fire Depository Boxes."	Minor change to base code language. No change to Houston amendment.
	404.4 Availability. Fire safety, evacuation and lockdown plans shall be available in the workplace for reference and review by employees, and copies shall be furnished to the fire code official for review upon request.		Minor change to base code language.
	404.4.1 Distribution. The fire safety, evacuation and lockdown plans shall be distributed to the tenants and building service employees by the owner or owner's agent. Tenants shall distribute to their employees applicable parts of the fire safety plan and lockdown plan affecting the employees' actions in the event of a fire or other emergency.		Minor change to base code language.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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405.1 General. Emergency evacuation drills complying with Sections 405.2 through 405.9 shall be conducted <u>in an occupancy when required by the fire code official</u> in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills." Evacu-ation drills in high-rise buildings shall be conducted in accordance with Houston Fire Department LSB Standard No. 07, "High-Rise Fire Safety Plans." ~~"not less than annually where fire safety and evacuation plans are required by Section 403 or where required by the fire code official."~~ Drills shall be designed in cooperation with the local authorities.	SECTION 405 EMERGENCY EVACUATION DRILLS 405.1 General. Emergency fire and evacuation drills complying with Sections 405.3 through 405.10 shall be conducted not less than annually where fire safety and evacuation plans are required by Section 403 or where required by the <i>fire code official</i> . Lockdown plan drills shall be conducted in accordance with the approved plan. Such drills shall not be substituted for fire and evacuation drills required by Section 405.3. Drills shall be designed in cooperation with the local authorities.	405.1 General. Emergency fire and evacuation drills complying with Sections 405.2 through 405.9 shall be conducted <u>in an occupancy when required by the fire code official</u> in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills." Evacu-ation drills in high-rise buildings shall be conducted in accordance with Houston Fire Department LSB Standard No. 07, "High-Rise Fire Safety Plans." ~~not less than annually where fire safety and evacuation plans are required by Section 403 or where required by the fire code official.~~ Lockdown plan drills shall be conducted in accordance with the approved plan. Such drills shall not be substituted for fire and evacuation drills required by section 405.3. Drills shall be designed in cooperation with the local authorities.	No change to Houston amendment.
405.2 Frequency. Fire drill frequency shall be in accordance with the Houston Fire Department LSB Standard No. 08, "Fire Drills" unless superseded by other regulatory agencies. ~~Required emergency evacuation drills shall be held at the intervals specified in Table 405.2 or more frequently where necessary to familiarize all occupants with the drill procedure.~~ Moved to 405.3	405.2 Occupant participation. Emergency fire and evacuation drills shall involve the actual evacuation of occupants to a selected assembly point and shall provide occupants with experience in exiting through required <i>exits</i> . Exceptions: 1. In ambulatory care facilities and Group I-2, the movement of care recipients to a safe area or to the exterior of the building is not required. 2. In Group I-1, Condition 2, the assembly point for residents is permitted to be within an adjacent <i>smoke compartment</i> . 3. In Group R-4, actual exiting from emergency escape and rescue openings shall not be required. Opening the emergency escape and rescue openings and signaling for help shall be an acceptable alternative. 4. In Group I-3, Conditions 2 through 5 where a defend-in-place response is permitted, the assembly point for detainees is permitted to be within an adjacent <i>smoke compartment</i> . 5. In Group I-3, Conditions 2 through 5, movement of detainees is not required to an assembly point where there are security concerns.		New section defining occupant participation in drills. Previous Houston amendment relocated to Section 405.3.
	405.3 Frequency.	405.3 Frequency. Fire drill frequency shall be in accordance with the Houston Fire Department LSB Standard No. 08, "Fire Drills" unless superseded by other regulatory agencies. ~~Required emergency evacuation drills shall be held at the intervals specified in Table 405.3 or more frequently where necessary to familiarize all occupants with the drill procedure.~~	Base code renumbering. No change to Houston amendment, relocated from Section 405.2.
	TABLE 405.3 FIRE AND EVACUATION DRILL FREQUENCY AND PARTICIPATION		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary																																										
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	<table><tr><th>GROUP OR OCCUPANCY</th><th>FREQUENCY</th><th>PARTICIPATION</th></tr><tr><td>Group A</td><td>Quarterly</td><td>EmployeesStaff</td></tr><tr><td>Group B*</td><td>Annually</td><td>All occupants</td></tr><tr><td>Group B* (Ambulatory care facilities)</td><td>Quarterly on each shift*</td><td>EmployeesStaff</td></tr><tr><td>Group B* (Clinic, outpatient)</td><td>Annually</td><td>EmployeesStaff</td></tr><tr><td>Group E</td><td>Monthly*</td><td>All occupants</td></tr><tr><td>Group F</td><td>Annually</td><td>Employees</td></tr><tr><td>Group I-1</td><td>Semiannually on each shift*</td><td>All occupants</td></tr><tr><td>Group I-2</td><td>Quarterly on each shift*</td><td>EmployeesStaff</td></tr><tr><td>Group I-3</td><td>Quarterly on each shift*</td><td>EmployeesStaff</td></tr><tr><td>Group I-4</td><td>Monthly on each shift*</td><td>All occupants</td></tr><tr><td>Group R-1</td><td>Quarterly on each shift</td><td>Employees</td></tr><tr><td>Group R-2**</td><td>Four annually</td><td>All occupants</td></tr><tr><td>Group R-4</td><td>Semiannually on each shift*</td><td>All occupants</td></tr></table> a. In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill frequency. b. Emergency evacuation drills are required in Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge. c. Emergency evacuation drills are required in ambulatory care facilities in accordance with Section 403.9.1. d. Emergency evacuation drills in Group R-2 college and university buildings shall be in accordance with Section 403.9.2.1. Other Group R-2 occupancies shall be in accordance with Section 403.9.2.2.	GROUP OR OCCUPANCY	FREQUENCY	PARTICIPATION	Group A	Quarterly	EmployeesStaff	Group B*	Annually	All occupants	Group B* (Ambulatory care facilities)	Quarterly on each shift*	EmployeesStaff	Group B* (Clinic, outpatient)	Annually	EmployeesStaff	Group E	Monthly*	All occupants	Group F	Annually	Employees	Group I-1	Semiannually on each shift*	All occupants	Group I-2	Quarterly on each shift*	EmployeesStaff	Group I-3	Quarterly on each shift*	EmployeesStaff	Group I-4	Monthly on each shift*	All occupants	Group R-1	Quarterly on each shift	Employees	Group R-2**	Four annually	All occupants	Group R-4	Semiannually on each shift*	All occupants		
GROUP OR OCCUPANCY	FREQUENCY	PARTICIPATION																																											
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	405.3 Turquoise 405.4 Leadership.		Base code renumbering.																																										
	405.4 Turquoise 405.5 Time. Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of fire. Exceptions: 1. In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill termination points and frequency. 2. In Groups I-1, I-2, I-3 and R-4, where staff-only emergency evacuation drills are conducted after visiting hours or where care recipients are expected to be asleep, a coded announcement shall be an acceptable alternative to audible alarms.		Base code renumbering and updates to include new exceptions for fire drill times.																																										
405.6 Notification. Where required by the fire code official, prior notification of emergency evacuation drills shall be given to the ~~fire code official~~ jurisdiction immediately prior to the drill by calling the Houston Fire Department Office of Emergency Communications, Telephone: (713) 884-3143, and to the building's fire alarm monitoring service. The Fire Department and the monitoring service shall be immediately notified at the conclusion of emergency evacuation drills, in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills." Moved to 405.7	405.5 Turquoise 405.6 Recordkeeping.		Previous Houston amendment relocated to Section 405.7.																																										
	405.6 Turquoise 405.7 Notification.	405.7 Notification. Where required by the fire code official, prior notification of emergency evacuation drills shall be given to the ~~fire code official~~ jurisdiction immediately prior to the drill by calling the Houston Fire Department Office of Emergency Communications, Telephone: (713) 884-3143, and to the building's fire alarm monitoring service. The Fire Department and the monitoring service shall be immediately notified at the conclusion of emergency evacuation drills, in accordance with Houston Fire Department LSB Standard No. 08, "Fire Drills."	Base code renumbering. No change to Houston amendment, relocated from Section 405.6.																																										
	405.7 Turquoise 405.8 Initiation.		Base code renumbering.																																										

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~405.8~~ 405.9 Accountability. As building occupants arrive at the assembly point, efforts shall be made to determine if all occupants have been successfully evacuated or have been accounted for. Exception: In Group I-2 and ambulatory care facilities, the movement of care recipients to safe areas or to the exterior of the building is not required.		Base code renumbering and updates to include new exceptions for Group I-2 occupancies in fire drills.
	407.2 Material Safety Data Sheets. ~~Material~~ Safety Data Sheets (MSDS) for all hazardous materials shall be either readily available on the premises as a paper copy, or where approved, shall be permitted to be readily retrievable by electronic access.		Minor wordsmithing to base code language.
2015 Houston IFC – Chapter 5 Fire Service Features	2021 IFC – Chapter 5 – Fire Service Features	2021 Houston IFC Amendments	Code Change Summary
501.1 Scope. Fire service features for buildings, structures and premises shall comply with this chapter. Exception: Group R-2 occupancies when in accordance with Chapter 42 of the <i>City Code</i> for those items addressed therein. Items not specifically addressed in Chapter 42 of the <i>City Code</i> for multi-family residential developments shall be as required by this chapter or elsewhere in this code.		501.1 Scope. Fire service features for buildings, structures and premises shall comply with this chapter. Exception: Group R-2 occupancies when in accordance with Chapter 42 of the <i>City Code</i> for those items addressed therein. Items not specifically addressed in Chapter 42 of the <i>City Code</i> for multi-family residential developments shall be as required by this chapter or elsewhere in this code.	No change to Houston amendment.
	501.3.1 Site safety plan. The owner or owner's authorized agent shall be responsible for the development, implementation and maintenance of an approved written site safety plan in accordance with Section 3308.		New base code provisions requiring site safety plan.
	501.4 Timing of installation. Where fire apparatus access roads or a water supply for fire protection are required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction except ~~when~~ where approved alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection where construction of new roadways allows passage by vehicles in accordance with Section 505.2.		Minor wordsmithing to base code language.
503.2 Specifications. Fire apparatus access roads shall be installed and arranged in accordance with Sections 503.2.1 through 503.2.8 and Houston Fire Department LSB Standard No. 03, "Fire Department Access."		503.2 Specifications. Fire apparatus access roads shall be installed and arranged in accordance with Sections 503.2.1 through 503.2.8 and Houston Fire Department LSB Standard No. 03, "Fire Department Access."	No change to Houston amendment.
503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6,096 mm), exclusive of shoulders, except for <i>approved</i> security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4,115 mm). Exceptions: 1. When approved by the <i>fire code official</i>, vertical clearance may be reduced, provided the reduction does not impair access by fire apparatus and <i>approved</i> signs are installed and maintained indicating the established vertical clearance.		503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6,096 mm), exclusive of shoulders, except for <i>approved</i> security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4,115 mm). Exceptions: 1. When approved by the <i>fire code official</i>, vertical clearance may be reduced, provided the reduction does not impair access by fire apparatus and <i>approved</i> signs are installed and maintained indicating the established vertical clearance.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2. When approved by the <i>fire code official</i> , existing access roads may have an unobstructed width of not less than 15 feet (4,572 mm), when the reduction in width will not impair access by fire department equipment, or when, for access roads in existence on June 15, 1976, the designation of a greater width would necessitate structural changes to the building.		2. When approved by the <i>fire code official</i> , existing access roads may have an unobstructed width of not less than 15 feet (4,572 mm), when the reduction in width will not impair access by fire department equipment, or when, for access roads in existence on June 15, 1976, the designation of a greater width would necessitate structural changes to the building.	
503.2.2 Authority. The <i>fire code official</i> shall have the authority to require an increase in the minimum access ~~widths~~ dimensions where they are inadequate for fire or rescue operations.		503.2.2 Authority. The <i>fire code official</i> shall have the authority to require an increase in the minimum access ~~widths~~ dimensions where they are inadequate for fire or rescue operations.	No change to Houston amendment.
503.3 Marking. Where required by the <i>fire code official</i> , approved signs or other approved notices or markings that include the words NO PARKING—FIRE LANE shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Marking of fire apparatus access roads shall be in accordance with Section 503.3 and Houston Fire Department LSB Standard No. 03, “Fire Department Access.” ~~The means by which fire lanes are designated~~ Signs or notices shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.		503.3 Marking. Where required by the <i>fire code official</i> , approved signs or other approved notices or markings that include the words NO PARKING—FIRE LANE shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Marking of fire apparatus access roads shall be in accordance with Section 503.3 and Houston Fire Department LSB Standard No. 03, “Fire Department Access.” ~~The means by which fire lanes are designated~~ Signs or notices shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.	No change to Houston amendment.
503.3.1 Alteration, defacing or signs unlawful. A person commits an offense if the person intentionally alters, defaces, injures, knocks down, or removes, or attempts to alter, deface, injure, knock down, or remove, any sign required under the terms of this code.		503.3.1 Alteration, defacing or signs unlawful. A person commits an offense if the person intentionally alters, defaces, injures, knocks down, or removes, or attempts to alter, deface, injure, knock down, or remove, any sign required under the terms of this code.	No change to Houston amendment.
503.4 Obstruction of fire apparatus access roads. Fire The required width of a fire apparatus access roads, private drive, private street, or private access easement utilized for fire apparatus access shall not be obstructed in any manner, including the parking of vehicles. The minimum required widths and clearances established in Section 503.2.1 and 503.2.2 shall be maintained at all times. Exceptions: 1. Access control gates installed in accordance with Houston Fire Department LSB Standard No. 04, “Access Control Gates.” See Section 105.6 for permits. 2. Parking shall not include a vehicle that has a licensed vehicle operator in constant attendance in the vehicle, provided that the licensed operator has the ability to immediately remove the vehicle in case of an emergency.		503.4 Obstruction of fire apparatus access roads. Fire The required width of a fire apparatus access roads, private drive, private street, or private access easement utilized for fire apparatus access shall not be obstructed in any manner, including the parking of vehicles. The minimum required widths and clearances established in Section 503.2.1 and 503.2.2 shall be maintained at all times. Exceptions: 1. Access control gates installed in accordance with Houston Fire Department LSB Standard No. 04, “Access Control Gates.” See Section 105.6 for permits. 2. Parking shall not include a vehicle that has a licensed vehicle operator in constant attendance in the vehicle, provided that the licensed operator has the ability to immediately remove the vehicle in case of an emergency.	No change to Houston amendment.
503.4.1 Traffic calming devices. Traffic calming devices shall be prohibited unless approved by the <i>fire code official</i> . Removal of vehicles and obstructions. Vehicles parked and obstructions placed in violation of this code may be removed at the vehicle owner's expense by or at the direction of the fire chief, any peace officer or the property owner in accordance with applicable provisions of the <i>City Code</i> and state law.		503.4.1 Traffic calming devices. Traffic calming devices shall be prohibited unless approved by the <i>fire code official</i> . Removal of vehicles and obstructions. Vehicles parked and obstructions placed in violation of this code may be removed at the vehicle owner's expense by or at the direction of the fire chief, any peace officer or the property owner in accordance with applicable provisions of the <i>City Code</i> and state law.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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503.4.2 Presumption of ownership. In any prosecution arising under this code that relates to the unlawful parking, standing, or stopping of a motor vehicle, it shall be presumed that the person who is the registered owner of the motor vehicle is the person who parked or stopped the vehicle at the date and time of the offense charged.		503.4.2 Presumption of ownership. In any prosecution arising under this code that relates to the unlawful parking, standing, or stopping of a motor vehicle, it shall be presumed that the person who is the registered owner of the motor vehicle is the person who parked or stopped the vehicle at the date and time of the offense charged.	No change to Houston amendment.
503.5 Required gates or barricades. The fire code official is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads, trails or other accessways, not including public streets, alleys or highways. Access control gates and barriers shall be installed and maintained in accordance with Houston Fire Department LSB Standard No. 04, "Access Control Gates." For required permits see Section 105.6.2. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.		503.5 Required gates or barricades. The fire code official is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads, trails or other accessways, not including public streets, alleys or highways. Access control gates and barriers shall be installed and maintained in accordance with Houston Fire Department LSB Standard No. 04, "Access Control Gates." For required permits see Section 105.6.2. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.	No change to Houston amendment.
503.6 Security gates. The installation of security gates across a fire apparatus access road shall be approved by the fire chief fire code official in accordance with Houston Fire Department LSB Standard No. 04, "Access Control Gates." Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times, or secured in the open position. Repairs shall be in accordance with original specifications and approvals. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.	503.6 Security gates. The installation of security gates across a fire apparatus access road shall be approved by the fire chief fire code official. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.	503.6 Security gates. The installation of security gates across a fire apparatus access road shall be approved by the fire code official in accordance with Houston Fire Department LSB Standard No. 04, "Access Control Gates." Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times, or secured in the open position. Repairs shall be in accordance with original specifications and approvals. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.	Minor wordsmithing in base code language. No change to Houston amendment.
	SECTION 504 ACCESS TO BUILDING OPENINGS AND ROOFS 504.1 Required access. Exterior doors and openings required by this code or the International Building Code shall be maintained readily accessible for emergency access by the fire department. An approved access walkway leading from fire apparatus access roads to exterior openings shall be provided when where required by the fire code official.		Minor wordsmithing in base code language.
504.1.1 Key box required. When required by the fire code official, security gates and barriers on access walkways shall be provided with approved "9-1-1" key boxes to facilitate emergency access into the property or building where emergency access is not readily available because of property or building design or because of distances from approved access roadways or drives to the building entrance. Key boxes shall be installed in accordance with Houston Fire Department LSB Standard No. 05, "Key Boxes." See Section 105.6 for required permit.		504.1.1 Key box required. When required by the fire code official, security gates and barriers on access walkways shall be provided with approved "9-1-1" key boxes to facilitate emergency access into the property or building where emergency access is not readily available because of property or building design or because of distances from approved access roadways or drives to the building entrance. Key boxes shall be installed in accordance with Houston Fire Department LSB Standard No. 05, "Key Boxes." See Section 105.6 for required permit.	No change to Houston amendment.
	504.2 Maintenance of exterior doors and openings. Exterior doors and their function shall not be eliminated without prior approval. Exterior doors that have been rendered nonfunctional and that retain a functional door exterior appearance shall have a sign affixed to the exterior side of the door with the words THIS		Base code referenced section updated.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	DOOR BLOCKED. The sign shall consist of letters having a principal stroke of not less than 3/4 inch (19.1 mm) wide and not less than 6 inches (152 mm) high on a contrasting background. Required fire department access doors shall not be obstructed or eliminated. Exit and exit access doors shall comply with Chapter 10. Access doors for high-piled combustible storage shall comply with Section ~~3206.6.1~~ 3206.7 .		
504.3 Stairway access to roof. New buildings four or more stories ~~above-grade plane in height~~ , except those with a roof slope greater than four units vertical in 12 units horizontal (33.3-percent slope), shall be provided with a <i>stairway</i> to the roof. <i>Stairway</i> access to the roof shall be in accordance with Section 1011.12. Such <i>stairway</i> shall be marked at street and floor levels with a sign indicating that the <i>stairway</i> continues to the roof. Where roofs are used for roof gardens or for other purposes, <i>stairways</i> shall be provided as required for such occupancy classification. <u>See Appendix H for stairway identification sign requirements.</u>		504.3 Stairway access to roof. New buildings four or more stories ~~above-grade plane in height~~ , except those with a roof slope greater than four units vertical in 12 units horizontal (33.3-percent slope), shall be provided with a <i>stairway</i> to the roof. <i>Stairway</i> access to the roof shall be in accordance with Section 1011.12. Such <i>stairway</i> shall be marked at street and floor levels with a sign indicating that the <i>stairway</i> continues to the roof. Where roofs are used for landscaped roofs or for other purposes, <i>stairways</i> shall be provided as required for such occupancy classification. <u>See Appendix H for stairway identification sign requirements.</u>	No change to Houston amendment.
505.1 Address identification. New and existing buildings, <u>and occupancies therein under construction</u> , shall be provided with <i>approved</i> address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of ½ inch (12.7 mm). Where required by the <i>fire code official</i> , address identification shall be provided in additional <i>approved</i> locations to facilitate emergency response. Where access is by means of a private road and the building cannot be viewed from the <i>public way</i> , a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained. <u>All new and existing buildings are required to be numbered as provided in Chapter 10, Article V, of the <i>City Code</i>.</u>		505.1 Address identification. New and existing buildings, <u>and occupancies therein under construction</u> , shall be provided with <i>approved</i> address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) high with a minimum stroke width of ½ inch (12.7 mm). Where required by the <i>fire code official</i> , address identification shall be provided in additional <i>approved</i> locations to facilitate emergency response. Where access is by means of a private road and the building cannot be viewed from the <i>public way</i> , a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintained. <u>All new and existing buildings are required to be numbered as provided in Chapter 10, Article V, of the <i>City Code</i>.</u>	No change to Houston amendment.
506.1 Where required. Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the <i>fire code official</i> is authorized to require a key box <u>or a fire depository box</u> to be installed in an <i>approved</i> location. The key box shall be of an <i>approved</i> type listed in accordance with UL 1037, and shall contain keys to gain necessary access as required by the <i>fire code official</i> . <u>Key boxes shall be provided in accordance with Houston Fire Department LSB Standard No. 05, “Key Boxes” and LSB Standard No. 6, “Fire Depository Boxes.”</u>		506.1 Where required. Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the <i>fire code official</i> is authorized to require a key box <u>or a fire depository box</u> to be installed in an <i>approved</i> location. The key box shall be of an <i>approved</i> type listed in accordance with UL 1037, and shall contain keys to gain necessary access as required by the <i>fire code official</i> . <u>Key boxes shall be provided in accordance with Houston Fire Department LSB Standard No. 05, “Key Boxes” and LSB Standard No. 6, “Fire Depository Boxes.”</u>	No change to Houston amendment.
506.1.1 Locks. An <i>approved</i> lock shall be installed on gates or similar barriers where required by the <i>fire code official</i> . <u>Key boxes shall be provided in accordance with Houston Fire Department LSB Standard No. 05, “Key Boxes.”</u>		506.1.1 Locks. An <i>approved</i> lock shall be installed on gates or similar barriers where required by the <i>fire code official</i> . <u>Key boxes shall be provided in accordance with Houston Fire Department LSB Standard No. 05, “Key Boxes.”</u>	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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506.1.2 Key boxes for nonstandardized fire service elevator keys. <u>Fire depository boxes for all high-rise, mid-rise and other facilities shall be installed and maintained in accordance with Houston Fire Department LSB Standard No. 06, “Fire Depository Boxes” as required by the fire marshal.</u> Key boxes provided for nonstandardized fire service elevator keys shall comply with Section 506.1 and all of the following: 1. The key box shall be compatible with an existing rapid entry key box system in use in the jurisdiction and <i>approved</i> by the <i>fire code official</i>. 2. The front cover shall be permanently labeled with the words “Fire Department Use Only—Elevator Keys.” 3. The key box shall be mounted at each elevator bank at the lobby nearest to the lowest level of fire department access. 4. The key box shall be mounted 5 feet 6 inches (1,676 mm) above the finished floor to the right side of the elevator bank. 5. Contents of the key box are limited to fire service elevator keys. Additional elevator access tools, keys and information pertinent to emergency planning or elevator access shall be permitted where authorized by the <i>fire code official</i>. 6. In building with two or more elevator banks, a single key box shall be permitted to be used where such elevator banks are separated by not more than 30 feet (9,144 mm). Additional key boxes shall be provided for each individual elevator or elevator bank separated by more than 30 feet (9,144 mm). Exception: A single key box shall be permitted to be located adjacent to a <i>fire command center</i> or the nonstandard fire service elevator key shall be permitted to be secured in a key box used for other purposes and located in accordance with Section 506.1.		506.1.2 Key boxes for nonstandardized fire service elevator keys. <u>Fire depository boxes for all high-rise, mid-rise and other facilities shall be installed and maintained in accordance with Houston Fire Department LSB Standard No. 06, “Fire Depository Boxes” as required by the fire marshal.</u> Key boxes provided for nonstandardized fire service elevator keys shall comply with Section 506.1 and all of the following: 1. The key box shall be compatible with an existing rapid entry key box system in use in the jurisdiction and <i>approved</i> by the <i>fire code official</i>. 2. The front cover shall be permanently labeled with the words “Fire Department Use Only—Elevator Keys.” 3. The key box shall be mounted at each elevator bank at the lobby nearest to the lowest level of fire department access. 4. The key box shall be mounted 5 feet 6 inches (1,676 mm) above the finished floor to the right side of the elevator bank. 5. Contents of the key box are limited to fire service elevator keys. Additional elevator access tools, keys and information pertinent to emergency planning or elevator access shall be permitted where authorized by the <i>fire code official</i>. 6. In building with two or more elevator banks, a single key box shall be permitted to be used where such elevator banks are separated by not more than 30 feet (9,144 mm). Additional key boxes shall be provided for each individual elevator or elevator bank separated by more than 30 feet (9,144 mm). Exception: A single key box shall be permitted to be located adjacent to a <i>fire command center</i> or the nonstandard fire service elevator key shall be permitted to be secured in a key box used for other purposes and located in accordance with Section 506.1.	No change to Houston amendment.
506.3 Fire depository box. A fire depository box shall be provided within all high-rise occupancies, as defined in the <i>Building Code</i>, or other facilities as may be required by the <i>fire code official</i>. Fire depository boxes shall be installed and maintained in accordance with Houston Fire Department LSB Standard No. 06, “Fire Depository Boxes.”		506.3 Fire depository box. A fire depository box shall be provided within all high-rise occupancies, as defined in the <i>Building Code</i>, or other facilities as may be required by the <i>fire code official</i>. Fire depository boxes shall be installed and maintained in accordance with Houston Fire Department LSB Standard No. 06, “Fire Depository Boxes.”	No change to Houston amendment.
506.4 Permit required. A permit is required to install and maintain a key box and/or fire depository box. See Section 105.6.		506.4 Permit required. A permit is required to install and maintain a key box and/or fire depository box. See Section 105.6.	No change to Houston amendment.
507.4.1 Hose lay advancement access. <u>The <i>fire code official</i> may require an unobstructed 5 feet by 10 feet (1,524 mm × 3,048 mm) minimum clearance along the perimeter of any building, structure or appurtenance. The clearance shall allow adequate access and coverage during emergency operations for firefighters to deploy and advance fire hose lines.</u>		507.4.1 Hose lay advancement access. <u>The <i>fire code official</i> may require an unobstructed 5 feet by 10 feet (1,524 mm × 3,048 mm) minimum clearance along the perimeter of any building, structure or appurtenance. The clearance shall allow adequate access and coverage during emergency operations for firefighters to deploy and advance fire hose lines.</u>	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	SECTION 507 FIRE PROTECTION WATER SUPPLIES 507.1 Required water supply. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction.		Minor wordsmithing to base code language.
507.5 Fire hydrant systems. Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.6, <u>and the Houston Fire Department LSB Standard No. 09, "Marking of Fire Hydrants."</u>		507.5 Fire hydrant systems. Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.6, <u>and the Houston Fire Department LSB Standard No. 09, "Marking of Fire Hydrants."</u>	No change to Houston amendment.
507.5.7 Removal of vehicles parked near fire hydrants. Vehicles parked within 15 feet of a fire hydrant in violation of a state law or ordinance may be removed at the vehicle owner's expense by or at the direction of the fire chief, <i>fire code official</i> or any peace officer in accordance with applicable provisions of the <i>City Code</i> and state law.		507.5.7 Removal of vehicles parked near fire hydrants. Vehicles parked within 15 feet of a fire hydrant in violation of a state law or ordinance may be removed at the vehicle owner's expense by or at the direction of the fire chief, <i>fire code official</i> or any peace officer in accordance with applicable provisions of the <i>City Code</i> and state law.	No change to Houston amendment.
	SECTION 508 FIRE COMMAND CENTER 508.1 General. Where required by other sections of this code and in all buildings classified as high-rise buildings by the <i>International Building Code</i> and in all F-1 and S-1 occupancies with a building footprint greater than 500,000 square feet (46 452 m²). a <i>fire command center</i> for fire department operations shall be provided and shall comply with Sections 508.1.1 through 508.1.7.		New base code requirements for fire command centers in F-1 and S-1 occupancies greater than 500,000 sq/ft.
508.1.1 Location and access. The location and accessibility of the <i>fire command center</i> shall be <i>approved</i> by the ~~fire chief~~ <i>fire code official</i> . The <i>fire command center</i> room shall be on the building floor having street access. Access to the room shall be either directly from the exterior, through an entrance lobby, or through a 2-hour rated corridor leading directly to the exterior.	508.1.1 Location and access. The location and access to accessibility of the <i>fire command center</i> shall be <i>approved</i> by the ~~fire chief~~ code official .	508.1.1 Location and access. The location and access to the <i>fire command center</i> shall be <i>approved</i> by the ~~fire chief~~ <i>fire code official</i> . The <i>fire command center</i> room shall be on the building floor having street access. Access to the room shall be either directly from the exterior, through an entrance lobby, or through a 2-hour rated corridor leading directly to the exterior.	Minor wordsmithing to base code language. No change to Houston amendment.
	508.1.3 Size. The <i>fire command center</i> shall be not less than 0.015 percent of the total building area of the facility served or 200 square feet (19 m²) in area, whichever is greater, with a minimum dimension of 0.7 times the square root of the room area or 10 feet (3048 mm), whichever is greater. Where a <i>fire command center</i> is required for Group F-1 and S-1 occupancies with a building footprint greater than 500,000 square feet (46 452 m²), the <i>fire command center</i> shall have a minimum size of 96 square feet (9 m²) with a minimum dimension of 8 feet (2438 mm) where <i>approved</i> by the <i>fire code official</i>.		Base code updates to fire commend center size requirements.
508.1.6 Required features. The <i>fire command center</i> shall comply with NFPA 72 and shall contain the following features: {EDITORIAL NOTE: ITEMS 1-18 SHALL REMAIN AS SET FORTH IN THE 2015 IFC.} <u>19. A means to automatically switch an alarm signal to an approved central station.</u> <u>20. Two handsets per each 10 stories in building height.</u>		508.1.6 Required features. The <i>fire command center</i> shall comply with NFPA 72 and shall contain the following features: {EDITORIAL NOTE: ITEMS 1-18 SHALL REMAIN AS SET FORTH IN THE 2021 IFC.} <u>19. A means to automatically switch an alarm signal to an approved central station.</u> <u>20. Two handsets per each 10 stories in building height.</u>	Added requirement for a dry erase board.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		21. A dry erase board, minimum size 36x60 inch, must be provided in fire command centers. A dry erase maker shall be provided.	
	508.1.7 Fire command center identification. The fire command center shall be identified by a permanent, easily visible sign stating "FIRE COMMAND CENTER" located on the door to the fire command center.		New base code requirements for fire command center identification.
	SECTION 509 FIRE PROTECTION AND UTILITY EQUIPMENT IDENTIFICATION AND ACCESS 509.1 Identification. Fire protection equipment shall be identified in an <i>approved</i> manner. Rooms containing controls for air-conditioning systems, ~~sprinkler risers and valves, or other fire detection, suppression or control elements~~ fire protection systems shall be identified for the use of the fire department. <i>Approved</i> signs required to identify fire protection system equipment and equipment location shall be constructed of durable materials, permanently installed and readily visible.		Minor wordsmithing to base code language.
	509.2 Equipment access. <i>Approved</i> access shall be provided and maintained for all fire protection system equipment to permit immediate safe operation and maintenance of such equipment. Storage, trash and other materials or objects shall not be placed or kept in such a manner that would prevent such equipment from being readily accessible.		Minor wordsmithing to base code language.
510.1 Emergency responder radio coverage (ERRC) in new buildings. All new buildings shall have <i>approved</i> radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of utilized by the jurisdiction, measured at the exterior of the building. Coverage shall include the City of Houston Radio System. Any building or structure that fails to support adequate radio coverage shall comply with this code for minimum ERRC coverage. The owner shall immediately contact the City of Houston Permitting Office to report the system failure. This section shall not require improvement of the existing public safety communication systems. Exceptions: - Where <i>approved</i> by the building official and the <i>fire code official</i>, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an <i>approved</i> radio coverage system. - Where it is determined by the <i>fire code official</i> that the radio coverage system is not needed. - In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the <i>fire code official</i> shall have the authority to accept an automatically activated emergency responder radio coverage system.	SECTION 510 EMERGENCY RESPONDER COMMUNICATION COVERAGE 510.1 Emergency responder radio communication coverage in new buildings. New buildings shall have <i>Approved in-building, two-way emergency responder communication coverage</i> for emergency responders shall be provided in all new buildings. In-building, two-way emergency responder communication coverage within the building shall be based upon the existing coverage levels of the public safety communication systems of utilized by the jurisdiction, measured at the exterior of the building. This section shall not require improvement of the existing public safety communication systems. Exceptions: - Where <i>approved</i> by the building official and the <i>fire code official</i>, a wired communication system in accordance with Section ~~907.2.13.2~~ 907.2.13.2 shall be permitted to be installed or maintained instead of an <i>approved</i> radio coverage system. - Where it is determined by the <i>fire code official</i> that the radio coverage system is not needed. - In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the <i>fire code official</i> shall have the authority to accept an automatically activated emergency responder radio coverage system.		Minor wordsmithing changes to ERCC base code language. Previous Houston amendment removed to move forward with base code provisions.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
510.1.1 Compliance verification. New buildings require compliance verification testing by a City of Houston registered ERRC third-party special inspector. A copy of the compliance verification special inspection report shall be submitted to the <i>building official</i> for review and archiving to the project records prior to the project final approval or issuance of a <i>Certificate of Occupancy</i> . Exception: Buildings without basements and three stories or less in height with an aggregate total building area of 50,000 square feet or less. NOTE: ERRC special inspection reports shall be submitted by email directly to the Customer Assistance & Code Development Office of the Houston Permitting Center at: HPC-RA@houstontx.gov .		510.1.1 Compliance verification. New buildings require compliance verification testing by a City of Houston registered ERRC third-party special inspector. A copy of the compliance verification special inspection report shall be submitted to the <i>building official</i> for review and archiving to the project records prior to the project final approval or issuance of a <i>Certificate of Occupancy</i> . Exception: Buildings without basements and three stories or less in height with an aggregate total building area of 50,000 square feet or less. NOTE: ERRC special inspection reports shall be submitted by email directly to the Customer Assistance & Code Development Office of the Houston Permitting Center at: HPC-RA@houstontx.gov .	No change to Houston amendment.
510.2 Emergency responder radio coverage in existing buildings. Existing buildings shall be provided with <i>approved</i> radio coverage for emergency responders as required in Chapter 11 of <i>this code</i> .	510.2 Emergency responder radio communication coverage in existing buildings. Existing buildings shall be provided with <i>approved in-building, two-way emergency responder communication radio</i> coverage for emergency responders as required in Chapter 11.		Minor wordsmithing to base code language. Previous Houston amendment removed to go with base code.
510.3 Permit required. A construction permit, when required, shall be issued by the building official for the installation of or modification to an ERRC system in accordance with the <i>Construction Code</i> for the installation of or modification to emergency responder radio coverage systems and related equipment is required as specified in Section 105.7.5. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.	510.3 Permit required. A construction permit for the installation of or modification to <i>in-building, two-way</i> emergency responder radio <i>communication</i> coverage systems and related equipment is required as specified in Section 105.6.4. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.	510.3 Permit required. A construction permit, when required, shall be issued by the <i>building official</i> for the installation of or modification to an ERCC system in accordance with the <i>Construction Code</i> for the installation of or modification to <i>in-building, two-way emergency responder communication coverage systems and related equipment</i> is required as specified in Section 105.6.4. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.	Edits made to clarify code, no major change to code
510.4 Technical requirements. Systems, components, and equipment required to provide the emergency responder radio coverage system shall comply with Sections 510.4.1 through 510.4.2.95.	510.4 Technical requirements. Equipment required to provide <i>in-building, two-way emergency responder communication coverage shall be listed in accordance with UL 2524</i> . Systems, components and equipment required to provide the <i>in-building, two-way</i> emergency responder radio <i>communication</i> coverage system shall comply with Section 510.4.1 through ~~510.4.2.5~~ 510.4.2.8 .	510.4 Technical requirements. Equipment required to provide in-building, two-way emergency responder communication coverage shall be <i>listed</i> in accordance with UL 2524. Systems, components and equipment required to provide in-building, two-way emergency responder communication coverage system shall comply with Sections 510.4.1 through 510.4.2.98.	Updates to base code provisions for ERCC requirements. Update code language to match base code.
510.4.1 Radio Emergency responder communication enhancement system signal strength. The building shall be considered to have acceptable emergency responder radio communications enhancement system coverage when signal strength measurements in 95 percent of all areas on each floor of the building meet the signal strength requirements in Sections 510.4.1.1 and through 510.4.1.32.	510.4.1 Radio Emergency responder communication enhancement coverage system signal strength. The building shall be considered to have acceptable <i>in-building, two-way</i> emergency responder radio ~~communications enhancement communication system~~ coverage where signal strength measurements in 95 percent of all areas and 99 percent of areas designated as <i>critical areas by the fire code official</i> on each floor of the building meet the signal strength requirements in Sections 510.4.1.1 ~~and through 510.4.1.2~~ 510.4.1.3 .		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
510.4.1.2 Minimum signal strength out of the building. A minimum signal strength of -95 dBm shall be received by the agency's radio system when transmitted from within the building. The minimum outbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the <i>fire code official</i> . The outbound signal level shall be sufficient to provide not less than a DAQ of 3.0 or an equivalent SINR applicable to the technology for either analog or digital signals.	510.4.1.1 Minimum signal strength into the building. A minimum signal strength of -95 dBm shall be receivable within the building The minimum inbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the <i>fire code official</i> . The inbound signal level shall be a minimum of -95dBm throughout the coverage area and sufficient to provide not less than a Delivered Audio Quality (DAQ) of 3.0 or an equivalent		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	Signal-to-Interference-Plus-Noise-Ratio (SINR) applicable to the technology for either analog or digital signals.		
510.4.1.3 System performance. Signal strength shall be sufficient to meet the requirements of the applications being utilized by public safety for emergency operations through the coverage area as specified by the <i>fire code official</i> in Section 510.4.2.2	510.4.1.3 System performance. Signal strength shall be sufficient to meet the requirements of the applications being utilized by public safety for emergency operations through the coverage area as specified by the fire code official in Section 510.4.2.2		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
510.4.2 System design. The emergency responder radio coverage system shall be designed in accordance with Section 510.4.2.1 through 510.4.2.95 and NFPA 1221-2016.	510.4.2 System design. The in-building, two-way emergency responder communication coverage system shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.58 and NFPA 1221.		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
510.4.2.1 Amplification systems allowed. Buildings and structures that cannot support the required level of radio coverage shall be equipped with an internal multiple system with FCC Type Accepted Bi-Directional Amplifiers as required to encompass the frequency ranges as specified in Section 510.1, or as subsequently established by the City of Houston and be equipped with systems and components to enhance the public safety radio signals and achieve the required level of radio coverage specified in Sections 510.4.1 through 510.4.1.3. Donor antennas, when utilized, shall be optimized for directional reception from a single transmitter site. Public safety communications enhancement systems utilizing radio-frequency-emitting devices and cabling shall be approved by the <i>fire code official</i> . Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use. ~~a radiating cable system, a distributed antenna system with Federal Communications Commission (FCC)-certified signal boosters, or other system approved by the fire code official in order to achieve the required adequate radio coverage.~~	510.4.2.1 Amplification systems and components. Buildings and structures that cannot support the required level of in-building, two-way emergency responder communication radio coverage shall be equipped with a radiating cable system, a distributed antenna system with Federal Communications Commission (FCC)-certified signal boosters, or other system approved by the fire code official in order to achieve the required adequate radio coverage. systems and components to enhance the public safety signals and achieve the required level of in-building, two-way emergency responder communication coverage specified in Sections 510.4.1 through 510.4.1.3. Public safety communications enhancement in-building, two-way emergency responder communication radio systems utilizing radio-frequency-emitting devices and cabling shall be approved by the fire code official. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use.	510.4.2.1 Amplification systems and components. Buildings and structures that cannot support the required level of in-building, two-way emergency responder communication coverage shall be equipped with an internal multiple system with FCC Type Accepted Bi-Directional Amplifiers as required to encompass the frequency ranges as specified in Section 510.1, or as subsequently established by the City of Houston and be equipped with systems and components to enhance the radio signals and achieve the required level of in-building, two-way emergency responder communication coverage specified in Sections 510.4.1 through 510.4.1.3. In-building, two-way emergency responder communication systems utilizing radio-frequency-emitting devices and cabling shall be approved by the fire code official. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use. Donor antennas, when utilized, shall be optimized for directional reception from a single transmitter site.	Updates to base code provisions for ERCC requirements. No change to Houston amendment requirements for ERCC.
510.4.2.2 Technical criteria. The <i>fire code official</i> shall maintain a document providing the specific technical information and requirements for the emergency responder radio communications coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design.	510.4.2.2 Technical criteria. The <i>fire code official</i> shall maintain a document providing the specific technical information and requirements for the in-building, two-way emergency responder communication radio communications coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design.		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
510.4.2.3 Secondary Standby power. Emergency responder radio coverage systems shall be provided with an approved secondary source of power. dedicated standby batteries or provided with 2-hour standby power batteries and connected to the facility generator power system in accordance with Section 1203604 of this code. The secondary-standby power supply shall be capable of operating the emergency responder radio coverage system	510.4.2.3 Standby power. In-building, two-way emergency responder communication radio coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 604-1203. The standby power supply shall be capable of operating the in-building, two-way emergency responder communication radio		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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at 100-percent system capacity for a period duration of not less than 1224 hours. When primary power is lost, the power supply to the emergency responder radio coverage system shall automatically transfer to the secondary power supply.	coverage system at 100-percent system capacity for a duration of not less than 24-12 hours.		
510.4.2.4 Signal booster requirements. If used, signal boosters shall meet the following requirements: 1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet. 2. Battery systems used for the emergency power source shall be contained in a NEMA 4-type waterproof 3R or higher-rated cabinet. 3. The signal booster system and battery system shall be electrically supervised and monitored by a supervisory service, or when approved by the fire code official, shall sound an audible signal at a constantly attended location. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation. 4. Equipment shall have FCC certification prior to installation. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions. Donor antennas shall be omnidirectional to take advantage of the City of Houston simulcast radio architecture. 5. Bi-Directional Amplifiers (BDAs) used in emergency responder radio coverage systems shall have oscillation prevention circuitry. BDAs will need to be a bandpass or able to hand 42 downlink and 42 uplink channels with room for expansion. For required frequencies, the installer will need to contact the City of Houston Radio Communication Services. NOTE: Contact City of Houston HITS – Radio Communications Services for specific frequencies of specific project locations. City of Houston HITS – Radio Communications Services 2318 Greens Road, Houston, Texas 77032 Attn: NOC Office: 832-393-0399 Email: RCSNETWORKOPS@houstontx.gov 6. The installation of amplification systems or system that operate on or provide the means to cause interference on any emergency responder radio coverage networks shall be coordinated and approved by the fire code official.	510.4.2.4 Signal booster requirements. If used, signal boosters shall meet the following requirements: 1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet. 2. Battery systems used the for emergency power source shall be contained in a NEMA 4-type waterproof 3R or higher-rated cabinet. 3. The signal booster system and battery system shall be electrically supervised and monitored by a supervisory service, or when approved by the fire code official, shall sound an audible signal at a constantly attended location. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation. 4. Equipment shall have FCC certification prior to installation. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions. 5. Bi-Directional Amplifiers (BDAs) Active RF-emitting devices used for in-building, two-way emergency responder communication coverage systems shall have oscillation prevention built-in oscillation detection and control circuitry. 6. The installation of amplification systems or systems that operate on or provide the means to cause interference on any in-building, two-way emergency responder communication coverage networks network shall be coordinated and approved by the fire code official.	510.4.2.4 Signal booster requirements. If used, signal boosters shall meet the following requirements: 1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet. 2. Battery systems used for the emergency power source shall be contained in a NEMA-3R or higher-rated cabinet. 3. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation. 4. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions. Donor antennas shall be omnidirectional to take advantage of the City of Houston simulcast radio architecture. 5. Active RF-emitting devices used for in-building, two-way emergency responder communication coverage systems shall have built-in oscillation detection and control circuitry. Devices will need to be a bandpass or able to hand 42 downlink and 42 uplink channels with room for expansion. For required frequencies, the installer will need to contact the City of Houston Radio Communication Services. NOTE: Contact City of Houston HITS – Radio Communications Services for specific frequencies of specific project locations. City of Houston HITS – Radio Communications Services 2318 Greens Road, Houston, Texas 77032 Attn: NOC Office: 832-393-0399 Email: RCSNETWORKOPS@houstontx.gov 6. The installation of amplification systems or system that operate on or provide the means to cause interference on any in-building, two-way emergency responder communication coverage network shall be coordinated and approved by the fire code official.	Updates to base code provisions for ERCC requirements. No change to Houston amendment requirements for ERCC.
510.4.2.5 Additional frequencies and change of frequencies. The emergency responder radio coverage system shall be capable of modification or expansion in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are	510.4.2.5 Additional frequencies and change of frequencies System monitoring. The in-building, two-way emergency responder communication coverage radio coverage system shall be capable of modification or expansion in the event frequency changes are		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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made available by the FCC or other radio licensing authority.	~~required by the FCC or additional frequencies are made available by the FCC enhancement~~ system shall be monitored by a <i>listed fire alarm control unit</i>, or where approved by the <i>fire code official</i>, shall sound an audible signal at a constantly attended on-site location. Automatic supervisory signals shall include the following: 1. Loss of normal AC power supply. 2. System battery charger(s) failure. 3. Malfunction of the donor antenna(s). 4. Failure of active RF-emitting device(s). 5. Low-battery capacity at 70-percent reduction of operating capacity. 6. Failure of critical system components. 7. The communications link between the <i>fire alarm system</i> and the <i>in-building, two-way emergency responder radio enhancement communication coverage system</i>. 8. Oscillation of active RF-emitting device(s).		
510.4.2.6 System monitoring. The emergency responder radio enhancement system shall be monitored by a <i>listed fire alarm control unit</i>, or where approved by the <i>fire code official</i>, shall sound an audible signal at a constantly attended on-site location. Automatic supervisory signals shall include the following: 1. Loss of normal AC power supply. 2. System battery charger(s) failure. 3. Malfunction of the donor antenna(s). 4. Failure of active RF-emitting device(s). 5. Low-battery capacity at 70-percent reduction of operating capacity. 6. Failure of critical system components. 7. The communications link between the <i>fire alarm system</i> and the emergency responder radio enhancement system.	~~510.4.2.5~~ 510.4.2.6 Additional frequencies and change of frequencies. The <i>in-building, two-way emergency responder radio communication coverage system</i> shall be capable of modification or expansion in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority.		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
510.4.2.7 Design documents. The <i>fire code official</i> shall have the authority to require “as-built” design documents and specifications for emergency responder communications coverage systems. The documents shall be in a format acceptable to the <i>fire code official</i>.	510.4.2.7 Design documents. The <i>fire code official</i> shall have the authority to require “as-built” design documents and specifications for <i>in-building, two-way emergency responder communication communications coverage systems</i>. The documents shall be in a format acceptable to the <i>fire code official</i>.		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
510.4.2.8 Radio communication antenna density. Systems shall be engineered to minimize the near-far effect. Radio enhancement system designs shall include sufficient antenna density to address reduced gain conditions. Exceptions: 1. Class A narrow band signal booster devices with independent AGC/ALC circuits per channel. 2. Systems where all portable devices within the same band use active power control features.	510.4.2.8 Radio communication antenna density. Systems shall be engineered to minimize the near-far effect. <i>In-building, two-way emergency responder communication coverage system</i> designs shall include sufficient antenna density to address reduced gain conditions. Exceptions: 1. Class A narrow band signal booster devices with independent AGC/ALC circuits per channel. 2. Systems where all portable devices within the same band use active power control features.		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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510.4.2.9 Minimum qualifications of designer. An amplification system shall be designed, sealed, signed and dated by a registered professional engineer licensed by the State of Texas.	N/A	510.4.2.9 Minimum qualifications of designer. An amplification system shall be designed, sealed, signed and dated by a registered professional engineer licensed by the State of Texas.	No change to Houston amendment.
510.5 Installation requirements. The installation of the public safety radio coverage system shall be in accordance with Section 510.5.1 through 510.5.4 and NFPA 1221-2016.	510.5 Installation requirements. The installation of the in-building, two-way emergency responder communication coverage system shall be in accordance with NFPA 1221 and Section 510.5.2 through 510.5.5.		Updates to base code provisions for ERCC requirements. Previous Houston amendment removed to go with base code.
	510.5.1 Mounting of the donor antennas(s). To maintain proper alignment with the system designed donor site, donor antennas shall be permanently affixed on the building or where <i>approved</i> , mounted on a movable sled with a clearly visible sign stating "MOVEMENT OR REPOSITIONING OF THIS ANTENNA IS PROHIBITED WITHOUT APPROVAL FROM THE FIRE CODE OFFICIAL." The antenna installation shall be in accordance with the applicable requirements in the <i>International Building Code</i> for weather protection of the building envelope.		New base code provisions for mounting donor antennas for ERCC.
510.5.2 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following: 1. A valid, <u>current</u> FCC-issued general radio operators license. 2. Certification of in-building system training issued by an <u>approved nationally recognized organization</u> , or <u>approved school</u> , or a certificate issued by the manufacturer of the equipment being installed. These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the <i>fire code official</i> is provided. Moved to 510.5.3	~~510.5.1~~ 510.5.2 Approval prior to installation. Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC or other radio licensing authority shall not be installed without prior coordination and approval of the fire code official.		Updates to base code provisions for ERCC requirements. Previous Houston amendment relocated to Section 510.5.3.
510.5.3 Acceptance test procedure. Where an emergency responder radio coverage system is required, and upon completion of installation, the building owner shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 9590 percent. Testing shall be conducted by personnel with minimum qualifications as specified in Section 510.5.2. The building owner shall retain copies of all test records at the inspected premises. A photocopy of the test inspection report shall be submitted to the building official. If the building coverage fails to comply with the minimum requirements of this code, repairs shall be made and additional testing conducted until the minimum requirements have been met. The test procedure shall be conducted as follows: 1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas. 2. The test shall be conducted using a calibrated, and <u>approved</u> , portable radio of the latest brand and model used by the agency talking through the agency's radio	~~510.5.2~~ 510.5.3 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following: 1. A valid FCC-issued general radio operators license. 2. Certification of in-building system training issued by a organization or <i>approved</i> school, or a certificate issued by the manufacturer of the equipment being installed. These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the <i>fire code official</i> is provided.	510.5.3 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following: 3. A valid, <u>current</u> FCC-issued general radio operators license "GROL". 4. Certification of in-building system training issued by an <u>approved</u> organization or <i>approved</i> school, or a certificate issued by the manufacturer of the equipment being installed. These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the <i>fire code official</i> is provided.	Base code renumbering. Previous Houston amendment relocated to Section 510.5.4.

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communications system or equipment approved by the <i>fire code official</i>. 3. Failure of <u>more than one test area</u> shall result in failure ~~not more than two nonadjacent test areas shall not result in failure of the test.~~ 4. In the event that ~~three~~ <u>two</u> of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than ~~four~~ <u>two</u> nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the ~~90~~<u>95</u>-percent coverage requirement. 5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered failure of that test area. Additional test locations shall not be permitted. 6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building <i>owner</i> so that the measurements can be verified during annual tests. In the event that the measurements results become lost, the building <i>owner</i> shall be required to rerun the acceptance test to reestablish the gain values. 7. As part of the installation a spectrum analyzer or other suitable test equipment, <u>calibrated within the previous 12 months</u>, shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and subsequent annual inspections. 8. Systems incorporating Class B signal-booster devices of Class B broadband fiber remote devices shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater than 10 feet (3,048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2. <u>Exception:</u> The minimum coverage of each floor may be reduced from 95 to 90 percent where the stairwells and elevator lobbies are included in the 90-percent coverage area. Moved to 510.5.4			

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~510.5.3~~ 510.5.4 Acceptance test procedure. Where an <u>in-building, two-way</u> emergency responder radio <u>communication</u> coverage system is required, and upon completion of installation, the building <i>owner</i> shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 95 percent. The test procedure shall be conducted as follows: 1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas. 2. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the <i>agency</i> talking through the <i>agency</i> 's radio communications system or equipment <i>approved</i> by the <i>fire code official</i>. 3. Failure of more than one test area shall result in failure of the test. 4. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 95-percent coverage requirement. 5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public <i>agency</i> 's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted. 6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building <i>owner</i> so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building <i>owner</i> shall be required to rerun the acceptance test to reestablish the gain values. 7. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and at subsequent annual inspections. 8. <u>Systems</u> incorporating Class B signal booster devices or Class B broadband fiber remote devices shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater than 10 feet (3048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on	510.5.4 Acceptance test procedure. Where an in-building, two-way emergency responder communication coverage system is required, and upon completion of installation, the building <i>owner</i> shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 95 percent. <u>Testing shall be conducted by personnel with minimum qualifications as specified in Section 510.5.3. The building owner shall retain copies of all test records at the inspected premises. A photocopy of the test inspection report shall be submitted to the building official. If the building coverage fails to comply with the minimum requirements of this code, repairs shall be made and additional testing conducted until the minimum requirements have been met.</u> The test procedure shall be conducted as follows: 1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas. 2. The test shall be conducted using a calibrated, <u>and approved,</u> portable radio of the latest brand and model used by the <i>agency</i> talking through the <i>agency</i>'s radio communications system or equipment approved by the <i>fire code official</i>. 3. Failure of more than one test area shall result in failure of the test. 4. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 95-percent coverage requirement. 5. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public <i>agency</i>'s radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted. 6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building <i>owner</i> so that the measurements can be verified during annual tests. In the event that the measurements results become lost, the building <i>owner</i> shall be required to rerun the acceptance test to reestablish the gain values. 7. As part of the installation a spectrum analyzer or other suitable test equipment, <u>calibrated within the previous 12 months,</u> shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and subsequent annual inspections. 8. Systems shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater	Base code renumbering. No change to Houston amendment, relocated from Section 510.5.3.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2.	than 10 feet (3048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2. Exception: The minimum coverage of each floor may be reduced from 95 to 90 percent where the stairwells and elevator lobbies are included in the 90-percent coverage area.	
	~~510.5.4~~ 510.5.5 FCC compliance. The in-building, two-way emergency responder radio communication coverage system installation and components shall also comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.		Minor wordsmithing to base code ERCC language.
510.6 Maintenance. The emergency responder radio coverage system shall be maintained operational at all times in accordance with Sections 510.6.1 through 510.6.4 ~~3~~ , and shall be replaced or repaired where defective. The property owners shall be responsible for necessary repairs, replacement, and/or upgrades to the system as directed by the fire code official.	510.6 Maintenance. The in-building, two-way emergency responder radio communication coverage system shall be maintained operational at all times in accordance with Sections 510.6.1 through ~~510.6.3~~ 510.6.4 .	510.6 Maintenance. The in-building two-way emergency responder communication coverage system shall be maintained operational at all times in accordance with Sections 510.6.1 through 510.6.4 and shall be replaced or repaired where defective. The property owners shall be responsible for necessary repairs, replacement, and/or upgrades to the system as directed by the fire code official.	Minor wordsmithing to base code ERCC language. No change to Houston amendment.
510.6.1 Testing and proof of compliance. The building owner shall have the emergency responder radio coverage system ~~shall be~~ inspected and tested annually ~~and or~~ where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following: 1. In-building coverage test as described in Section 510.5.3. 2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance or set to optimize the performance of the system. 3. Backup batteries and power supplies shall be tested under load of a period of 1-hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined. 4. Other active components shall be checked to verify operation within the manufacturer's specifications. 5. At the conclusion of the special inspection testing, a photocopy of the report, which shall verify compliance with Section 510.5.3, shall be electronically submitted to the Customer Assistance & Code Development Office of the Houston Permitting Center at: HPC-RA@houston.tx.gov. The original shall be kept on site and available for review upon request by the fire code official.	510.6.1 Testing and proof of compliance. The owner of the building or owner's authorized agent shall have the in-building, two-way emergency responder radio communication coverage system ~~shall be~~ inspected and tested annually or where structural changes occur, including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following: 1. In-building coverage test as described in Section 510.5.4. 2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance or set to optimize the performance of the system. 3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined. 4. Other All active components shall be checked to verify operation within the manufacturer's specifications. 5. At the conclusion of the testing, a report, which shall verify compliance with Section 510.5.4, shall be submitted to the fire code official.	510.6.1 Testing and proof of compliance. The owner of the building or owner's authorized agent shall have the in-building, two-way emergency responder communication coverage system inspected and tested annually ~~and or~~ where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following: 1. In-building coverage test as described in Section 510.5.4. 2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance or set to optimize the performance of the system. 3. Backup batteries and power supplies shall be tested under load of a period of 1-hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined. 4. All active components shall be checked to verify operation within the manufacturer's specifications. 5. At the conclusion of the special inspection testing, a photocopy of the report, which shall verify compliance with Section 510.5.4, shall be electronically submitted to the Customer Assistance & Code Development Office of the Houston Permitting Center at: HPC-RA@houston.tx.gov. The original shall be kept on site and available for review upon request by the fire code official.	Minor wordsmithing to base code ERCC language. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	510.6.2 Additional frequencies. The building owner shall modify or expand the in-building, two-way emergency responder radio communication coverage system at his or her expense in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority. Prior approval of a public safety radio in-building, two-way emergency responder communication coverage system on previous frequencies does not exempt this section.		Minor wordsmithing to base code ERCC language.
	510.6.3 Nonpublic safety system. Where other nonpublic safety amplification systems installed in buildings reduce the performance or cause interference with the in- building, two-way emergency responder communications communication coverage system, the nonpublic safety amplification system shall be corrected or removed.		New base code section for requirements of nonpublic systems.
<u>510.6.4 Nonpublic safety system. Where other nonpublic safety amplification systems installed in buildings reduce the performance or cause interference with the emergency responder communications coverage system, the nonpublic safety amplification system shall be corrected or removed.</u>	~~510.6.3~~ 510.6.4 Field testing. Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage.		Base code renumbering. Previous Houston amendment removed as it's now part of base code.
2015 Houston IFC – Chapter 6 Building Service and Systems	2021 IFC – Chapter 6 – Building Service and Systems	2021 Houston Amendments	Code Change Summary
	CHAPTER 6 BUILDINGS SERVICES AND SYSTEMS User note: <i>About this chapter: Chapter 6 focuses on building systems and services as they relate to potential safety hazards and when and how they should be installed. This chapter brings together all building system- and service-related issues for convenience and provides a more systematic view of buildings. The following building services and systems are addressed: electrical equipment wiring and hazards, elevator operation, maintenance and fire service keys, fuel-fired appliances, electrical equipment, wiring and hazards, mechanical refrigeration, elevator operation, maintenance and fire service keys, commercial cooking equipment and systems, kitchen hoods, commercial kitchen cooking oil storage, mechanical refrigeration, and hyperbaric facilities and clothes dryer exhaust systems. Note that building systems focused on energy systems and components are addressed by Chapter 12. Portions of this chapter were extensively reorganized for the 2021 edition. For clarity, the relocation marginal markings have not been included. For complete information, see the relocations table in the preface information of this code.</i>		Updated information on Ch. 6 added to base code.
	SECTION 601 GENERAL 601.1 Scope. The provisions of this chapter shall apply to the installation, operation and maintenance of the following building services and systems: fuel-fired appliances and heating systems,		New updates to base code to establish applicability of the chapter.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~electrical systems and equipment, mechanical refrigeration systems, elevator recall and commercial kitchen equipment.~~ 1. <u>Electrical systems, equipment and wiring.</u> 2. <u>Information technology server rooms.</u> 3. <u>Elevator systems, emergency operation and recall.</u> 4. <u>Fuel-fired appliances, heating systems, chimneys and fuel oil storage.</u> 5. <u>Commercial cooking equipment and systems.</u> 6. <u>Commercial cooking oil storage.</u> 7. <u>Mechanical refrigeration systems.</u> 8. <u>Hyperbaric facilities.</u> 9. <u>Clothes dryer exhaust systems.</u>		
601.2 Permits. Permits shall be obtained for refrigeration systems, stationary lead acid battery systems and solar photovoltaic power systems as set forth in Sections 105.6 and 105.7.	~~601.2 Permits.~~ Permits shall be obtained for refrigeration systems, battery systems and solar photovoltaic power systems as set forth in Sections 105.5 and 105.6. Hazard abatement. <u>Operations or conditions deemed unsafe or hazardous by the fire code official shall be abated. Equipment, appliances, materials and systems that are modified or damaged and constitute an electrical shock or fire hazard shall not be used.</u>		New section added to base code to address general abatement of hazards for all building services/systems.
	601.2.1 Correction of unsafe conditions. <u>The fire code official shall be authorized to require the owner, the owner's authorized agent, operator or occupant of a building or premises to abate or cause to be abated or corrected such unsafe operations or conditions either by repair, rehabilitation, demolition or other approved corrective action in compliance with this code.</u>		New base code section establishing fire code official's authority when unsafe conditions are present.
	SECTION 602 DEFINITIONS 602.1 Definitions. The following terms are defined in Chapter 2: BATTERY SYSTEM, STATIONARY LEAD-ACID BATTERY TYPES. COMMERCIAL COOKING APPLIANCES. CRITICAL CIRCUIT. EMERGENCY POWER SYSTEM. HOOD. Type I. Type II. REFRIGERANT. REFRIGERATION — REFRIGERANT (REFRIGERATION) SYSTEM. STANDBY POWER SYSTEM.		Minor updates to base code. Provisions related to energy are relocated to Chapter 12.
	~~SECTION 604~~603 ELECTRICAL EQUIPMENT, WIRING AND HAZARDS 603.1 General. <u>Electrical equipment, wiring and systems required by this code or the International Building Code shall be installed, used and maintained in accordance with NFPA 70 and Sections 603.2 through 603.10.</u>		New base code section for electrical/wiring systems to be maintained in accordance with NFPA 70.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~604.7~~ 603.1.1 Equipment and fixtures wiring. Electrical equipment and fixtures All electrical equipment, wiring, devices and appliances shall be tested; ~~and listed by an approved agency and labeled;~~ and installed, used and maintained in accordance with NFPA 70 and all instructions included as part of such listing.		New base code section for electrical/wiring systems to be maintained in accordance with NFPA 70.
	603.1.2 Healthcare facilities. In Group I-2 facilities, ambulatory care facilities and outpatient clinics, the electrical systems and equipment shall be maintained and tested in accordance with NFPA 99.		New base code section for electrical/wiring systems in healthcare facilities to be maintained in accordance with NFPA 99.
	~~604.4~~ 603.2 Abatement of unsafe conditions and electrical hazards. Identified electrical hazards shall be abated. Identified hazardous electrical conditions in permanent wiring shall be brought to the attention of the responsible code official. Electrical wiring, devices, appliances and other equipment that is modified or damaged and constitutes Conditions that constitute an electrical shock or fire hazard shall ~~be abated~~ not be used.		New base code language for unsafe electrical conditions.
	603.2.1 Modified or damaged. Electrical wiring, devices, equipment and appliances that are modified or damaged, and constitute an electrical shock or fire hazard, shall not be used until repaired or replaced in accordance with this code and NFPA 70.		New base code section for electrical/wiring systems to be maintained in accordance with NFPA 70.
	~~604.6~~ 603.2.2 Unapproved conditions Open electrical terminations.		Base code renumbering and section renaming.
	~~604.2~~ 603.3 Illumination.		Base code renumbering.
603.3.2.4 Installation. Tanks and piping systems shall be installed and separated from other uses in accordance with NFPA 37 and UL 2200 standards Section 915 and Chapter 13, both of the ~~International Mechanical Code~~ , as applicable. Exception: Protected above-ground tanks complying with Section 5704.2.9.7 shall not be required to be separated from surrounding areas. Moved to 605.4.2.5			Previous Houston amendment relocated to Section 605.4.2.5.
	~~604.3~~ 603.4 Working space and clearances clearance. A working space of not Working space around electrical equipment shall be provided in accordance with Section 110.26 of NFPA 70 for electrical equipment rated 1,000 volts or less, and Section 110.33 of NFPA 70 for electrical equipment rated over 1,000 volts. The minimum required working space shall be not less than 30 inches (762 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height ~~shall be provided~~ in front of electrical service equipment. Where the electrical service equipment is wider than 30 inches (762 mm), the minimum working space shall be not less than the width of the		New base code language for electrical/wiring systems to be maintained in accordance with NFPA 70.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	equipment. Storage of materials shall not be located within the designated working space. Exceptions: ~~here other dimensions are required or allowed by NFPA 70.~~ ~~Access openings into attics or under floor areas that provide a minimum clear opening of 22 inches (559 mm) by 30 inches (762 mm).~~		
	~~604.3.1~~ 603.4.1 Labeling. Doors into electrical control panel rooms shall be marked with a plainly visible and legible sign stating ELECTRICAL ROOM or similar approved wording. The disconnecting means for each service, feeder or branch circuit originating on a switchboard or panelboard shall be legibly and durably marked to indicate its purpose unless such purpose is clearly evident. Where buildings or structures are supplied by more than one power source, markings shall be provided at each service equipment location and at all interconnected electric power production sources identifying all electric power sources at the premises in accordance with NFPA 70.		New base code language for electrical/wiring systems to be maintained in accordance with NFPA 70.
	~~604.4~~ 603.5 Relocatable power taps and current taps. ~~Multiplug adapters. Multiplug adapters, such as cube adapters, unfused plug strips or any other device not complying with NFPA 70 shall be prohibited.~~ The construction and use of current taps and relocatable taps shall be in accordance with NFPA 70 and this code.		New base code section for power/current taps.
	~~604.4.1~~ 603.5.1 Listing Power tap design. Relocatable power taps shall be ~~of the polarized or grounded type, equipped with overcurrent protection, and shall be listed~~ in accordance with UL 1363. Current taps shall be listed and labeled in accordance with UL 498A.		Updates to base code language for current traps.
	603.5.1.1 Listing in Group I-2 occupancies and ambulatory care facilities. In Group I-2 occupancies and ambulatory care facilities, relocatable power taps shall be listed in accordance with UL 1363 except under the following conditions: 1. In Group I-2, Condition 2 occupancies, relocatable power taps providing power to patient care-related electrical equipment in the patient care vicinity, as defined by NFPA 99, shall be listed in accordance with UL 1363A or UL 60601-1. 2. In Group I-2, Condition 1 facilities, in care recipient rooms using line-operated patient care-related electrical equipment, relocatable power taps in the patient care vicinity, as defined by NFPA 99, shall be listed in accordance with UL 1363A or UL 60601-1. 3. In ambulatory care facilities, relocatable power taps providing power to patient care-related electrical equipment in the patient care vicinity, as defined by NFPA 99, shall be listed in accordance with UL 1363A or UL 60601-1.		New base code provisions for power traps in healthcare facilities.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~604.4.2~~ 603.5.2 Application and use ~~Power supply.~~ Relocatable power taps and current taps shall be directly connected to a permanently installed receptacle. Exceptions: 1. Where approved for use in a Group A occupancy or in a meeting room in a Group B occupancy, not more than five relocatable power taps shall be permitted to be connected together or connected to an extension cord for temporary use to supply power to electronic equipment. 2. Current taps and relocatable power taps shall not be required to connect directly to a permanently installed receptacle outlet where used for 90 days or less for the purpose of testing the performance of such devices.		Updates to base code language for power traps to provide certain exceptions.
	~~604.4.3~~ 603.5.3 Installation.		Base code renumbering.
	~~604.5~~ 603.6 Extension cords. Extension cords and flexible cords shall not be a substitute for permanent wiring and shall be listed and labeled in accordance with UL 817. Extension cords and flexible cords shall not be affixed to structures, extended through walls, ceilings or floors, or under doors or floor coverings, nor shall such cords be subject to environmental damage or physical impact. Extension cords shall be used only with portable appliances. Extension cords marked for indoor use shall not be used outdoors.		New base code language for extension cords to meet UL 817.
	~~604.5.1~~ 603.6.1 Application and use ~~Power supply.~~ Extension cords shall be plugged directly into an <i>approved</i> receptacle, relocatable power tap or ~~multiplug adapter~~ current tap and, except for <i>approved</i> multiplug extension cords, shall serve only one portable appliance.		Minor wordsmithing to base code language.
	~~604.5.2~~ 603.6.2 Ampacity.		Base code renumbering.
	~~604.5.3~~ 603.6.3 Maintenance.		Base code renumbering.
	~~604.5.4~~ 603.6.4 Grounding.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~604.8~~ 603.7 Electrical motors.		Base code renumbering.
	~~604.9~~ 603.8 Temporary wiring. Temporary The use of temporary wiring for electrical power and lighting installations shall not exceed is allowed for a period ~~not to exceed~~ of 90 days. Temporary wiring methods shall meet the applicable provisions of NFPA 70. Exception: Temporary wiring for electrical power and lighting installations ~~is allowed~~ complying with the applicable provisions of NFPA 70 is permitted during periods of construction, remodeling, repair or demolition of buildings, structures, equipment or similar activities.		Minor wordsmithing to base code language.
	~~604.9.1~~ 603.8.1 Attachment to structures. Temporary wiring attached to a structure shall be protected from physical damage and supported on insulators spaced not more than 10 feet (3048 mm) apart ~~attached in an approved manner.~~		New base code language requiring protection of temp wiring.
603.9 Gas meters and piping. Moved to 605.9 603.9.1 Protection of meters and piping. Above-ground gas meters, regulators and piping subject to damage shall be protected by a barrier complying with Section 312 or otherwise protected in an <i>approved</i> manner. Moved to 605.9.1	~~604.10~~ 603.9 Portable, electric space heaters. Where not prohibited by other sections of this code, portable, electric space heaters shall be permitted to be used in all occupancies ~~other than Group I-2 and~~ in accordance with Sections 605.43.10.1 through 605.40.43. Exception: ~~The use of portable, electric space heaters in which the heating element cannot exceed a temperature of 212°F (100°C) shall be permitted in nonsleeping staff and employee areas in Group I-2 occupancies.~~		Minor changes to base code provisions. Previous Houston amendment relocated to Section 605.9.
	~~604.10.1~~ 603.9.1 Listed and labeled.		Base code renumbering.
603.9.2 Testing of piping and systems. Moved to 605.9.2 603.9.2.1 Routine testing. All gas piping systems in Groups A, E, I, R-1 and R-2 occupancies shall be tested at least every five years by a licensed plumber. Systems shall be tested in accordance with the <i>Plumbing Code</i> . The owner shall maintain a written record onsite at a location designated by the <i>fire code official</i> and it shall be made available upon request. Moved to 605.9.2.1	~~604.10.2~~ 603.9.2 Power supply.		Base code renumbering. Previous Houston amendment relocated to Section 605.9.
603.9.2.2 Testing for leaks. The <i>fire code official</i> is authorized to require a test of the gas piping system in any building or structure, of any occupancy type, when there is reason to believe a leak may exist in the system. Moved to 605.9.2.2			Previous Houston amendment relocated to Section 605.9.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~604.10.3~~ 603.9.3 Extension cords.		Base code renumbering.
	~~604.10.4~~ 603.9.4 Prohibited areas.		Base code renumbering.
	~~604.10.5~~ 603.9.5 Group I-2 occupancies and ambulatory care facilities.		Base code renumbering.
	~~605.11 Solar photovoltaic power systems.~~ Redline Note: This section Relocated to new Chapter 12 and reorganized so that it is shown as stricken through and underlined in Chapter 12. For detailed revisions reference should be made to other Code Council resources such as "Complete Revision History" (available in 2018)		Solar PV systems relocated to Chapter 12.
	~~604.11~~ 603.10 Abandoned wiring in plenums.		Base code renumbering.
		603.11 Protection of lighting fixtures and devices. All permanent or temporary lighting fixtures and devices used in mechanical spaces, service areas, exit accessways, stairways, and parking garages shall be provided with an <i>approved</i> protective device designed to prevent accidental breakage, contact with readily ignitable materials, or creation of electrical shock hazard. Exceptions: 1. <i>Listed</i> devices <i>approved</i> for use in hazardous locations in accordance with the <i>Electrical Code</i> . 2. <i>Listed</i> incandescent bulbs or fluorescent tubes provided with <i>approved</i> shatter- or break-resistive protective coatings. 3. <i>Listed</i> devices for exterior use, with <i>approved</i> weather resistant bulbs. 4. Fixtures so located as to be suitably protected from accidental damage or breakage.	No change to Houston amendment, relocated from Section 605.13.
	~~SECTION 604~~ ~~EMERGENCY AND STANDBY POWER SYSTEMS~~ Redline Note: This section Relocated to new Chapter 12 and reorganized so that it is shown as stricken through and underlined in Chapter 12. For detailed revisions reference should be made to other Code Council resources such as "Complete Revision History" (available in 2018)		Emergency/standby power systems relocated to Chapter 12.

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	SECTION ~~606~~ 604 ELEVATOR OPERATION, MAINTENANCE AND FIRE SERVICE KEYS 604.1 General. Where elevators and conveying systems are installed, they shall comply with Chapter 30 of the <i>International Building Code</i> and Sections 604.2 through 604.7 of this code.		New base code section correlating elevator requirements with IBC.
	~~606.1~~ 604.2 Emergency operation.		Base code renumbering.
	~~606.2~~ 604.3 Standby power.		Base code renumbering.
	~~606.2.1~~ 604.3.1 Manual transfer.		Base code renumbering.
	~~606.2.2~~ 604.3.2 One elevator.		Base code renumbering.
	~~606.2.3~~ 604.3.3 Two or more elevators.		Base code renumbering.
	~~606.2.4~~ 604.3.4 Machine room ventilation.		Base code renumbering.
	[BE] 606.3 604.4 Emergency signs.	[BE] 604.4 Emergency signs. An <i>approved</i> pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS. The lettering shall be at least ½ inch (13 mm) block letters on a background of contrasting color so that the lettering is clearly visible. Exceptions: 1. The emergency sign shall not be required for elevators that are part of an accessible <i>means of egress</i> complying with Section 1009.4. 2. The emergency sign shall not be required for elevators that are used for occupant self-evacuation in accordance with Section 3008 of the <i>International Building Code</i>.	Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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604.4.1 Schedule. Inspection, testing and maintenance of emergency and standby power systems shall be in accordance with an approved schedule established upon completion and approval of the system installation and Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment."			Previous Houston amendment relocated to Section 1203.4.2.
	604.5 Maintenance of elevators. Elevator features and lobbies required by Section 3006 of the <i>International Building Code</i> shall be maintained in accordance with Sections 604.5.1 through 604.5.4.		New base code section correlating elevator requirements with IBC.
	~~606.4~~ 604.5.1 Fire service access elevators and lobbies. Where fire service access elevators are required by Section 3007 of the <i>International Building Code</i> , fire service access elevator fire protection and safety features and lobbies required by Section 3007 of the <i>International Building Code</i> shall be maintained free of storage and furniture.		New base code section correlating elevator requirements with IBC.
	~~606.5~~ 604.5.2 Occupant evacuation elevator elevators and lobbies. Where occupant evacuation elevators are provided in accordance with Section 3008 of the <i>International Building Code</i> , occupant evacuation elevator fire protection and safety features and lobbies required by Section 3008 of the <i>International Building Code</i> shall be maintained free of storage and furniture.		New base code section correlating elevator requirements with IBC.
	604.5.3 Storage within elevator lobbies. Where hoistway opening protection is required by Section 3006.2 of the <i>International Building Code</i> , elevator lobbies shall be maintained free of storage.		New base code section correlating elevator requirements with IBC.
	~~606.6~~ 604.5.4 Water protection of hoistway enclosures. Methods to prevent water from infiltrating into a hoistway enclosure required by Sections 3007.3 and 3008.3 of the <i>International Building Code</i> shall be maintained.		New base code section correlating elevator requirements with IBC.
	604.6 Elevator keys. All elevators shall be provided with elevator car door and fire-fighter service keys in accordance with Sections 604.6.1 through 604.6.2.4.		New base code section correlating elevator requirements with IBC.
	~~606.7~~ 604.6.1 Elevator key location. Keys for the elevator car doors and fire-fighter service keys shall be kept in an <i>approved</i> location for immediate use by the fire department.	604.6.1 Elevator key location. Keys for the elevator car doors and fire-fighter service keys shall be kept in an <i>approved</i> location in accordance with Houston Fire Department LSB Standard No. 06, "Fire Depository Boxes" for immediate use by the fire department.	New base code section correlating elevator requirements with IBC. No changes to Houston amendment, relocated from Section 607.7.
	~~606.8~~ 604.6.2 Standardized fire service elevator keys. Buildings with elevators equipped with Phase I emergency recall, Phase II emergency in-car operation, or a fire service access elevator shall be equipped to operate with a standardized fire service elevator key <i>approved</i> by the <i>fire code official</i> or a standardized key in accordance with ASME A17.1/CSA B44.	604.6.2 Standardized fire service elevator keys. Buildings with elevators equipped with Phase I emergency recall, Phase II emergency in-car operation, or a fire service access elevator shall be equipped to operate with a standardized fire service elevator key approved by the <i>fire code official</i> , or a standardized key in accordance with Houston Fire Department LSB Standard No. 06, "Fire Depository Boxes." See Section 506.1. The <i>approved</i> fire	New base code section correlating elevator requirements with IBC. No change to Houston amendment, relocated from Section 607.8.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Exception: The <i>owner</i> shall be permitted to place the building's nonstandardized fire service elevator keys in a key box installed in accordance with Section 506.1.2.	service elevator key shall be available for immediate use by the fire department. Exception: The owner shall be permitted to place the building's nonstandardized fire service elevator keys in a key box installed in accordance with Section 506.1.2.	
	~~606.8.1~~ 604.6.2.1 Requirements for standardized fire service elevator keys. Standardized fire service elevator keys shall comply with all of the following: 1. All fire service elevator keys within the jurisdiction shall be uniform and ~~specific for the jurisdiction~~ approved in accordance with Section 604.6.2. Keys shall be cut to a uniform key code. 2. Fire service elevator keys shall be of a patent-protected design to prevent unauthorized duplication. 3. Fire service elevator keys shall be factory restricted by the manufacturer to prevent the unauthorized distribution of key blanks. Uncut key blanks shall not be permitted to leave the factory. 4. Fire service elevator keys subject to these rules shall be engraved with the words "DO NOT DUPLICATE."		New base code section correlating elevator requirements with IBC.
	~~606.8.2~~ 604.6.2.2 Access to standardized fire service keys. Access to standardized fire service elevator keys shall be restricted to the following: 1. Elevator owners or their authorized agents. 2. Elevator contractors. 3. Elevator inspectors of the jurisdiction. 4. Fire code officials of the jurisdiction. 5. The fire department and other emergency response agencies designated by the fire code official.		New base code section correlating elevator requirements with IBC.
	~~606.8.3~~ 604.6.2.3 Duplication or distribution of keys. A person shall not duplicate a standardized fire service elevator key or issue, give, or sell a duplicated key unless in accordance with this code.		New base code section correlating elevator requirements with IBC.
	~~606.8.4~~ 604.6.2.4 Responsibility to provide keys. The building <i>owner</i> shall provide up to three standardized fire service elevator keys where required by the fire code official, upon installation of a standardized fire service key switch or switches in the building. *		New base code section correlating elevator requirements with IBC.
	604.7 Storage. Storage is prohibited in elevator cars or elevator machine rooms. Exceptions: 1. Blankets used for protection of elevator cab walls during construction or renovation. 2. Materials necessary for the operation and maintenance of the elevator equipment.		New base code section correlating elevator requirements with IBC.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 603-605 FUEL-FIRED APPLIANCES ~~603.1.4~~605.1 Installation General. The design, construction, installation, operation, alteration, repair and maintenance of nonportable ~~fuel-gas-fired~~ appliances and systems shall comply with the provisions of this section and the <i>International Fuel Gas Code</i>. The design, construction, installation, operation, alteration, repair and maintenance of nonportable solid fuel-fired and oil-fired liquid fuel-fired appliances and systems shall comply with the provisions of this section and the <i>International Mechanical Code</i>. The construction and use of portable installation of all other fuel-fired appliances not connected to a fixed fuel piping system, other than portable internal combustion engines, oil lamps and other portable devices such as blow torches, melting pots and weed burners, shall comply with this section~~and the <i>International Mechanical Code</i>.~~		New base code language providing the scope of regulation for fuel-fired appliances and systems.
	~~603.1.4~~605.1.1 Manufacturer's instructions-Installation of nonportable fuel-fired appliances. The installation of nonportable fuel-fired appliances shall be made in accordance with the manufacturer's installation instructions and applicable federal, state and local rules and regulations. ~~Where it becomes necessary to change, modify or alter a manufacturer's instructions in any way, written approval shall first be obtained from the manufacturer.~~		Minor base code changes for fuel-fired appliances.
	~~603.1.3~~605.1.2 Electrical wiring and equipment. Electrical wiring and equipment used in connection with ~~oil-burning~~ fuel-fired appliances and equipment shall be installed and maintained in accordance with Section 603 and NFPA 70.		Minor base code changes for fuel-fired appliances.
	~~603.1.4~~605.1.3 Fuel oil. The grade of fuel oil used in an oil a burner shall be that for which the oil burner is approved and as stipulated by the oil burner manufacturer's instructions. ~~manufacturer.~~ Oil containing gasoline shall not be used. Waste crankcase oil shall be an acceptable fuel in Group F, M and S occupancies where utilized in equipment listed and labeled for use with waste oil and where such equipment is installed in accordance with the manufacturer's instructions and the terms of its listing.		Minor base code changes for fuel-fired appliances.
	~~603.1.5~~605.1.4 Access. The installation of fuel-fired equipment shall be readily provided with accessible ~~to equipment~~ for cleaning hot surfaces; removing burners; replacing motors, controls, air filters, chimney and vent connectors, draft regulators and other working parts; and for adjusting, cleaning and lubricating parts.		Minor base code changes for fuel-fired appliances.
	~~603.1.6~~605.1.5 Testing, diagrams and instructions. After installation of the ~~oil-burning~~ fuel-fired equipment, operation and combustion performance tests shall be conducted to determine that the burner equipment is in proper operating condition and that all accessory equipment, controls, and safety devices function properly		Minor base code changes for fuel-fired appliances.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~603.1.6.1~~ 605.1.5.1 Diagrams. Contractors installing industrial oil-burning systems shall furnish not less than two copies of diagrams showing the main oil lines and controlling valves, one copy of which shall be posted at the oil-burning equipment and another at an <i>approved</i> location that will be ~~accessible~~ available in case of emergency.		Minor base code changes for fuel-fired appliances.
	~~603.1.6.2~~ 605.1.5.2 Operating instructions. After completing the installation, the installer shall instruct the <i>owner</i> or operator in the proper operation of the equipment. The installer shall furnish the <i>owner</i> or operator with the manufacturer's operating instructions. ~~name and telephone number of persons to contact for technical information or assistance and routine or emergency services.~~		Minor base code changes for fuel-fired appliances.
	~~603.1.7~~ 605.1.6 Clearances. Working clearances between ~~oil~~ fuel- fired appliances and electrical panelboards and equipment shall be in accordance with NFPA 70. Clearances between oil-fired equipment and oil supply tanks shall be in accordance with NFPA 31.		Minor base code changes for fuel-fired appliances.
	~~603.7~~ 605.2 Discontinuing operation ~~Abatement~~ of unsafe conditions ~~heating appliances.~~ The <i>fire code official</i> is authorized to order that measures be taken to prevent the operation of any existing stove, oven, furnace, incinerator, boiler or any other heat-producing device or appliance found to be defective or in violation of code requirements for existing appliances after giving notice to this effect to any person, <i>owner</i> , firm or agent or operator in charge of the same. The <i>fire code official</i> is authorized to take measures to prevent the operation of any device or appliance without notice when inspection shows the existence of an immediate fire hazard or when imperiling human life. The defective device shall remain withdrawn from service until all necessary repairs or <i>alterations</i> have been made or replaced in accordance with Section 605.1.		Minor base code changes for fuel-fired appliances.
	~~603.6~~ 605.2.1 Chimneys and appliances. Chimneys, vents, incinerators, smokestacks or similar devices for conveying smoke or hot gases to the outer air and the appliances such as stoves, furnaces, fireboxes or boilers to which such devices are connected, shall be maintained so as not to create a fire hazard.		Minor base code changes for fuel-fired appliances.
	~~603.6.4~~ 605.2.1.1 Masonry chimneys. Masonry chimneys that, upon inspection, are found to be without a flue liner and that have open mortar joints which will permit smoke or gases to be discharged into the building, or which are cracked as to be dangerous, shall be repaired or relined with a <i>listed</i> chimney liner system installed in accordance with the manufacturer's instructions and the International Mechanical Code or a flue lining system installed in accordance with the requirements of the <i>International Building Code</i> and appropriate for the intended class of chimney service.		Minor base code changes for fuel-fired appliances.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~603.6.2~~ 605.2.1.2 Metal chimneys. Metal chimneys that are corroded or improperly supported shall be repaired or replaced <u>in accordance with the <i>International Mechanical Code</i>.</u>		Minor base code changes for fuel-fired appliances.
	~~603.6.3~~ 605.2.1.3 Decorative shrouds. Decorative shrouds installed at the termination of factory-built chimneys <u>or vents</u> shall be removed except where such shrouds are <i>listed</i> and <i>labeled</i> for use with the specific factory-built chimney system and are installed in accordance with the chimney <u>or vent</u> manufacturer's instructions <u>and the <i>International Mechanical Code</i> or <i>International Fuel Gas Code</i>.</u>		Minor base code changes for fuel-fired appliances.
	~~603.6.4~~ 605.2.1.4 Factory-built <u>chimney and vent systems.</u> ~~chimneys.~~ Existing factory-built chimneys <u>and vent systems</u> that are damaged, corroded or improperly supported shall be repaired or replaced <u>in accordance with the <i>International Mechanical Code</i>.</u>		Minor base code changes for fuel-fired appliances.
	~~603.6.5~~ 605.2.1.5 Connectors. Existing chimney and vent connectors that are damaged, corroded or improperly supported shall be repaired or replaced <u>in accordance with the <i>International Mechanical Code</i>.</u>		Minor base code changes for fuel-fired appliances.
	~~603.2~~ 605.3 Chimneys <u>and vents.</u> Masonry chimneys shall be constructed in accordance with the <i>International Building Code</i> . Factory-built chimneys <u>and vent systems serving solid-fuel-fired appliances or oil-fired appliances</u> shall be installed in accordance with the <i>International Mechanical Code</i> . Metal chimneys shall be constructed and installed in accordance with NFPA 241 <u>the <i>International Mechanical Code</i>. Factory-built chimneys and vent systems serving gas-fired appliances shall be installed in accordance with the <i>International Fuel Gas Code</i>.</u>		Minor base code changes for fuel-fired appliances.
	~~603.3~~ 605.4 Fuel oil storage systems. Fuel oil storage systems <u>for building heating systems</u> shall be installed <u>and maintained</u> in accordance with this code. <u>Tanks and fuel-oil piping systems</u> shall be installed in accordance with <u>Chapter 13</u> of the <i>International Mechanical Code</i> .		Minor base code changes for fuel-fired appliances.
	~~603.3.4~~ 605.4.1 Fuel oil storage in outside, above-ground tanks.		Base code renumbering.
	605.4.1.1 Approval. <u>Outdoor fuel oil storage tanks shall be in accordance with UL 142 or UL 2085.</u>		New base code section for outdoor fuel oil storage to comply with UL 142 or UL 2085.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~603.3.2~~ 605.4.2 Fuel oil storage inside buildings.		Base code renumbering.
	605.4.2.1 Approval. Indoor fuel oil storage tanks shall be in accordance with UL 80, UL 142 or UL 2085.		New base code section for indoor fuel oil storage to comply with UL 80, UL 142 or UL 2085.
	~~603.3.2.1~~ 605.4.2.2 Quantity limits. One or more fuel oil storage tanks containing Class II or III <i>combustible liquid</i> shall be permitted in a building. The aggregate capacity of all such tanks shall not exceed ~~660 gallons (2498 L)~~ the following: ~~Exception: The aggregate capacity limit shall be permitted to be increased to 3,000 gallons (11 356 L) of Class II or III liquid for storage in protected above-ground tanks complying with Section 5704.2.9.7, where all of conditions are met:~~ 1. ~~The entire 3,000-gallon (11 356 L) quantity shall be stored in protected above-ground tanks 660 gallons (2498 L) in unsprinklered buildings, where stored in a tank complying with UL 80, UL 142 or UL 2085.~~ 2. ~~The 3,000-gallon (11 356 L) capacity shall be permitted to be stored in a single tank or multiple smaller tanks 1,320 gallons (4996 L) in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, where stored in a tank complying with UL 142. The tank shall be listed as a secondary containment tank, and the secondary containment shall be monitored visually or automatically.~~ 3. ~~The tanks shall be located in a room protected by an automatic sprinkler system complying with Section 903.3.1.4 3,000 gallons (11 356 L) in buildings equipped with an automatic sprinkler system in accordance with Section 903.3.1.1, where stored in protected above-ground tanks complying with UL 2085 and Section 5704.2.9.7 and the room is protected by an automatic sprinkler system in accordance with Section 903.3.1.4. The tank shall be listed as a secondary containment tank, as required by UL 2085, and the secondary containment shall be monitored visually or automatically.~~		Minor base code changes for fuel-fired appliances.
	~~603.3.2.2~~ 605.4.2.3 Restricted use and connection. Tanks installed in accordance with Section 605.4.2 shall be used only to supply fuel oil to fuel-burning equipment, generators or generator equipment fire pumps installed in accordance with Section 605.4.2.5. Connections between tanks and equipment supplied by such tanks		Minor base code changes for fuel-fired appliances.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	shall be made using closed piping systems in accordance with the <u>International Mechanical Code</u>.		
	~~603.3.2.3~~ 605.4.2.4 Applicability of maximum allowable quantity and control area requirements.		Base code renumbering.
	~~603.3.2.4~~ 605.4.2.5 Installation. Tanks and piping systems shall be installed ~~and separated from other uses~~ in accordance with Section 915 and Chapter 13, both of the International Mechanical Code, as applicable.	605.4.2.5 Installation. Tanks and piping systems shall be installed in accordance with <u>NFPA 37 and UL 2200 standards</u> ~~Section 915 and Chapter 13, both of the International Mechanical Code,~~ as applicable.	Base code renumbering and minor changes to language. No change to Houston amendment, relocated from Section 603.3.2.4.
	~~603.3.2.5~~ 605.4.2.6 Separation. Rooms containing fuel oil tanks for internal combustion engines shall be separated from the remainder of the building by fire barriers, horizontal assemblies, or both, with a minimum 1-hour fire-resistance rating with 1-hour fire-protection-rated opening protectives constructed in accordance with the International Building Code. Exception: Rooms containing protected above-ground tanks complying with Section 5704.2.9.7 shall not be required to be separated from surrounding areas.		New base code provisions for rooms containing fuel oil tanks.
	~~603.3.2.6~~ 605.4.2.7 Spill containment. Tanks exceeding ~~55~~ 60 -gallon (~~227~~ 208 L) capacity or an aggregate capacity of 1,000 gallons (3785 L) that are not provided with integral secondary containment shall be provided with spill containment sized to contain a release from the largest tank.		New base code provisions for spill containment for tanks in excess of 1,000 gallons.
	~~603.3.2.7~~ 605.4.2.8 Tanks in basements.		Base code renumbering.
	~~603.3.3~~ 605.4.3 ~~Fuel oil storage in underground tanks~~ Underground storage of fuel oil. The storage of fuel oil in underground storage tanks shall comply with <u>UL 58 or UL 1316 and be installed in accordance with</u> NFPA 31.		Minor base code changes for fuel-fired appliances.
	~~603.4~~ 605.5 Portable unvented heaters. Portable unvented fuel-fired heating equipment shall be prohibited in occupancies in Groups A, E, I, R-1, R-2, R-3 and R-4 ~~and ambulatory care facilities.~~ Exceptions: ~~1. Listed and approved unvented fuel-fired heaters, including portable outdoor gas-fired heating appliances, in one and two family dwellings.~~ Portable ~~In one and two family dwellings portable unvented fuel-fired heaters, where approved and listed in accordance~~		Minor base code changes for fuel-fired appliances.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	with UL 647 are permitted to be used in one- and two-family dwellings, where operated and maintained in accordance with the manufacturer's instructions. 2. Portable outdoor gas-fired heating appliances shall be allowed in accordance with Section 605.5.2.		
	~~603.4.1~~ 605.5.1 Prohibited locations.		Base code renumbering.
	~~603.4.2~~ 605.5.2 Portable outdoor gas-fired heating appliances.		Base code renumbering.
	~~603.4.2.1~~ 605.5.2.1 Location. Portable outdoor gas-fired heating appliances shall be <u>used and</u> located in accordance with Sections 605.5.2.1.1 through 605.5.2.1.4.		Minor base code changes for fuel-fired appliances.
	~~603.4.2.1.1~~ 605.5.2.1.1 Prohibited locations. The storage or use of portable outdoor gas-fired heating appliances is prohibited in any of the following locations: 1. Inside of any occupancy where connected to the fuel gas container. 2. Inside of tents, canopies and membrane structures. 3. On exterior balconies. Exception: As ~~allowed~~ <u>permitted</u> in <u>Chapter 61</u>. ~~Section 6.22 of NFPA 58.~~		Minor base code changes for fuel-fired appliances.
	~~603.4.2.1.2~~ 605.5.2.1.2 Clearance to buildings.		Base code renumbering.
	~~603.4.2.1.3~~ 605.5.2.1.3 Clearance to combustible materials.		Base code renumbering.
	~~603.4.2.1.4~~ 605.5.2.1.4 Proximity to exits.		Base code renumbering.
	~~603.4.2.2~~ 605.5.2.2 Installation <u>Use</u> and operation. Portable outdoor gas-fired heating appliances shall be installed <u>used</u> and operated in accordance with Sections 605.5.2.2.1 through 605.5.2.2.4.		Minor base code changes for fuel-fired appliances.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~603.4.2.2.1~~ 605.5.2.2.1 Listing and approval. Only <i>listed</i> and <i>approved</i> portable outdoor gas-fired heating appliances utilizing a fuel gas container that is integral to the appliance shall be used. Portable outdoor gas-fired heating appliances shall be <i>listed</i> and <i>labeled</i> in accordance with ANSI Z83.26/CSA 2.37.		Minor base code changes for fuel-fired appliances.
	~~603.4.2.2.2~~ 605.5.2.2.2 Installation — Use and maintenance. Portable outdoor gas-fired heating appliances shall be installed used and maintained in accordance with the manufacturer's instructions.		Minor wordsmithing to base code language.
	~~603.4.2.2.3~~ 605.5.2.2.3 Tip-over switch.		Base code renumbering.
	~~603.4.2.2.4~~ 605.5.2.2.4 Guard against contact.		Base code renumbering.
	~~603.4.2.3~~ 605.5.2.3 Gas containers.		Base code renumbering.
	~~603.4.2.3.1~~ 605.5.2.3.1 Approved containers.		Base code renumbering.
	~~603.4.2.3.2~~ 605.5.2.3.2 Container replacement.		Base code renumbering.
	~~603.4.2.3.3~~ 605.5.2.3.3 Container capacity.		Base code renumbering.
	~~603.4.2.3.4~~ 605.5.2.3.4 Indoor storage prohibited.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~603.5.5~~ 605.6 Heating appliances.		Base code renumbering.
	~~603.5.4~~ 605.6.1 Guard against contact.		Base code renumbering.
	~~603.5.2~~ 605.6.2 Heating appliance installation and maintenance.		Base code renumbering.
	~~603.7.4~~ 605.7 Unauthorized operation.		Base code renumbering.
	~~603.8~~ 605.8 Incinerators.		Base code renumbering.
	~~603.8.4~~ 605.8.1 Residential incinerators. Residential incinerators shall be of an ~~approved type~~ listed and labeled in accordance with UL 791.		New base code language requiring residential incinerators comply with UL 791.
	~~603.8.2~~ 605.8.2 Spark arrestor.		Base code renumbering.
	~~603.8.3~~ 605.8.3 Restrictions.		Base code renumbering.
	~~603.8.4~~ 605.8.4 Time of burning.		Base code renumbering.
	~~603.8.5~~ 605.8.5 Discontinuance.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~603.8.6~~ 605.8.6 Flue-fed incinerators in Group I-2.		Base code renumbering.
	~~603.8.7~~ 605.8.7 Incinerator inspections in Group I-2.		Base code renumbering.
	~~603.9~~ 605.9 Gas meters.	605.9 Gas meters and piping. 605.9.1 Protection of meters and piping. Above-ground gas meters, regulators and piping subject to damage shall be protected by a barrier complying with Section 312 or otherwise protected in an <i>approved</i> manner.	Base code renumbering. No change to Houston amendment, relocated from Section 603.9 and 603.9.1.
		605.9.2 Testing of piping and systems. 605.9.2.1 Routine testing. All gas piping systems in Groups A, E, I, R-1 and R-2 occupancies shall be tested at least every five years by a licensed plumber. Systems shall be tested in accordance with the <i>Plumbing Code</i> . The owner shall maintain a written record onsite at a location designated by the <i>fire code official</i> and it shall be made available upon request.	No change to Houston amendment, relocated from Section 603.9.2 and 603.9.2.1.
		605.9.2.2 Testing for leaks. The <i>fire code official</i> is authorized to require a test of the gas piping system in any building or structure, of any occupancy type, when there is reason to believe a leak may exist in the system.	No change to Houston amendment, relocated from Section 603.9.2.2.
605.13 Protection of lighting fixtures and devices. All permanent or temporary lighting fixtures and devices used in mechanical spaces, service areas, exit accessways, stairways, and parking garages shall be provided with an <i>approved</i> protective device designed to prevent accidental breakage, contact with readily ignitable materials, or creation of electrical shock hazard. Exceptions: 1. <i>Listed</i> devices <i>approved</i> for use in hazardous locations in accordance with the <i>Electrical Code</i> . 2. <i>Listed</i> incandescent bulbs or fluorescent tubes provided with <i>approved</i> shatter- or break-resistive protective coatings. 3. <i>Listed</i> devices for exterior use, with <i>approved</i> weather resistant bulbs. 4. Fixtures so located as to be suitably protected from accidental damage or breakage. Moved to 603.11			Previous Houston amendment relocated to Section 603.11.
	SECTION ~~607~~606 COMMERCIAL KITCHEN HOODS COOKING EQUIPMENT AND SYSTEMS [M] ~~607.4~~606.1 General. Commercial kitchen exhaust hoods shall comply with the requirements of the <i>International Mechanical Code</i> .		Base code renumbering and minor wordsmithing to section.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~[M] 607.2~~606.2 Where required. A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease vapors. Exception: A Type I hood shall not be required for an electric cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m³ or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m³/s) in accordance with UL 710B. Exceptions: 1. Factory-built commercial exhaust hoods that are listed and labeled in accordance with UL 710, and installed in accordance with Section 304.1 of the International Mechanical Code, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5 of the International Mechanical Code. 2. Factory-built commercial cooking recirculating systems that are listed and labeled in accordance with UL 710B, and installed in accordance with Section 304.1 of the International Mechanical Code, shall not be required to comply with Sections 507.1.5, 507.2.3, 507.2.5, 507.2.8, 507.3.1, 507.3.3, 507.4 and 507.5 of the International Mechanical Code. Spaces in which such systems are located shall be considered to be kitchens and shall be ventilated in accordance with Table 403.3.1.1 of the International Mechanical Code. For the purpose of determining the floor area required to be ventilated, each individual appliance shall be considered as occupying not less than 100 square feet (9.3 m²). 3. Where cooking appliances are equipped with integral down-draft exhaust systems and such appliances and exhaust systems are listed and labeled for the application in accordance with NFPA 96, a hood shall not be required at or above them. 4. A Type I hood shall not be required for an electric cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m³ or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m³/s) in accordance with UL 710B.		Base code renumbering. New base code language providing requirements for exhaust hoods.
	~~607.3~~606.3 Operations and maintenance.		Base code renumbering.
	~~607.3.4~~606.3.1 Ventilation system. The ventilation system in connection with hoods shall be operated at the required rate of air movement, and ~~classified~~ grease filters listed and labeled in accordance with UL 1046 shall be in place ~~when~~ where equipment under a kitchen grease hood is used.		Base code renumbering and minor wordsmithing.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~607.3.2~~ 606.3.2 Grease extractors.		Base code renumbering.
	~~607.3.3~~ 606.3.3 Cleaning.		Base code renumbering.
	~~607.3.3.1~~ 606.3.3.1 Inspection.		Base code renumbering.
	~~TABLE 607.3.3.1~~ TABLE 606.3.3.1 COMMERCIAL COOKING SYSTEM INSPECTION FREQUENCY		Base code renumbering.
	~~607.3.3.2~~ 606.3.3.2 Grease accumulation.		Base code renumbering.
	~~607.3.3.3~~ 606.3.3.3 Records.		Base code renumbering.
	~~607.3.3.3.1~~ 606.3.3.3.1 Tags.		Base code renumbering.
	~~607.3.4~~ 606.3.4 Extinguishing system service.		Base code renumbering.
	~~607.4~~ 606.4 Appliance connection to building piping.		Base code renumbering.
606.9 Remote controls. Where flammable refrigerants are used and compliance with ~~Chapter 11~~ ~~Section 1106~~ of the ~~International Mechanical Code~~ is required, remote control of the mechanical equipment and appliances located in the machinery room as required by Sections 606.9.1 and 606.9.2 shall be provided at an			Previous Houston amendment relocated to Section 608.10.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
approved location immediately outside the machinery room and adjacent to its principal entrance. Moved to 608.10			
606.16 Electrical equipment. Where refrigerants of Groups A2, A3, B2 and B3, as defined in the ~~International Mechanical Code~~ , are used, refrigeration machinery rooms shall conform to the Class I, Division 2 hazardous location classification requirements of NFPA 70. Exception: Ammonia machinery rooms that are provided with ventilation in accordance with Section ~~1106.3~~ <u>1102.1</u> of the ~~International Mechanical Code~~ . Moved to 608.17			Previous Houston amendment relocated to Section 608.17.
	SECTION 608.607 COMMERCIAL KITCHEN COOKING OIL STORAGE ~~608.4~~ 607.1 General.		Base code renumbering.
	~~608.2~~ 607.2 Metallic storage tanks.		Base code renumbering.
[BE] 607.3 Emergency signs. An <i>approved</i> pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS. The lettering shall be at least ½ inch (13 mm) block letters on a background of contrasting color so that the lettering is clearly visible. Exceptions: 1. The emergency sign shall not be required for elevators that are part of an accessible <i>means of egress</i> complying with Section 1009.4. 2. The emergency sign shall not be required for elevators that are used for occupant self-evacuation in accordance with Section 3008 of the ~~International Building Code~~ . Moved to 604.4	~~608.3~~ 607.3 Nonmetallic storage tanks. Nonmetallic cooking oil storage tanks shall be installed in accordance with the tank manufacturer's instructions and shall also comply with all of the following: 1. Tanks shall be listed for use with cooking oil, including maximum temperature to which the tank will be exposed during use. 2. Tank capacity shall not exceed 200 gallons (757 L) per tank, listed in accordance with UL 2152 and shall be installed in accordance with the tank manufacturer's instructions.		Base code renumbering and updating of requirements for nonmetallic storage tanks. Previous Houston amendment relocated to Section 604.4.
	~~608.4~~ 607.4 Cooking oil storage system components.		Base code renumbering.
	~~608.4.1~~ 607.4.1 Design standards.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~608.4.2~~ 607.4.2 Components in contact with heated oil.		Base code renumbering.
	~~608.5~~ 607.5 Tank venting.		Base code renumbering.
	~~608.5.4~~ 607.5.1 Normal vents.		Base code renumbering.
	~~608.5.2~~ 607.5.2 Emergency vents.		Base code renumbering.
	~~608.6~~ 607.6 Heating of cooking oil.		Base code renumbering.
607.7 Elevator key location. Keys for the elevator car doors and fire-fighter service keys shall be kept in an <i>approved</i> location in accordance with Houston Fire Department LSB Standard No. 06, "Fire Depository Boxes" for immediate use by the fire department. Moved to 604.6.1	~~608.7~~ 607.7 Electrical equipment.		Base code renumbering. Previous Houston amendment relocated to Section 604.6.1.
607.8 Standardized fire service elevator keys. Buildings with elevators equipped with Phase I emergency recall, Phase II emergency in-car operation, or a fire service access elevator shall be equipped to operate with a standardized fire service elevator key approved by the <i>fire code official</i> , in accordance with Houston Fire Department LSB Standard No. 06, "Fire Depository Boxes." See Section 506.1. The <i>approved</i> fire service elevator key shall be available for immediate use by the fire department. Exception: The owner shall be permitted to place the building's nonstandardized fire service elevator keys in a key box installed in accordance with Section 506.1.2. Moved to 604.6.2			Previous Houston amendment relocated to Section 604.6.2.
	~~SECTION 608~~ ~~STATIONARY STORAGE BATTERY SYSTEMS~~ Redline Note: This section Relocated to new Chapter 12 and reorganized so that it is shown as stricken through and underlined in Chapter 12. For detailed revisions reference should be made to other Code Council resources such as "Complete Revision History" (available in 2018)		Battery storage system provisions have been relocated to Chapter 12.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	SECTION ~~605.608~~ MECHANICAL REFRIGERATION [M] ~~605.1~~608.1 Scope.		Base code renumbering.
	~~605.1.1~~ 608.1.1 Refrigerants other than ammonia. Where a refrigerant other than ammonia is used, refrigeration systems and the buildings in which such systems are installed shall be in accordance with ASHRAE 15.		New base code section providing requirements for refrigerants other than ammonia.
	~~605.1.2~~ 608.1.2 Ammonia refrigeration. Refrigeration systems using ammonia refrigerant and the buildings in which such systems are installed shall comply with IIAR 2 for system design and installation; IIAR 6 for inspection, testing and maintenance; and IIAR 7 for operating procedures. Decommissioning of ammonia refrigeration systems shall comply with IIAR 8, and engineering practices for existing ammonia refrigeration systems shall be in accordance with IIAR 9.		New base code section providing requirements for ammonia refrigeration.
	608.2 Permits. Permits shall be obtained for refrigeration systems in accordance with Sections 105.5 and 105.6.		New base code section requiring permits for refrigeration systems.
	[M] ~~605.2~~608.3 Refrigerants.		Base code renumbering.
	[M] ~~605.3~~608.4 Refrigerant classification.		Base code renumbering.
	~~605.4~~ 608.5 Change in refrigerant type.		Base code renumbering.
	~~605.5~~ 608.6 Access. Access to refrigeration systems having a refrigerant circuit containing more than 220 pounds (100 kg) of Group A1 or 30 pounds (14 kg) of any other group refrigerant shall be ~~accessible~~ provided for the fire department at all times as required by the fire code official.		Base code renumbering and minor wordsmithing to base code language.
	~~605.6~~ 608.7 Testing of equipment.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~605.6.4~~ 608.7.1 Periodic testing.		Base code renumbering.
	~~605.7~~ 608.8 Emergency signs.		Base code renumbering.
	~~605.8~~ 608.9 Refrigerant detector detection. Machinery rooms shall ~~detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The alarm shall be actuated at a value not greater than the corresponding TLV-TWA values shown in the International Mechanical Code for the refrigerant classification.~~ Detectors and alarms shall be placed in approved locations. ~~The detector shall transmit a signal to an approved location~~ be provided with a refrigerant detector with an audible and visible alarm. Where ammonia is used as the refrigerant, detection shall comply with IIAR 2. For refrigerants other than ammonia, refrigerant detection shall comply with Section 605.8.1		New base code language for refrigerant detection.
	~~605.8.4~~ 608.9.1 Refrigerants other than ammonia. A detector, or a sampling tube that draws air to a detector, shall be provided at an approved location where refrigerant from a leak is expected to accumulate. The system shall be designed to initiate audible and visible alarms inside of and outside each entrance to the refrigerating machinery room and transmit a signal to an approved location where the concentration of refrigerant detected exceeds the lesser of the following: 1. The corresponding TLV-TWA values shown in the International Mechanical Code for the refrigerant Classification. 2. Twenty-five percent of the lower flammable limit(LFL).Detection of a refrigerant concentration exceeding the upper detection limit or 25 percent of the lower flammable limit (LFL), whichever is lower, shall stop refrigerant equipment in the machinery room in accordance with Section 605.9.1.		New base code language for refrigerant detection.
	~~605.9~~ 608.10 Remote controls.	608.10 Remote controls. Where flammable refrigerants are used and compliance with ~~Chapter 11~~ Section 1106 of the ~~International Mechanical Code~~ is required, remote control of the mechanical equipment and appliances located in the machinery room as required by Sections 608.10.1 and 608.10.2 shall be provided at an approved location immediately outside the machinery room and adjacent to its principal entrance.	Base code renumbering. No change to Houston amendment, relocated from Section 606.9.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~605.9.1~~ 608.10.1 Refrigeration system emergency shutoff.		Base code renumbering.
	~~605.9.2~~ 608.10.2 Ventilation system.		Base code renumbering.
	~~605.10~~ 608.11 Emergency pressure control system. Permanently installed refrigeration systems in machinery rooms containing more than 6.6 pounds (3 kg) of flammable, toxic or highly toxic refrigerant or ammonia shall be provided with an emergency pressure control system in accordance with Sections 608.11.1 and 608.11.2.		Base code renumbering and minor edits to provisions.
	~~605.10.1~~ 608.11.1 Automatic crossover valves.		Base code renumbering.
	~~605.10.1.1~~ 608.11.1.1 Overpressure limit set point.		Base code renumbering.
	~~605.10.1.2~~ 608.11.1.2 Manual operation.		Base code renumbering.
	~~605.10.1.3~~ 608.11.1.3 System design pressure.		Base code renumbering.
	~~605.10.2~~ 608.11.2 Automatic emergency stop.		Base code renumbering.
	~~605.10.2.1~~ 608.11.2.1 Operation of an automatic crossover valve.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~605.10.2.2~~ 608.11.2.2 Overpressure in low-pressure zone.		Base code renumbering.
	~~605.11~~ 608.12 Storage, use and handling.		Base code renumbering.
	~~605.12~~ 608.13 Discharge and termination of pressure relief and purge systems.		Base code renumbering.
	~~606.12.1 Standards. Refrigeration systems and the buildings in which such systems are installed shall be in accordance with ASHRAE 15.~~		Previous base code sections removed.
	~~606.12.1.1 Ammonia refrigeration. Refrigeration systems using ammonia refrigerant and the buildings in which such systems are installed shall comply with IAR-2 for system design and installation and IAR-7 for operating procedures.~~		Previous base code sections removed.
	~~605.12.1~~ 608.13.1 Fusible plugs and rupture members.		Base code renumbering.
	~~605.12.2~~ 608.13.2 Flammable refrigerants.		Base code renumbering.
	~~605.12.3~~ 608.13.3 Toxic and highly toxic refrigerants.		Base code renumbering.
	~~605.12.4~~ 608.13.4 Ammonia refrigerant. Systems containing more than 6.6 pounds (3 kg) of ammonia refrigerant shall discharge vapor to the atmosphere in accordance with one of the following methods: 1. Directly to atmosphere where the <i>fire code official</i> determines, on review of an engineering analysis prepared in accordance with Section 104.8.2, that a fire, health or environmental hazard would not result from atmospheric discharge of ammonia.		Base code renumbering and minor wordsmithing to provisions.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. Through an <i>approved</i> treatment system in accordance with Section 608.13.5. 3. Through a flaring system in accordance with Section 608.13.6. 4. Through an <i>approved</i> ammonia diffusion system in accordance with Section 608.13.7. 5. By other <i>approved</i> means. Exception: Ammonia/water absorption systems containing less than 22 pounds (10 kg) of ammonia and for which the ammonia circuit is located entirely outdoors.		
	~~605.12.5~~ 608.13.5 Treatment systems.		Base code renumbering.
	~~605.12.6~~ 608.13.6 Flaring systems.		Base code renumbering.
	~~605.12.7~~ 608.13.7 Ammonia diffusion systems.		Base code renumbering.
	~~605.13~~ 608.14 Discharge location for refrigeration machinery room ventilation. Mechanical ventilation exhaust. Exhaust from mechanical ventilation systems serving refrigeration machinery rooms containing flammable, toxic or highly toxic refrigerants, other than ammonia, capable of exceeding 25 percent of the LFL or 50 percent of the IDLH shall be equipped with approved treatment systems to reduce the discharge concentrations to those values or lower. Exception: Refrigeration systems containing Group A2L complying with Section 605.17.		Base code renumbering and new exception added from A2L refrigerants.
	~~605.14~~ 608.15 Notification of refrigerant discharges.		Base code renumbering.
	~~605.15~~ 608.16 Records.		Base code renumbering.
	~~605.16~~ 608.17 Electrical equipment. Where refrigerant of Groups A2, A3, B2 and B3, as defined in the <i>International Mechanical Code</i> , are used, refrigeration machinery rooms shall conform to the Class I, Division 2, hazardous location classification requirements of NFPA 70. Exceptions:	608.17 Electrical equipment. Where refrigerants of Groups A2, A3, B2 and B3, as defined in the ~~International~~ <i>Mechanical Code</i> , are used, refrigeration machinery rooms shall conform to the Class I, Division 2 hazardous location classification requirements of NFPA 70. Exception: 1. Ammonia machinery rooms that are provided with	Base code renumbering. No change to Houston amendment, relocated from Section 606.16.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1. Ammonia machinery rooms that are provided with ventilation in accordance with Section 1101.1.2, Exception 1 of the <i>International Mechanical Code</i> . 2. Machinery rooms for systems containing Group A2L refrigerants that are provided with ventilation in accordance with Section 608.18.	ventilation in accordance with Section 1101.1.2, Exception 4, 1102.2 of the <i>International Mechanical Code</i> . 2. Machinery rooms for systems containing Group A2L refrigerants that are provided with ventilation in accordance with Section 608.18.	
	~~605.17.4~~ 608.18 Special requirements for Group A2L refrigerant machinery rooms. Machinery rooms with systems containing Group A2L refrigerants shall comply with Sections 605.17.1 through 605.17.3. Exception: Machinery rooms conforming to the Class I, Division 2 hazardous location classification requirements of NFPA 70, that do not comply with the Class I, Division 2, hazardous location classification electrical requirements of NFPA 70, as permitted by Section 608.17, Exception 2, shall comply with Sections 608.18.1 through 608.18.2.		Base code renumbering. New requirements for A2L refrigerants in machinery rooms.
	~~605.17.4~~ 608.18.1 Ventilation system activation ~~Refrigerant detection system.~~ The machinery room Ventilation shall be activated by the refrigerant detection system in the machinery room, provided with a refrigerant detection system. The refrigerant detection system Refrigerant detection shall be in accordance with Section 608.9 and all of the following: 1. The detectors shall activate at or below a refrigerant concentration of 25 percent of the LFL. 2. Upon activation, the detection system shall activate the emergency ventilation system in Section 608.18.2. 3. The detection, signaling and control circuits shall be supervised.		Base code renumbering. New requirements for ventilation system activation in machinery rooms.
	[M] 605.17.2608.18.2 Emergency ventilation system. An emergency ventilation system shall be provided at the minimum exhaust rate specified in ASHRAE 15 or Table 608.18.2. Shut down of the emergency ventilation system shall be by manual means. 		Base code renumbering. New requirements for emergency ventilation in machinery rooms.
	[M] TABLE 605.17.2TABLE 608.18.2 MINIMUM EXHAUST RATE 		Base code renumbering.
	[M] 605.17.3608.18.3 Emergency ventilation system discharge. The point of discharge to the atmosphere shall be located outside of the structure at not less than 15 feet (4572 mm) above the adjoining grade level and not less than 20 feet (6096 mm) from any window, ventilation opening or exit 		Base code renumbering. New requirements for ventilation system.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 610 CLOTHES DRYER EXHAUST SYSTEMS 610.1 Clothes dryer exhaust duct systems. Clothes dryer exhaust duct systems shall be in accordance with Sections 610.1.1 and 610.1.2.		New base code section correlating clothes dryer exhaust requirements to the other I-Codes.
	610.1.1 Installation. Clothes dryer exhaust duct systems shall be installed in accordance with the <i>International Mechanical Code</i> or the <i>International Fuel Gas Code</i> , and the manufacturer's installation instructions.		New base code section correlating clothes dryer exhaust requirements to the other I-Codes.
	610.1.2 Maintenance. The lint trap, mechanical and heating components, and the exhaust duct system of a clothes dryer shall be maintained in accordance with the manufacturer's operating instructions to prevent the accumulation of lint or debris that prevents the exhaust of air and products of combustion.		New base code section correlating clothes dryer exhaust requirements to the other I-Codes.
2015 Houston IFC – Chapter 7 Fire and Smoke Protection Features	2021 IFC – Chapter 7 – Fire and Smoke Protection Features	2021 Houston Amendments	Code Change Summary
	SECTION 701 GENERAL 701.1 Scope. The provisions of this chapter shall govern the inspection and maintenance of the materials, systems and assemblies used for structural fire-resistance and fire resistance, fire-resistance-rated construction separation of adjacent spaces and construction installed to resist the passage of smoke to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings. New buildings shall comply with the International Building Code.		Minor wordsmithing to base code language.
	701.2 Fire-resistance-rated construction. The fire-resistance rating of the following fire-resistance-rated construction shall be maintained: 1. Structural members. 2. Exterior walls. 3. Fire walls, fire barriers, fire partitions. 4. Horizontal assemblies. 5. Shaft enclosures.		New base code section for maintenance of fire-resistance-rated construction.
	701.2.1 Hanging displays. The hanging and displaying of salable goods and other decorative materials from acoustical ceiling systems that are part of a fire-resistance-rated horizontal assembly shall be prohibited.		New base code section for maintenance of hanging displays.
	701.3 Smoke barriers. The fire-resistance rating and smoke-resistant characteristics of smoke barriers shall be maintained.		New base code section for maintenance of smoke barriers.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	701.4 Smoke partitions. The smoke-resistant characteristics of smoke partitions shall be maintained.		New base code section for maintenance of smoke partitions.
	~~701.2 Unsafe conditions. Where any components in this chapter are not maintained and do not function as intended or do not have the fire resistance required by the code under which the building was constructed, remodeled or altered, such component(s) or portion thereof shall be deemed an unsafe condition, in accordance with Section 110.1.1. Components or portions thereof determined to be unsafe shall be repaired or replaced to conform to that code under which the building was constructed, remodeled, altered or this chapter, as deemed appropriate by the fire code official.~~ ~~Where the extent of the conditions of components is such that any building, structure or portion thereof presents an imminent danger to the occupants of the building, structure or portion thereof, the fire code official shall act in accordance with Section 110.2.~~		Base code section removed.
	701.6 Owner's responsibility. The owner shall maintain an inventory of all required <i>fire-resistance-rated</i> construction, construction installed to resist the passage of smoke and the construction included in Sections 703 through 707 and Section 602.4.1 and 602.4.2 of the <i>International Building Code</i>. Such construction shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.		New base code section requiring owner responsibility of maintenance.
	701.7 Unsafe conditions. Where any components in this chapter are not maintained and do not function as intended or do not have the fire resistance or the resistance to the passage of smoke required by the code under which the building was constructed, remodeled or altered, such component(s) or portion thereof shall be deemed an unsafe condition, in accordance with Section 111.1.1. Components or portions thereof determined to be unsafe shall be repaired or replaced to conform to that code under which the building was constructed, remodeled, altered or this chapter, as deemed appropriate by the fire code official. Where the condition of components is such that any building, structure or portion thereof presents an imminent danger to the occupants of the building, structure or portion thereof, the fire code official shall act in accordance with Section 111.2.		New base code section detailing requirements of unsafe conditions.
	SECTION 702 DEFINITIONS 702.1 Definitions. The following terms are defined in Chapter 2: DRAFTSTOP . FIREBLOCKING .		New base code definitions listed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	FIRE-RESISTANT JOINT SYSTEM . FIREBLOCKING-MEMBRANE-PENETRATION FIRESTOP SYSTEM . OPENING PROTECTIVE . SMOKE BARRIER . SMOKE PARTITION . THROUGH-PENETRATION FIRESTOP SYSTEM .		
	SECTION 703 FIRE-RESISTANCE RATED CONSTRUCTIONPENETRATIONS 703.1 Maintenance Maintaining protection. The required fire-resistance rating of fire-resistance-rated construction, including, but not limited to, walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained. Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self- or automatic-closing doors of approved construction meeting the fire protection requirements for the assembly. Materials and firestop systems used to protect membrane and through penetrations in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be maintained. The materials and firestop systems shall be securely attached to or bonded to the construction being penetrated with no openings visible through or into the cavity of the construction. Where the system design number is known, the system shall be inspected to the listing criteria and manufacturer's installation instructions.		New base code section for maintenance of firestops.
703.1.1 Fireblocking and draftstopping. Required <i>fireblocking</i> and draftstopping in combustible concealed spaces shall be maintained to provide continuity and integrity of the construction. Including attics in existing Group R-2 apartments, the <i>fire code official</i> is authorized to require installation of draftstops in Group R-2 occupancies that do not exceed four stories in height in any building undergoing roof work that involves replacement of more than 25 percent of the roof sheathing. The attic space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units whichever is smaller. Moved to 707.1	703.1.1 Fireblocking and draftstopping. Required fireblocking and draftstopping in combustible concealed spaces shall be maintained to provide continuity and integrity of the construction.		Base code section removed. Previous Houston amendment relocated to Section 707.1.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~703.1.2 Smoke barriers and smoke partitions. Required smoke barriers and smoke partitions shall be maintained to prevent the passage of smoke. Openings protected with approved smoke barrier doors or smoke dampers shall be maintained in accordance with NFPA 105.~~		Base code section removed.
	~~703.1.3 Fire walls, fire barriers and fire partitions. Required fire walls, fire barriers and fire partitions shall be maintained to prevent the passage of fire. Openings protected with approved doors or fire dampers shall be maintained in accordance with NFPA 80.~~		Base code section removed.
	~~703.2 Opening protectives. Opening protectives shall be maintained in an operative condition in accordance with NFPA 80. Where allowed by the fire code official, the application of field applied labels associated with the maintenance of opening protectives shall follow the requirements of the approved third party certification organization accredited for listing the opening protective. Fire doors and smoke barrier doors shall not be blocked or obstructed, or otherwise made inoperable. Fusible links shall be replaced promptly whenever fused or damaged. Fire door assemblies shall not be modified.~~		Base code section removed.
	~~703.2.1 Signs. Where required by the fire code official, a sign shall be permanently displayed on or near each fire door in letters not less than 1 inch (25 mm) high to read as follows: 1. For doors designed to be kept normally open: FIRE DOOR — DO NOT BLOCK. 2. For doors designed to be kept normally closed: FIRE DOOR — KEEP CLOSED.~~		Base code section removed.
	~~703.2.2 Hold open devices and closers. Hold open devices and automatic door closers, where provided, shall be maintained. During the period that such device is out of service for repairs, the door it operates shall remain in the closed position.~~		Base code section removed.
	~~703.2.3 Door operation. Swinging fire doors shall close from the full open position and latch automatically. The door closer shall exert enough force to close and latch the door from any partially open position.~~		Base code section removed.
	~~703.3 Ceilings. The hanging and displaying of salable goods and other decorative materials from acoustical ceiling systems that are part of a fire-resistance-rated horizontal assembly, shall be prohibited.~~		Base code section removed.
703.4 Testing. Horizontal and vertical sliding and rolling fire doors shall be inspected and tested annually to confirm proper operation and full closure. Fire doors, fire dampers, and other similar equipment shall be inspected and tested in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment." The owner shall maintain records of inspections and testing onsite at a location designated by the fire code official shall be maintained. Moved to 705.2.6	~~703.4 Testing. Horizontal and vertical sliding and rolling fire doors shall be inspected and tested annually to confirm proper operation and full closure. Records of inspections and testing shall be maintained.~~		Base code section removed. Previous Houston amendment relocated to Section 705.2.6.

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	703.2 Repair of penetrations. Where damaged, materials used to protect membrane- and through-penetrations shall be replaced or restored with materials or systems that meet or exceed the code requirements applicable at the time when the assembly was constructed, remodeled or altered.		New base code section requiring repair of damaged penetrations.
	SECTION 704 FLOOR OPENINGS AND SHAFTS JOINTS AND VOIDS 704.1 Enclosure Maintaining protection. 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 required in Chapter 11. New floor openings in existing buildings shall comply with the International Building Code. Where required when the building was originally constructed, materials and systems used to protect joints and voids in the following locations shall be maintained. The materials and systems shall be securely attached to or bonded to the adjacent construction, without openings visible through the construction. 1. Joints in or between fire-resistance-rated walls, floors or floor/ceiling assemblies and roof or roof/ceiling assemblies. 2. Joints in smoke barriers. 3. Voids at the intersection of a horizontal floor assembly and an exterior curtain wall. 4. Voids at the intersection of a horizontal smoke barrier and an exterior curtain wall. 5. Voids at the intersection of a nonfire-resistance-rated floor assembly and an exterior curtain wall. 6. Voids at the intersection of a vertical fire barrier and an exterior curtain wall. 7. Voids at the intersection of a vertical fire barrier and a nonfire-resistance-rated roof assembly. Unprotected joints and voids do not need to be protected where such joints and voids were not required to be protected when the building was originally constructed. Where the system design number is known, the system shall be inspected to the listing criteria and manufacturer's installation instructions.		New base code section for maintenance of joints and voids.
	704.2 Repair of joints and voids. Where damaged, materials used to protect joints and voids shall be replaced or restored with materials or systems that meet or exceed the code requirements applicable at the time when the assembly was constructed, remodeled or altered.		New base code section requiring repair of damaged joints and voids.
	~~704.2~~ 704.3 Opening protectives.		Base code renumbering.
	SECTION 705 DOOR AND WINDOW OPENINGS 705.1 General. Where required when the building was originally constructed, opening protectives installed in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall be inspected and maintained in accordance with this section.		New base code section requiring maintaining of opening protectives.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	705.2 Inspection and maintenance. Opening protectives in fire-resistance-rated assemblies shall be inspected and maintained in accordance with NFPA 80. Opening protectives in smoke barriers shall be inspected and maintained in accordance with NFPA 80 and NFPA 105. Openings in smoke partitions shall be inspected and maintained in accordance with NFPA 105. Fire doors and smoke and draft control doors shall not be blocked, obstructed, or otherwise made inoperable. Fusible links shall be replaced promptly whenever fused or damaged. Opening protectives and smoke and draft control doors shall not be modified.		New base code section requiring maintaining of opening protectives.
	705.2.1 Labeling requirements. Where approved by the fire code official, the application of field-applied labels associated with the maintenance of opening protectives shall follow the requirements of the approved third-party certification organization accredited for listing the opening protective.		New base code section requiring maintaining of opening protectives.
	705.2.2 Signs. Where required by the fire code official, a sign shall be permanently displayed on or near each fire door in letters not less than 1 inch (25 mm) high to read as follows: 1. For doors designed to be kept normally open: FIRE DOOR—DO NOT BLOCK. 2. For doors designed to be kept normally closed: FIRE DOOR—KEEP CLOSED.		New base code section requiring maintaining of opening protectives.
	705.2.3 Hold-open devices and closers. Hold-open devices and automatic door closers, where provided, shall be maintained. During the period that such device is out of service for repairs, the door it operates shall remain in the closed position.		New base code section requiring maintaining of opening protectives.
	705.2.4 Door operation. Swinging fire doors shall close from the full-open position and latch automatically.		New base code section requiring maintaining of opening protectives.
	705.2.5 Smoke- and heat-activated doors. Smoke-activated doors shall be maintained to self-close or automatically close upon detection of smoke. Existing fusible-link-type automatic door-closing devices are permitted if the fusible link rating does not exceed 135°F (57°C).		New base code section requiring maintaining of opening protectives.
	705.2.6 Testing. Horizontal and vertical sliding and rolling fire doors shall be inspected and tested annually to confirm proper operation and full closure. Records of inspections and testing shall be maintained.		New base code section requiring maintaining of opening protectives.
		705.2.6 Testing. Horizontal and vertical sliding and rolling fire doors shall be inspected and tested annually to confirm proper operation and full closure. <u>Fire doors, fire dampers, and other similar equipment shall be inspected and tested in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment."</u> The owner shall maintain ~~r~~ Records of	No change to Houston amendment, relocated from Section 703.4.

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		inspections and testing onsite at a location designated by the <i>fire code official</i> ~~shall be maintained.~~	
		707.1 Fireblocking and draftstopping. Required <i>fireblocking</i> and draftstopping in combustibile concealed spaces shall be maintained to provide continuity and integrity of the construction. <u>Including attics in existing Group R-2 apartments, the <i>fire code official</i> is authorized to require installation of draftstops in Group R-2 occupancies that do not exceed four stories in height in any building undergoing roof work that involves replacement of more than 25 percent of the roof sheathing. The attic space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units whichever is smaller.</u>	No change to Houston amendment, relocated from Section 703.1.1.
	SECTION 706 DUCT AND AIR TRANSFER OPENINGS 706.1 Maintaining protection. Dampers protecting ducts and air transfer openings shall be inspected and maintained in accordance with NFPA 80 and NFPA 105. Other products or materials used to protect the openings for ducts and air transfer openings shall be securely attached to or bonded to the construction containing the duct or air transfer opening, without visible openings through or into the cavity of the construction. Any damaged products or materials protecting duct and air transfer openings shall be repaired, restored or replaced.		New base code section requiring maintaining of duct and air transfer openings.
	706.2 Unprotected openings. Unprotected duct and air transfer openings in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be protected so as to comply with requirements that were in effect when the building was constructed.		New base code section requiring maintaining of duct and air transfer openings.
	SECTION 707 CONCEALED SPACES 707.1 Fireblocking and draftstopping. Required fireblocking and draftstopping in combustibile concealed spaces shall be maintained to provide continuity and integrity of the construction.		New base code section requiring maintaining of concealed spaces.
	SECTION 708 SPRAY FIRE-RESISTANT MATERIALS AND INTUMESCENT FIRE-RESISTANT MATERIALS 708.1 Maintaining protection. <u>Where required when the building was originally permitted and constructed, spray fire-resistant materials and intumescent fire-resistant materials shall be visually inspected to verify that the materials do not exhibit exposure to the substrate.</u>		New base code section requiring maintaining of spray and intumescent fire-resistance materials.
2015 Houston IFC – Chapter 8	2021 IFC – Chapter 8 – Interior Finish, Decorative Materials and Furnishings	2021 Houston Amendments	Code Change Summary
	SECTION 803 INTERIOR WALL AND CEILING FINISH AND TRIM IN EXISTING BUILDINGS 803.1 General. The provisions of this section shall limit the allowable fire performance and smoke development of interior wall and ceiling finishes ~~and interior wall and ceiling trim~~ in		Minor base code changes to coincide with IBC updates.

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	existing buildings based on location and occupancy classification. Interior wall and ceiling finishes shall be classified in accordance with Section 803 of the International Building Code. Such materials shall be group classified in accordance with ~~ASTM E 84~~NFPA 286, as indicated in Section 803.1.1, or in accordance with ~~NFPA 286~~ASTM E84 or UL 723, as indicated in Section 803.1.2. Exceptions: 1. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls and ceilings. 2. Exposed portions of structural members complying with the requirements of buildings of Type IV construction in accordance with the International Building Code shall not be subject to interior finish requirements. Materials tested in accordance with Section 803.1.1 shall not be required to be tested in accordance with Section 803.1.2.		
	~~803.1.1 Classification in accordance with ASTM E 84.~~ Interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed index where tested in accordance with ASTM E 84. ~~Class A: flame spread index 0-25; smoke developed index 0-450.~~ ~~Class B: flame spread index 26-75; smoke developed index 0-450.~~ ~~Class C: flame spread index 76-200; smoke developed index 0-450.~~		Base code section removed.
	~~803.1.2 803.1.1 Interior wall and ceiling finish materials tested~~ Classification in accordance with NFPA 286. Interior wall or ceiling finishes shall be allowed to be tested in accordance with NFPA 286. Finishes tested in accordance with NFPA 286 shall comply with Section 803.1.2.1. Interior wall and ceiling finish materials tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.1.2.1 shall be allowed to be used where a Class A classification in accordance with ASTM E 84 is required and ceiling finish materials shall be classified in accordance with NFPA 286 and tested in accordance with Section 803.1.1.1. Materials complying with Section 803.1.1.1 shall be considered to comply with the requirements of Class A specified in Section 803.1.2.		Minor base code changes to coincide with IBC updates.
	803.1.2 Interior wall and ceiling finish materials tested in accordance with ASTM E84 or UL 723. Interior wall and ceiling finishes shall be classified in accordance with ASTM E84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indices. Class A: Flame spread index 0-25; smoke-developed index 0-450. Class B: Flame spread index 26-75; smoke-developed index 0-450. Class C: Flame spread index 76-200; smoke-developed index 0-450.		New base code section to coincide with IBC updates.

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	Exception: Materials tested in accordance with Section 803.1.1 and as indicated in Sections 803.1.3 through 803.15.		
	803.1.3 Interior wall and ceiling finish materials with specific requirements. The materials indicated in Sections 803.4 through 803.15 shall be tested as indicated in the corresponding sections.		New base code section to coincide with IBC updates.
	803.3 Interior finish requirements based on occupancy. Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.3 for the group and location designated. Interior wall and ceiling finish materials tested in accordance with NFPA 286, and meeting the acceptance criteria of Section 803.1.1.1, shall be used where a Class A classification in accordance with ASTM E84 or UL 723 is required.		New base code language to coincide with IBC updates.
	803.5 Textiles wall coverings. ~~Where used as interior wall or ceiling finish materials, textiles, including materials having woven or nonwoven, napped, tufted, looped or similar surface, shall comply with the requirements of this section~~ Where used as interior wall finish materials, textile wall coverings, including materials having a woven, nonwoven, napped, tufted, looped or similar surface, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1, 803.5.1 or 803.5.2.		New base code language to coincide with IBC updates.
	~~803.5.1 Textile wall or ceiling coverings~~ Room corner test for textile wall coverings and expanded vinyl wall coverings. Textile wall or ceiling coverings shall comply with one of the following: ~~1. The wall or ceiling covering shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723, and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2.~~ ~~2. The wall covering shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with NFPA 265 using the product mountingsystem, including adhesive, of actual use.~~ ~~3. The wall or ceiling covering shall meet the criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, of actual use.~~ Textile wall coverings and expanded vinyl wall coverings shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with the Method B protocol of NFPA 265 using the product mounting system, including adhesive. Test specimen preparation and mounting shall be in accordance with ASTM E2404.		New base code language to coincide with IBC updates.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	803.5.1.1 Method B test protocol Acceptance criteria for NFPA 265 Method B test protocol. ~~During the Method B protocol, the textile wall covering or expanded vinyl wall covering Where testing to NFPA 265, the interior finish shall comply with the following:~~ 1. During the 40-kW exposure, flames shall not spread to the ceiling. 2. The flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (203 by 305 mm) walls. 3. Flashover, as defined in NFPA 265, shall not occur. 4. For newly introduced wall ~~and ceiling~~ coverings, the total smoke released throughout the test shall not exceed 1,000 m².		New base code language to coincide with IBC updates.
	803.5.2 Newly introduced textile wall and ceiling coverings. ~~Newly introduced textile wall and ceiling coverings shall comply with one of the following:~~ 1. The wall or ceiling covering shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723, and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404. 2. The wall covering shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with NFPA 265 using the product mounting system (including adhesive) of actual use. 3. The wall or ceiling covering shall meet the criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 using the product mounting system (including adhesive) of actual use. Textile wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E84 or UL 723, and be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E2404.		New base code language to coincide with IBC updates.
	803.6 Expanded vinyl wall or Textile ceiling coverings. ~~Expanded vinyl wall or ceiling coverings shall comply with one of the following:~~ 1. The wall or ceiling covering shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723, and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404. 2. The wall covering shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with NFPA 265 using the product mounting system (including adhesive) of actual use. 3. The wall or ceiling covering shall meet the criteria of Section 803.1.2.1 when tested in accordance with NFPA 286		New base code language to coincide with IBC updates.

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	~~using the product mounting system (including adhesive) of actual use.~~ Where used as interior ceiling finish materials, textile ceiling coverings, including materials having a woven, nonwoven, napped, tufted, looped or similar surface and carpet or similar textile materials, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or 803.5.2.		
	~~803.7 Facings or wood veneers intended to be applied on site over a wood substrate~~ Expanded vinyl wall coverings. ~~Facings or veneers intended to be applied on site over a wood substrate shall comply with one of the following:~~ 1. The facing or veneer shall have a Class A, B or C flame spread index and smoke developed index, based on the requirements of Table 803.3, in accordance with ASTM E 84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E 2404. 2. The facing or veneer shall meet the criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, described in Section 5.8.9 of NFPA 286. Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1, 803.5.1 or 803.5.2.		New base code language to coincide with IBC updates.
	~~803.8 Foam plastic materials~~ Expanded vinyl ceiling coverings. Foam plastic materials shall not be used as interior wall and ceiling finish unless specifically allowed by Section 803.8.1 or 803.8.2. Foam plastic materials shall not be used as interior trim unless specifically allowed by Section 803.8.3 Where used as interior ceiling finish materials, expanded vinyl ceiling coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or 803.5.2.		New base code language to coincide with IBC updates.
	~~803.8.1 Combustibility characteristics.~~ Foam plastic materials shall be allowed on the basis of fire tests that substantiate their combustibility characteristics for the use intended under actual fire conditions, as indicated in Section 2603.9 of the International Building Code. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.		Base code section removed.
	~~803.8.2 Thermal barrier.~~ Foam plastic material shall be allowed if it is separated from the interior of the building by a thermal barrier in accordance with Section 2603.4 of the International Building Code.		Base code section removed.
	~~803.8.3 Trim.~~ Foam plastic shall be allowed for trim in accordance with Section 804.2.		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	803.11 Foam plastic materials. Foam plastic materials shall not be used as interior wall and ceiling finish unless specifically allowed by Section 803.11.1 or 803.11.2. Foam plastic materials shall not be used as interior trim unless specifically allowed by Section 804.2.		New base code section to coincide with IBC updates.
	803.11.1 Foam plastic combustibility characteristics. Foam plastic materials shall be allowed on the basis of fire tests that substantiate their combustibility characteristics for the use intended under actual fire conditions, as indicated in Section 2603.9 of the International Building Code. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.		New base code section to coincide with IBC updates.
	803.11.2 Thermal barrier for foam plastics. Foam plastic material shall be allowed if it is separated from the interior of the building by a thermal barrier in accordance with Section 2603.4 of the International Building Code.		New base code section to coincide with IBC updates.
	803.12 Facings or wood veneers intended to be applied on site over a wood substrate. Facings or veneers intended to be applied on site over a wood substrate shall comply with one of the following: 1. The facing or veneer shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, described in Section 5.8.9 of NFPA 286. 2. The facing or veneer shall have a Class A, B or C flame spread index and smoke-developed index based on the requirements of Table 803.3, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2404.		New base code section to coincide with IBC updates.
	803.13 Laminated products factory produced with an attached wood substrate. Laminated products factory produced with an attached wood substrate shall comply with one of the following: 1. The laminated product shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, of actual use. 2. The laminated product shall have a Class A, B or C flame spread index and smoke-developed index based on the requirements of Table 803.3, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579.		New base code section to coincide with IBC updates.
	803.14 Thickness exemption. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls or ceilings shall not be required to be tested.		New base code section to coincide with IBC updates.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	803.15 Heavy timber exemption. Exposed portions of building elements complying with the requirements of Type IV construction in accordance with the International Building Code shall not be subject to interior finish requirements.		New base code section to coincide with IBC updates.
	SECTION 804 INTERIOR WALL AND CEILING TRIM AND INTERIOR FLOOR FINISH IN NEW AND EXISTING BUILDINGS 804.1 Interior trim. ~~Material, other than foam plastic, used as interior trim in new and existing buildings shall have minimum Class C flame spread and smoke-developed indices, when tested in accordance with ASTM E 84 or UL 723, as described in Section 803.1.1. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the specific wall or ceiling areas to which it is attached.~~ Combustible trim in new and existing buildings, excluding handrails and guards, shall not exceed 10 percent of the specific wall or ceiling areas to which it is attached. Other than foam plastic, material used as interior trim shall comply with Section 804.1.1 or 804.1.2 Foam plastic used as interior trim shall comply with Section 804.2.		New base code language to coincide with IBC updates.
	804.1.1 Alternative testing in accordance with NFPA 286. Interior trim material shall be tested in accordance with NFPA 286 and comply with the acceptance criteria in Section 803.1.1.1. Where the interior trim material has been tested as an interior finish in accordance with NFPA 286 and complies with the acceptance criteria in Section ~~803.1.2.4~~ 803.1.1.1, it shall not be required to be tested for flame spread index and smoke-developed index in accordance with ASTM E 84 or UL 723.		New base code language to coincide with IBC updates.
	804.1.2 Testing in accordance with ASTM E84 or UL 723. Material, other than foam plastic, used as interior trim shall have minimum Class C flame spread and smoke-developed indices, when tested in accordance with ASTM E84 or UL 723, as described in Section 803.1.2.		New base code section to coincide with IBC updates.
	804.2 Foam plastic interior trim.		Minor wordsmithing update.
	804.2.4 Flame spread. The flame spread index shall not exceed 75 where tested in accordance with ASTM E 84 or UL 723. The smoke-developed index shall not be limited. Exception: ~~When~~ Where the interior trim material has been tested as an interior finish in accordance with NFPA 286 and complies with the acceptance criteria in Section ~~803.1.2.4~~ 803.1.1.1, it shall not be required to be tested for flame spread index in accordance with ASTM E 84 or UL 723.		Minor wordsmithing update.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	804.3.1 Classification. Interior floor finish and floor covering materials required by Section 804.3.3.2 to be of Class I or II materials shall be classified in accordance with ASTM E648 or NFPA 253 . The classification referred to herein corresponds to the classifications determined by ASTM E648 or NFPA 253 as follows: Class I, 0.45 watts/cm ² or greater; Class II, 0.22 watts/cm ² or greater.		Minor update to include ASTM standards.
	804.3.2 Testing and identification. Interior floor finish and floor covering materials shall be tested by an approved agency in accordance with ASTM E648 or NFPA 253 and identified by a hang tag or other suitable method so as to identify the manufacturer or supplier and style, and shall indicate the interior floor finish or floor covering classification in accordance with Section 804.3.1. Carpet -type floor coverings shall be tested as proposed for use, including underlayment. Test reports confirming the information provided in the manufacturer's product identification shall be furnished to the fire code official upon request.		Minor update to include ASTM standards.
	804.4 Interior floor-wall base. Interior floor-wall base that is 6 inches (152 mm) or less in height shall be tested in accordance with ASTM E648 or NFPA 253 and shall be not less than Class II. Where a Class I floor finish is required, the floor-wall base shall be Class I. The classification referred to herein corresponds to the classifications determined by ASTM E648 or NFPA 253 as follows: Class I, 0.45 watt/cm ² or greater; Class II, 0.22 watts/cm ² or greater. Exception: Interior trim materials that comply with Section 804.1.		Minor update to include ASTM standards.
	805.1.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E 1537 or California Technical Bulletin 133, as follows: 1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW. Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. 2. The total energy heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 megajoules (MJ). Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.		Minor wordsmithing update.
	805.2 Group I-2, ~~nursing homes and hospitals~~ and Group B ambulatory care facilities. The requirements in Sections 805.2.1 through 805.2.2 shall apply to nursing homes and hospitals classified in Group I-2 occupancies and Group B ambulatory care facilities .		Minor wordsmithing update.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	805.2.1.1 Ignition by cigarettes. Newly introduced upholstered furniture shall be shown to resist ignition by cigarettes as determined by tests conducted in accordance with one of the following: (a) mocked-up composites of the upholstered furniture shall have a char length not exceeding 1.5 inches (38 mm) when tested in accordance with NFPA 261 or (b) the components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260. Exception: Upholstered furniture belonging to the patients in sleeping rooms of ~~nursing homes~~ (Group I-2), Condition 1 occupancies provided that a smoke detector is installed in such rooms. Battery-powered, single-station smoke alarms shall be allowed.		Minor wordsmithing update.
	805.2.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E 1537 or California Technical Bulletin 133, as follows: 1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW. Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. 2. The total energy heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 MJ. Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.		Minor wordsmithing update.
	805.2.2.2 Heat release rate. Newly introduced mattresses shall have limited rates of heat release when tested in accordance with ASTM E 1590 or California Technical Bulletin 129, as follows: 1. The peak rate of heat release for the single mattress shall not exceed 100 kW. Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. 2. The total energy heat released by the single mattress during the first 10 minutes of the test shall not exceed 25 MJ. Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.		Minor wordsmithing update.
	805.3.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E 1537, as follows: 1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW.		Minor wordsmithing update.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. The total energy heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 MJ.		
	805.3.2.2.1 Heat release rate. Newly introduced mattresses shall have limited rates of heat release when tested in accordance with ASTM E 1590 or California Technical Bulletin 129, as follows: 1. The peak rate of heat release for the single mattress shall not exceed 100 kW. 2. The total energy heat released by the single mattress during the first 10 minutes of the test shall not exceed 25 MJ.		Minor wordsmithing update.
	805.4.1.2 Heat release rate. Newly introduced upholstered furniture shall have limited rates of heat release when tested in accordance with ASTM E 1537 or California Technical Bulletin 133, as follows: 1. The peak rate of heat release for the single upholstered furniture item shall not exceed 80 kW. Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. 2. The total energy heat released by the single upholstered furniture item during the first 10 minutes of the test shall not exceed 25 MJ. Exception: Upholstered furniture in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.		Minor wordsmithing update.
	805.4.2.2 Heat release rate. Newly introduced mattresses shall have limited rates of heat release when tested in accordance with ASTM E 1590 or California Technical Bulletin 129, as follows: 1. The peak rate of heat release for the single mattress shall not exceed 100 kW. Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. 2. The total energy heat released by the single mattress during the first 10 minutes of the test shall not exceed 25 MJ. Exception: Mattresses in rooms or spaces protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1.		Minor wordsmithing update.
	SECTION 806 NATURAL DECORATIVE VEGETATION IN NEW AND EXISTING BUILDINGS		Minor wordsmithing update.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	806.1.4 Fire-retardant treatments for natural cut trees. Where fire-retardant treatments are applied to natural cut trees, the fire-retardant treatment shall be tested by an approved agency and shall comply with both Test Method 1 and Test Method 2 of ASTM E3082.		New base code section for fire-retardant treatments of natural cut trees in accordance with ASTM E3082.
	~~806.2 Artificial vegetation~~ Obstruction of means of egress. Artificial decorative vegetation shall meet the flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701. Meeting the flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701 shall be documented and certified by the manufacturer in an approved manner. Alternatively, the artificial decorative vegetation item shall be tested in accordance with NFPA 289, using the 20 kW ignition source, and shall have a maximum heat release rate of 100 kW. The required width of any portion of a means of egress shall not be obstructed by decorative vegetation. Natural cut trees shall not be located within an exit, corridor, or a lobby or vestibule.		New base code language to coincide with IBC updates.
	~~806.4~~ 806.3 Open flame. Candles and open flames shall not be used on or near decorative vegetation. Natural cut trees shall be kept a distance from heat vents and any open flame or heat-producing devices at least equal not less than the height of the tree.		New base code language to coincide with IBC updates.
	~~806.5~~ 806.4 Electrical fixtures and wiring. The use of unlisted electrical wiring and lighting on natural vegetation, including natural cut trees and artificial decorative vegetation shall be prohibited. The use of electrical wiring and lighting on artificial trees constructed entirely of metal, shall be prohibited.		New base code language to coincide with IBC updates.
	SECTION 807 DECORATIVE MATERIALS OTHER THAN AND ARTIFICIAL DECORATIVE VEGETATION IN NEW AND EXISTING BUILDINGS 807.1 General. Combustible decorative materials, other than decorative vegetation, shall comply with Sections 807.2 through 807.5.6. 807.2 Limitations. The following requirements shall apply to all occupancies: 1. Furnishings or decorative materials of an explosive or highly flammable character shall not be used. 2. Fire-retardant coatings in existing buildings shall be maintained so as to retain the effectiveness of the treatment under service conditions encountered in actual use. 3. Furnishings or other objects shall not be placed to obstruct exits, access thereto, egress therefrom or visibility thereof. 4. The permissible amount of noncombustible decorative materials shall not be limited.		New base code language to coincide with IBC updates.
	~~807.3~~ 807.2 Combustible decorative materials. In other than Group I-3 Groups A, B, E, I, M and R-1 and in dormitories in Group R-2, curtains, draperies, fabric hangings and other similar combustible decorative materials suspended from walls or ceilings shall comply with Section 807.43 and shall not exceed		New base code language to coincide with IBC updates.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	10 percent of the specific wall or ceiling area to which they such materials are attached. Fixed or movable walls and partitions, paneling, wall pads and crash pads applied structurally or for decoration, acoustical correction, surface insulation or other purposes shall be considered to be interior finish, shall comply with Section 803 and shall not be considered decorative materials or furnishings. Exceptions: 1. In auditoriums in Group A, the permissible amount of curtains, draperies, fabric hangings and other similar combustible decorative material suspended from walls or ceilings shall not exceed 75 percent of the aggregate wall area where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, and where the material is installed in accordance with Section 803.135 of the International Building Code. 2. In Group R-2 dormitories, within sleeping units and dwelling units, the permissible amount of curtains, draperies, fabric hangings and other similar decorative materials suspended from walls or ceilings shall not exceed 50 percent of the aggregate wall areas where the building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1. 3. In Group B and M occupancies, the amount of combustible fabric partitions suspended from the ceiling and not supported by the floor shall comply with Section 807.3-807.4 and shall not be limited. 4. The 10-percent limit shall not apply to curtains, draperies, fabric hangings and similar combustible decorative materials used as window coverings.		
	807.4 807.3 Acceptance criteria and reports.		Base code renumbering.
	807.4 Artificial decorative vegetation. Artificial decorative vegetation shall comply with this section and the requirements of Sections 806.2 and 806.3 Natural decorative vegetation shall comply with Section 806.Exception: Testing of artificial vegetation is not required in Group I-1; Group I-2, Condition 1; Group R-2; Group R-3; or Group R-4 occupancies equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1, where such artificial vegetation complies with the following: 1. Wreaths and other decorative items on doors shall not obstruct the door operation and shall not exceed 50 percent of the surface area of the door. 2. Decorative artificial vegetation shall be limited to not more than 30 percent of the wall area to which it is attached. 3. Decorative artificial vegetation not on doors or walls shall not exceed 3 feet (914 mm) in any dimension.		New base code section to coincide with IBC updates.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	807.4.1 Flammability. Artificial decorative vegetation shall meet the flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701. Meeting such criteria shall be documented and certified by the manufacturer in an approved manner. Alternatively, the artificial decorative vegetation shall be tested in accordance with NFPA 289, using the 20 kW ignition source, and shall have a maximum heat release rate of 100 kW.		New base code section to coincide with IBC updates.
	807.4.2 Electrical fixtures and wiring on artificial vegetation. The use of unlisted electrical wiring and lighting on artificial decorative vegetation shall be prohibited. The use of electrical wiring and lighting on artificial trees constructed entirely of metal shall be prohibited.		New base code section to coincide with IBC updates.
	807.5 Occupancy-based requirements. ~~In~~ Occupancies specified, ~~combustible decorative materials not complying with Section 807.3~~ shall comply with Sections 807.5.1 through 807.5.6.		Minor wordsmithing update.
	807.5.1.2 Motion picture screens. The screens upon which motion pictures are projected in new and existing buildings of Group A shall either meet the flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701 or shall comply with the requirements for a Class B interior finish in accordance with Section 803 of the International Building Code.		Minor wordsmithing update.
	SECTION 808 FURNISHINGS OTHER THAN UPHOLSTERED FURNITURE AND MATTRESSES OR DECORATIVE MATERIALS IN NEW AND EXISTING BUILDINGS 808.1 Wastebaskets and linen containers in Group I-1, I-2 and I-3 occupancies and Group B ambulatory care facilities. Wastebaskets, linen containers and other waste containers, including their lids, located in Group I-1, I-2 and I-3 occupancies and Group B ambulatory care facilities shall be constructed of noncombustible materials or of materials that meet a peak rate of heat release not exceeding 300 kW/m ² when tested in accordance with ASTM E 1354 at an incident heat flux of 50 kW/m ² in the horizontal orientation. Metal wastebaskets and other metal waste containers with a capacity of 20 gallons (75.7 L) or more shall be listed in accordance with UL 1315 and shall be provided with a noncombustible lid. Portable containers exceeding 32 gallons (121 L) shall be stored in an area classified as a waste and linen collection room and constructed in accordance with Table 509 of the International Building Code. Exception: Recycling containers complying with Section 808.1.2 are not required to be stored in waste and linen collection rooms.		New base code language to coincide with IBC updates.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	808.1.1 Capacity density. The average capacity density of containers located in an individual room or space, other than waste and linen collection rooms, shall not be greater than 0.5 gal/ft ² (20.4 L/m ²).		New base code section to coincide with IBC updates.
	808.1.2 Recycling clean waste containers. Recycling clean waste containers, including their lids, shall not exceed an individual capacity of 96 gallons (363 L).		New base code section to coincide with IBC updates.
	808.4 Combustible lockers. Where lockers constructed of combustible materials are used, the lockers shall be considered to be interior finish and shall comply with Section 803. Exception: Lockers constructed entirely of wood and noncombustible materials shall be permitted to be used wherever interior finish materials are required to meet a Class C classification in accordance with Section ~~803.1.1~~ 803.1.2 .		Minor wordsmithing update.
	808.5 Play structures added to existing buildings. Where play structures that exceed 10 feet (3048 mm) in height or 150 square feet (14 m ²) in area are added inside an existing building, they shall comply with Section 424 of the <i>International Building Code</i> .		New base code section for play structures.
2015 Houston IFC – Chapter 9 Fire Protection Systems	2021 IFC – Chapter 9 Fire Protection And Life Safety Systems	2021 Houston Amendments	Code Change Summary
901.1 Scope. The provisions of this chapter ~~and the <i>Building Code</i>~~ shall specify where <i>fire protection systems</i> are required and shall apply to the design, installation, inspection, operation, testing and maintenance of all <i>fire protection systems</i> .	SECTION 901 GENERAL 901.1 Scope. The provisions of this chapter shall specify where fire protection and life safety systems are required and shall apply to the design, installation and operation of <i>fire protection and life safety systems</i> .	901.1 Scope. The provisions of this chapter ~~and the <i>Building Code</i>~~ shall specify where <i>fire protection</i> and <i>life safety systems</i> are required and shall apply to the design, installation, inspection, operation, testing and maintenance of all <i>fire protection</i> and <i>life safety systems</i> .	Minor changes to base code. No change to Houston amendment.
901.2 Construction documents. The <i>fire code official</i> shall have the authority to require <i>construction documents</i> and calculations ~~for all <i>fire protection systems</i> and to require permits be issued~~ for the installation, rehabilitation or modification of any <i>fire protection system</i> . <i>Construction documents</i> for <i>fire protection systems</i> shall be submitted for review and approval <u>in accordance with the <i>Building Code</i></u> prior to system installation.	901.2 Construction documents. The fire code official shall have the authority to require construction documents and calculations for all fire protection and life safety systems and to require permits be issued for the installation, rehabilitation or modification of any fire protection and life safety systems. Construction documents for fire protection and life safety systems shall be submitted for review and approval prior to system installation.	901.2 Construction documents. The <i>fire code official</i> shall have the authority to require <i>construction documents</i> and calculations ~~for all <i>fire protection and life safety systems</i> and to require permits be issued~~ for the installation, rehabilitation or modification of any <i>fire protection</i> and <i>life safety systems</i> . <i>Construction documents</i> for <i>fire protection</i> and <i>life safety systems</i> shall be submitted for review and approval <u>in accordance with the <i>Building Code</i></u> prior to system installation.	Minor wordsmithing changes to base code. No change to Houston amendment.
	901.2.1 Statement of compliance. Before requesting final approval of the installation, where required by the fire code official, the installing contractor shall furnish a written statement to the fire code official that the subject fire protection or life safety system has been installed in accordance with approved plans and has been tested in accordance with the manufacturer's specifications and the appropriate installation standard. Any deviations from the design standards shall be noted and copies of the approvals for such deviations shall be attached to the written statement.		Minor changes to base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
901.3 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7 of the <i>Building Code</i> .		901.3 Permits. Permits shall be required as set forth in Sections 105.5 and 105.6 of the <i>Building Code</i>	No change to Houston amendment.
	~~901.4 Installation. Fire protection systems shall be maintained in accordance with the original installation standards for that system. Required systems shall be extended, altered or augmented as necessary to maintain and continue protection where the building is altered, remodeled or added to. Alterations to fire protection systems shall be done in accordance with applicable standards. Fire protection and life safety systems shall be installed, repaired, operated and maintained in accordance with this code and the International Building Code.~~		Minor changes to base code to correlate to the IBC.
	901.4.1 Required fire protection and life safety systems. Fire protection and life safety systems required by this code or the International Building Code shall be installed, repaired, operated, tested and maintained in accordance with this code. A fire protection or life safety system for which a design option, exception or reduction to the provisions of this code or the International Building Code has been granted shall be considered to be a required system.		Minor changes to base code.
	901.4.2 Nonrequired fire protection and life safety systems. A fire protection system or portion thereof not required by this code or the International Building Code shall be allowed to be furnished for partial or complete protection provided that such installed systems meets the applicable requirements of this code and the International Building Code.		Minor changes to base code.
	901.4.3 Alterations in buildings and structures. For any alteration within a building or structure, the fire protection and life safety systems shall be extended, altered or augmented to maintain and continue protection within the building or structure. Persons shall not remove or modify any fire protection or life safety system installed or maintained under the provisions of this code or the International Building Code without approval from the fire code official.		New base code section for alterations requiring fire and life safety systems be maintained to continue protection.
	~~901.4.3~~ 901.4.4 Fire areas.		Base code renumbering.
	901.4.4 901.4.5 Additional fire protection systems. In occupancies of a hazardous nature, where special hazards exist in addition to the normal hazards of the occupancy, or where the fire code official determines that access for fire apparatus is unduly difficult, the fire code official shall have the authority to require additional safeguards. Such		Base code renumbering and minor changes to base code language.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	safeguards include, but shall not be limited to, the following: automatic fire detection systems, fire alarm systems, automatic fire extinguishing systems, standpipe systems, or portable or fixed extinguishers. Fire protection equipment and fire protection systems. Fire protection and life safety systems required under this section shall be installed in accordance with this code and the applicable referenced standards.		
901.4.5 Appearance of equipment. Any device that has the physical appearance of life safety or fire protection equipment but that does not perform that life safety or fire protection function shall be prohibited. <u>Systems or devices that are permanently out of service or any non-required life safety system or fire protection system that no longer functions as originally installed shall be removed or the appearance changed so as not to be mistaken for functioning life safety or fire protection equipment.</u>	~~901.4.5~~ 901.4.6 Appearance of equipment.	901.4.6 Appearance of equipment. Any device that has the physical appearance of life safety or fire protection equipment but that does not perform that life safety or fire protection function shall be prohibited. <u>Systems or devices that are permanently out of service or any non-required life safety system or fire protection system that no longer functions as originally installed shall be removed or the appearance changed so as not to be mistaken for functioning life safety or fire protection equipment.</u>	Base code renumbering. No change to Houston amendment.
	~~901.4.6~~ 901.4.7 Pump and riser room size. Where provided, fire pump rooms and automatic sprinkler system riser rooms shall be designed with adequate space for all equipment necessary for the installation, as defined by the manufacturer, with sufficient working space around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly. Fire pump and automatic sprinkler system riser rooms shall be provided with a door(s) and an unobstructed passageway large enough to allow removal of the largest piece of equipment.		Base code renumbering and minor wordsmithing.
	~~901.4.6.1~~ 901.4.7.1 Access. Automatic sprinkler system risers, fire pumps and controllers shall be provided with ready access. Where located in a fire pump room or automatic sprinkler system riser room, the door shall be permitted to be locked provided that the key is available at all times.		New base code section for sprinkler system access.
	~~901.4.6.2~~ 901.4.7.2 Marking on access doors. Access doors for automatic sprinkler system riser rooms and fire pump rooms shall be labeled with an approved sign. The lettering shall be in contrasting color to the background. Letters shall have a minimum height of 2 inches (51 mm) with a minimum stroke of 3/8 inch (10 mm).		New base code section for marking access doors.
	~~901.4.6.3~~ 901.4.7.3 Environment. Automatic sprinkler system riser rooms and fire pump rooms shall be maintained at a temperature of not less than 40°F (4°C). Heating units shall be permanently installed.		New base code requirements for sprinkler/fire pump room temperature.
	~~901.4.6.4~~ 901.4.7.4 Lighting. Permanently installed artificial illumination shall be provided in the automatic sprinkler system riser rooms and fire pump rooms.		New base code section for sprinkler/fire pump room lighting.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary																								
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901.5 Installation acceptance testing. Fire detection and alarm systems, fire-extinguishing systems, fire hydrant systems, fire standpipe systems, fire pump systems, private fire service mains and all other <i>fire protection systems</i> and appurtenances thereto shall be subject to acceptance tests as contained in the installation standards and as <i>approved</i> by the <i>fire code official</i>. ~~The fire code official shall be notified before any required acceptance testing. The location of all fire department connections shall be approved by the fire code official.~~ Inspection of fire-extinguishing systems shall be conducted by the <i>fire code official</i>, upon payment of all applicable fees stated in the city fee schedule. The inspection and reports shall be forwarded to the building official for posting to occupancy records. No building or structure requiring a fire-extinguishing system shall be permanently occupied without first obtaining the <i>fire code official's</i> approval. Exception: The building official shall have the authority to issue a temporary certificate of occupancy for the use of a portion or portions of a building prior to the completion of the entire structure.	901.5 Installation acceptance testing. ~~Fire detection and alarm systems, emergency alarm systems, gas detection systems, fire-extinguishing systems, fire hydrant systems, fire standpipe systems, fire pump systems, private fire service mains and all other~~ Fire protection and life safety systems and appurtenances thereto shall be subject to acceptance tests as contained in the installation standards and as approved by the fire code official. The fire code official shall be notified before any required acceptance testing.	901.5 Installation acceptance testing. <i>Fire protection and life safety systems</i> and appurtenances thereto shall be subject to acceptance tests as contained in the installation standards and as <i>approved</i> by the <i>fire code official</i>. ~~The fire code official shall be notified before any required acceptance testing.~~ ~~The location of all fire department connections shall be approved by the fire code official. Inspection of fire-extinguishing systems shall be conducted by the fire code official, upon payment of all applicable fees stated in the city fee schedule. The inspection and reports shall be forwarded to the building official for posting to occupancy records. No building or structure requiring a fire-extinguishing system shall be permanently occupied without first obtaining the fire code official's approval.~~	Updated wording to be in line with base code, removed exception from Houston amendment.																								
901.5.1 Occupancy. It shall be unlawful to occupy any portion of a building or structure until the required fire detection, alarm and suppression systems have been tested and <i>approved</i>. Exception: The building official is authorized to issue a temporary certificate of occupancy in accordance with the <i>Building Code</i>.	901.5.1 Occupancy. It shall be unlawful to occupy any portion of a building or structure until the required fire ~~detection, alarm and suppression~~ protection and life safety systems have been tested and approved.	901.5.1 Occupancy. It shall be unlawful to occupy any portion of a building or structure until the required <i>fire protection and life safety</i> systems have been tested and <i>approved</i>. Exception: The <i>building official</i> shall have the authority to issue a temporary certificate of occupancy for the use of a portion or portions of a building prior to the completion of the entire structure.	No change to Houston amendment.																								
	901.6 Inspection, testing and maintenance. Fire ~~detection, alarm, and extinguishing alarm systems, emergency alarm systems, gas detection systems, fire-extinguishing systems, mechanical smoke exhaust systems, and smoke and heat vents~~ protection and life safety systems shall be maintained in an operative condition at all times, and shall be replaced or repaired where defective. Nonrequired fire protection and life safety systems and equipment shall be inspected, tested and maintained or removed in accordance with Section 901.8.		Minor changes to base code.																								
	TABLE 901.6.1 FIRE PROTECTION SYSTEM MAINTENANCE STANDARDS <table><tr><th>SYSTEM</th><th>STANDARD</th></tr><tr><td>Portable fire extinguishers</td><td>NFPA 10</td></tr><tr><td>Carbon dioxide fire-extinguishing system</td><td>NFPA 12</td></tr><tr><td>Halon 1301 fire-extinguishing systems</td><td>NFPA 12A</td></tr><tr><td>Dry-chemical extinguishing systems</td><td>NFPA 17</td></tr><tr><td>Wet-chemical extinguishing systems</td><td>NFPA 17A</td></tr><tr><td>Water-based fire protection systems</td><td>NFPA 25</td></tr><tr><td>Fire alarm systems</td><td>NFPA 72</td></tr><tr><td>Smoke and heat vents</td><td>NFPA 204</td></tr><tr><td>Water-mist systems</td><td>NFPA 750</td></tr><tr><td>Clean-agent extinguishing systems</td><td>NFPA 2001</td></tr><tr><td>Aerosol fire-extinguishing systems</td><td>NFPA 2010</td></tr></table>	SYSTEM	STANDARD	Portable fire extinguishers	NFPA 10	Carbon dioxide fire-extinguishing system	NFPA 12	Halon 1301 fire-extinguishing systems	NFPA 12A	Dry-chemical extinguishing systems	NFPA 17	Wet-chemical extinguishing systems	NFPA 17A	Water-based fire protection systems	NFPA 25	Fire alarm systems	NFPA 72	Smoke and heat vents	NFPA 204	Water-mist systems	NFPA 750	Clean-agent extinguishing systems	NFPA 2001	Aerosol fire-extinguishing systems	NFPA 2010		New standard added to table.
SYSTEM	STANDARD																										
Portable fire extinguishers	NFPA 10																										
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901.6.1 Standards. <i>Fire protection systems</i> shall be inspected, tested and maintained in accordance with the referenced standards <i>listed</i> in Table 901.6.1 and in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment" and LSB Standard No. 01, "Installation and Maintenance of Portable Fire Extinguishers."		901.6.1 Standards. <i>Fire protection systems</i> shall be inspected, tested and maintained in accordance with the referenced standards <i>listed</i> in Table 901.6.1 and in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment" and LSB Standard No. 01, "Installation and Maintenance of Portable Fire Extinguishers."	No change to Houston amendment																								

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	901.6.2.1 High-rise buildings. For high-rise buildings, integrated testing shall comply with NFPA 4, with an integrated test performed prior to issuance of the certificate of occupancy and at intervals not exceeding 10 years, unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. If an equipment failure is detected during integrated testing, a repeat of the integrated test shall not be required, except as necessary to verify operation of fire protection or life safety functions that are initiated by equipment that was repaired or replaced.		New base code section for integrated testing in accordance with NFPA 4 for high-rise buildings.
	901.6.2.2 Smoke control systems. Where a fire alarm system is integrated with a smoke control systems outlined in Section 909, integrated testing shall comply with NFPA 4, with an integrated test performed prior to issuance of the certificate of occupancy and at intervals not exceeding 10 years, unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. If an equipment failure is detected during integrated testing, a repeat of the integrated test shall not be required, except as necessary to verify operation of fire protection or life safety functions that are initiated by equipment that was repaired or replaced.		New base code section integrated testing of smoke control systems.
	901.6.3 Records.		Base code renumbering.
	901.6.23.1 Records information. Initial records shall include the name of the installation contractor, type of components installed, manufacturer of the components, location and number of components installed per floor. Records shall ~~also~~ include the manufacturers' operation and maintenance instruction manuals. Such records shall be maintained for the life of the installation.		Base code renumbering.
901.7 Systems out of service. Where a required life safety or fire protection system is out of service, the fire department and the fire code official shall be notified immediately in accordance with Section 901.12 and, where required by the fire code official, either the building shall be ~~either~~ evacuated or an approved fire watch, or one or more standby inspectors, in accordance with Section 114, shall be provided for all occupants left unprotected by the shutdown until the life safety or fire protection system has been returned to service. Where utilized, fire watches shall be provided with not less than one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.	901.7 Systems out of service. Where a required fire protection system is out of service, the fire department and the fire code official shall be notified immediately and, where required by the fire code official, the building shall be either evacuated or an approved fire watch shall be provided for all occupants left unprotected by the shutdown until the fire protection system has been returned to service. Where utilized, fire watches shall be provided with not less than one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires. Exception: Facilities with an approved notification and impairment management program. The notification and impairment program for water-based fire protection systems shall comply with NFPA 25.	901.7 Systems out of service. Where a required life safety or fire protection system is out of service, the fire department and the fire code official shall be notified immediately in accordance with Section 901.12 and, where required by the fire code official, ~~either~~ the building shall be either evacuated or an approved fire watch, or one or more standby inspectors, in accordance with Section 115, shall be provided for all occupants left unprotected by the shutdown until the life safety or fire protection system has been returned to service. Where utilized, fire watches shall be provided with not less than one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires. Exception: Facilities with an approved notification and impairment management program. The notification and impairment program for water-based fire protection systems shall comply with NFPA 25.	Updated wording to be in line with base code, no major change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	901.7.1 Impairment coordinator. The building owner shall assign an impairment coordinator to comply with the requirements of this section. In the absence of a specific designee, the owner shall be considered to be the impairment coordinator.		Minor wordsmithing to base code.
	901.7.6 Restoring systems to service. ~~When~~ Where impaired equipment is restored to normal working order, the impairment coordinator shall verify that all of the following procedures have been implemented: 1. Necessary inspections and tests have been conducted to verify that affected systems are operational. 2. Supervisors have been advised that protection is restored. 3. The fire department has been advised that protection is restored. 4. The building owner/manager, insurance carrier, alarm company and other involved parties have been advised that protection is restored. 5. The impairment tag has been removed.		Minor wordsmithing to base code.
	901.8 Removal of or tampering with equipment. It shall be unlawful for any person to remove, tamper with or ~~otherwise disturb any fire hydrant, fire detection and alarm system, fire suppression system or other fire appliance~~ protection or life safety system required by this code except for the purposes of extinguishing fire, training purposes, recharging or making necessary repairs or where approved by the fire code official.		Minor wordsmithing to base code.
	901.8.2 Removal of existing occupant-use hose lines. The fire code official is authorized to permit the removal of existing occupant-use hose lines where all both of the following conditions exist: 1. ~~Installation is not required by this code or the International Building Code.~~ 21. The hose line would not be utilized by trained personnel or the fire department. 32. The remaining outlets are compatible with local fire department fittings.		Minor wordsmithing to base code.
	901.9 Termination of monitoring service. For fire alarm systems required to be monitored by this code, notice shall be made to the fire code official whenever alarm monitoring services are terminated. Notice shall be made in writing, ~~to the fire code official~~ by the provider of the monitoring service ~~provider~~ being terminated.		Minor wordsmithing to base code.
901.11 Outside sprinkler control valve. <u>Outside control in the form of a wall post indicator valve or post indicator valve shall be provided for each sprinkler system. An indicating-type gate valve shall be required when sprinkler systems are supplied by the standpipe system.</u>		901.11 Outside sprinkler control valve. <u>Outside control in the form of a wall post indicator valve or post indicator valve shall be provided for each sprinkler system. An indicating-type gate valve shall be required when sprinkler systems are supplied by the standpipe system.</u>	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
901.12 Notification of fire department. The Houston Fire Department Office of Emergency Communications shall be immediately notified by telephone, at (713) 884-3143, whenever the required fire protection or life safety system is placed out of service for emergency or non-schedule repairs, replacements, or service. The Fire Department shall be provided with the following information: 1. <u>Correct street address and name of the building or structure.</u> 2. <u>The caller's name and contact phone number.</u> 3. <u>The identity of system that is impaired or shut down, and if known, the nature of the impairment or failure.</u> 4. <u>Estimated length of time system is to be out of service for repairs.</u> <u>The Fire Department Office of Emergency Communications shall again be notified when the system is restored to normal operational status.</u>		901.12 Notification of fire department. The Houston Fire Department Office of Emergency Communications shall be immediately notified by telephone, at (713) 884-3143, whenever the required fire protection or life safety system is placed out of service for emergency or non-schedule repairs, replacements, or service. The Fire Department shall be provided with the following information: 1. <u>Correct street address and name of the building or structure.</u> 2. <u>The caller's name and contact phone number.</u> 3. <u>The identity of system that is impaired or shut down, and if known, the nature of the impairment or failure.</u> 4. <u>Estimated length of time system is to be out of service for repairs.</u> <u>The Fire Department Office of Emergency Communications shall again be notified when the system is restored to normal operational status.</u>	No change to Houston amendment.
901.13 Fire pumps. Fire pumps shall be listed by Factory Mutual, Underwriters Laboratories or another approved agency and shall not deliver less than the required fire flow and pressure in accordance with the listing. Such pumps shall be automatic operation. (See the <i>Electrical Code</i> for additional requirements.) The source of supply for such pumps shall be a break tank served from the city main sized as required by NFPA 20, or a minimum 2500 gallons, whichever is more restrictive.			Removed Houston amendment. Refer to Technical Memo #03 for more information on Fire Pump/Break Tank updates to the Houston Construction Code.
	902.1 Definitions. The following terms are defined in Chapter 2: ALARM NOTIFICATION APPLIANCE. ALARM SIGNAL. ALARM VERIFICATION FEATURE. ANNUNCIATOR. AUDIBLE ALARM NOTIFICATION APPLIANCE. AUTOMATIC. AUTOMATIC FIRE-EXTINGUISHING SYSTEM. AUTOMATIC SMOKE DETECTION SYSTEM. AUTOMATIC SPRINKLER SYSTEM. AUTOMATIC WATER MIST SYSTEM. AVERAGE AMBIENT SOUND LEVEL. CARBON DIOXIDE EXTINGUISHING SYSTEM. CLEAN AGENT. COMMERCIAL MOTOR VEHICLE. CONSTANTLY ATTENDED LOCATION. DELUGE SYSTEM. DETECTOR, HEAT. DRY-CHEMICAL EXTINGUISHING AGENT. ELEVATOR GROUP. EMERGENCY ALARM SYSTEM. EMERGENCY VOICE/ALARM COMMUNICATIONS. FIRE ALARM BOX, MANUAL. FIRE ALARM CONTROL UNIT. FIRE ALARM SIGNAL. FIRE ALARM SYSTEM. FIRE AREA. FIRE DETECTOR, AUTOMATIC. FIRE PROTECTION SYSTEM. FIRE SAFETY FUNCTIONS.		New base code definitions added.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	FIXED BASE OPERATOR (FBO). FOAM-EXTINGUISHING SYSTEM. GAS DETECTION SYSTEM. HALOGENATED EXTINGUISHING SYSTEM. IMPAIRMENT COORDINATOR. INITIATING DEVICE. LIFE SAFETY SYSTEMS. MANUAL FIRE ALARM BOX. MULTIPLE-STATION ALARM DEVICE. MULTIPLE-STATION SMOKE ALARM. NOTIFICATION ZONE. NUISANCE ALARM. PRIVATE GARAGE. RECORD DRAWINGS. SINGLE-STATION SMOKE ALARM. SLEEPING UNIT. SMOKE ALARM. SMOKE DETECTOR. ~~STANDPIPE SYSTEM, CLASSES OF.~~ ~~Class I system.~~ ~~Class II system.~~ ~~Class III system.~~ STANDPIPE, TYPES OF. Automatic dry. Automatic wet. Manual dry. Manual wet. Semiautomatic dry. STANDPIPE SYSTEM, CLASSES OF. Class I system. Class II system. Class III system. SUPERVISING STATION. SUPERVISORY SERVICE. SUPERVISORY SIGNAL. SUPERVISORY SIGNAL-INITIATING DEVICE. TIRES, BULK STORAGE OF. TRANSIENT AIRCRAFT. TROUBLE SIGNAL. VISIBLE ALARM NOTIFICATION APPLIANCE. WET-CHEMICAL EXTINGUISHING AGENT. WIRELESS PROTECTION SYSTEM. ZONE. ZONE, NOTIFICATION.		
		903.1.2 Standby Personnel. In other than Group H occupancies, in lieu of an <i>automatic sprinkler system</i> for a temporary use occupancy, the applicant may agree to provide a fire watch program under which one or more fire inspectors of this jurisdiction will be present on the premises at all times when the occupancy is open for use. The <i>fire code official</i> shall promulgate regulations regarding the qualifications, deployment and numbers of fire inspectors, which regulations shall be predicated upon public safety for the purpose of preventing fires and allowing safe egress in the event of a fire. The jurisdiction shall not be	New Houston amendment modeled after previous Houston amendments to Section 903.2 for fire watch program.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		obligated to provide fire inspectors for this purpose. Fees for standby inspectors shall be in accordance with the city fee schedule.	
903.2 Where required. <i>Approved automatic sprinkler systems</i> in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Exceptions: 1. Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour <i>fire barriers</i> constructed in accordance with Section 707 of the <i>International Building Code</i> or not less than 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711 of the <i>International Building Code</i> , or both. <u>In other than Group H occupancies, a sprinkler system shall not be required in open buildings.</u>	903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code or not less than 2-hour horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both.	903.2 Where required. <i>Approved automatic sprinkler systems</i> in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Exceptions: 1. Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour <i>fire barriers</i> constructed in accordance with Section 707 of the International Building Code or not less than 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711 of the International Building Code , or both. 2. <u>In other than Group H occupancies, an automatic sprinkler system shall not be required in open buildings.</u>	No change to Houston amendment.
	903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section. ~~For Group A-1, A-2, A-3 and A-4 occupancies, the automatic sprinkler system shall be provided throughout the story where the fire area containing the Group A-1, A-2, A-3 or A-4 occupancy is located, and throughout all stories from the Group A occupancy to, and including, the levels of exit discharge serving the Group A occupancy. For Group A-5 occupancies, the automatic sprinkler system shall be provided in the spaces indicated in Section 903.2.1.5.~~		Base code updates to include all Group A occupancies.
	903.2.1.1 Group A-1. An automatic sprinkler system shall be provided ~~for fire areas containing Group A-1 occupancies and intervening floors of the building where one of the following conditions exists:~~ throughout stories containing Group A-1 occupancies and throughout all stories from the Group A-1 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists: 1. The fire area exceeds 12,000 square feet (1115 m ²). 2. The fire area has an occupant load of 300 or more. 3. The fire area is located on a floor other than a level of exit discharge serving such occupancies. 4. The fire area contains a multiple-theater complex.		Added clarification, no major change to code.
	903.2.1.2 Group A-2. An automatic sprinkler system shall be provided ~~for fire areas containing Group A-2 occupancies and intervening floors of the building where one of the following conditions exists:~~ throughout stories containing Group A-2 occupancies and throughout all		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	stories from the Group A-2 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists: 1. The fire area exceeds 5,000 square feet (464 m²). 2. The fire area has an occupant load of 100 or more. 3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.		
903.2.1.3 Group A-3. An <i>automatic sprinkler system</i> shall be provided for <i>fire areas</i> containing Group A-3 occupancies and intervening floors of the building where one of the following conditions exists: 1. The <i>fire area</i> exceeds 12,000 square feet (1115 m²). 2. The <i>fire area</i> has an <i>occupant load</i> of 300 or more. 3. The <i>fire area</i> is located on a floor other than a <u>the level of exit discharge</u> serving such occupancies. Exception: <u>In lieu of a sprinkler system for a temporary use occupancy, the applicant may agree to provide a fire watch program under which one or more fire inspectors of this jurisdiction will be present on the premises at all times when the amusement occupancy is open for use. The <i>fire code official</i> shall promulgate regulations regarding the qualifications, deployment and numbers of fire inspectors, which regulations shall be predicated upon public safety for the purpose of preventing fires and allowing safe egress in the event of a fire. The jurisdiction shall not be obligated to provide fire inspectors for this purpose. See Section 113.1.2 for fees for the provision of standby inspectors</u>	903.2.1.3 Group A-3. An automatic sprinkler system shall be provided ~~for fire areas containing Group A-3 occupancies and intervening floors of the building where one of the following conditions exists:~~ throughout stories containing Group A-3 occupancies and throughout all stories from the Group A-3 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists: 1. The fire area exceeds 12,000 square feet (1115 m²). 2. The fire area has an occupant load of 300 or more. 3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.		Added clarification, no major change to code. Previous Houston amendment incorporated into new Section 903.1.2.
	903.2.1.4 Group A-4. An automatic sprinkler system shall be provided ~~for fire areas containing Group A-4 occupancies and intervening floors of the building where one of the following conditions exists:~~ throughout stories containing Group A-4 occupancies and throughout all stories from the Group A-4 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists: 1. The fire area exceeds 12,000 square feet (1115 m²). 2. The fire area has an occupant load of 300 or more. 3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.		Added clarification, no major change to code.
903.2.1.6 Assembly occupancies on roofs. Where an occupied roof has an assembly occupancy with an <i>occupant load</i> exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupied roof and the <i>level of exit discharge</i> shall be equipped with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 or 903.3.1.2. Exception: ~~Open parking garages of Type I or Type II construction.~~ <u>In lieu of a sprinkler system for a temporary use occupancy, the applicant may agree to provide a fire watch program under which one of more fire inspectors of this jurisdiction will be present on the premises at all times when the amusement occupancy is open for use. The <i>fire code official</i></u>		903.2.1.6 Assembly occupancies on roofs. Where an occupied roof has an assembly occupancy with an <i>occupant load</i> exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupied roof and the <i>level of exit discharge</i> shall be equipped with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 or 903.3.1.2. Exception: ~~Open parking garages of Type I or Type II construction.~~	Previous Houston amendment incorporated into new Section 903.1.2, no other changes to amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
shall promulgate regulations regarding the qualifications, deployment and numbers of fire inspectors, which regulations shall be predicated upon public safety for the purpose of preventing fires and allowing safe egress in the event of a fire. The jurisdiction shall not be obliged to provide fire inspectors for this purpose. See the <i>Fire Code</i> for applicable fees and service conditions.			
	[F] 903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 or not less than 2-hour horizontal assemblies constructed in accordance with Section 711, or both.		Added clarification, no major change to code.
	903.2.1.5 Group A-5. An automatic sprinkler system shall be provided for all enclosed Group A-5 occupancies in the following areas: concession stands, retail areas, press boxes and other accessory use areas in excess of 1,000 square feet (93 m²).		Added clarification, no major change to code.
	903.2.1.5.1 Spaces under grandstands or bleachers. Enclosed spaces under grandstands or bleachers shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 where either of the following exist: 1. The enclosed area is 1,000 square feet (93 m²) or less and is not constructed in accordance with Section 1029.1.1.1. 2. The enclosed area exceeds 1,000 square feet (93 m²).		New base code section for spaces under grandstands/bleachers.
	903.2.2 Ambulatory care facilities. An automatic sprinkler system shall be installed throughout the entire floor containing an ambulatory care facility where either of the following conditions exist at any time: 1. Four or more care recipients are incapable of self-preservation, ~~whether rendered incapable by staff or staff has accepted responsibility for care recipients already incapable.~~ 2. One or more care recipients that are incapable of self-preservation are located at other than the level of exit discharge serving such a facility. In buildings where ambulatory care is provided on levels other than the level of exit discharge, an automatic sprinkler system shall be installed throughout the entire floor ~~where~~		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~such care is provided~~ as well as all floors below ~~where such care is provided~~, and all floors between the level of ambulatory care and the nearest level of exit discharge, including the level of exit discharge, and all floors below the level of exit discharge. Exception: Floors classified as an open parking garage are not required to be sprinklered.		
	903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows: 1. Throughout all Group E fire areas greater than 12,000 square feet (1115 m²) in area. ~~2. Throughout every portion of educational buildings below the lowest level of exit discharge serving that portion of the building.~~ Exception: ~~An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom throughout the building has not fewer than one exterior exit door at ground level.~~ 2. The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies. Exception: In buildings where every classroom has not fewer than one exterior exit door at ground level, an automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area. 3. The Group E fire area has an occupant load of 300 or more.		Added clarification, no major change to code.
	903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists: 1. A Group F-1 fire area exceeds 12,000 square feet (1115 m2). 2. A Group F-1 fire area is located more than three stories above grade plane. 3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m2). ~~4. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m2).~~		Added clarification, no major change to code.
	903.2.4.1 Woodworking operations. An automatic sprinkler system shall be provided throughout all Group F-1 occupancy fire areas that contain woodworking operations in excess of 2,500 square feet in area (232 m²) in area that generate finely divided combustible waste or use finely divided combustible materials.		Added clarification, no major change to code.
	903.2.4.2 Group F-1 distilled spirits. An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits.		New base code section for sprinklers in Group F-1, distilled spirits.

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	903.2.4.3 Group F-1 upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group F-1 fire area that exceeds 2,500 square feet (232 m2) used for the manufacture of upholstered furniture or mattresses.		New base code section for sprinklers in Group F-1, upholstered furniture/mattresses.
903.2.5 Group H. <i>Automatic sprinkler systems</i> shall be provided in high-hazard occupancies as required in Sections 903.2.5.1 through 903.2.5.3. Exception: <i>Hazardous materials storage</i> canopies complying with the provisions of Section 414.6.1 of the <i>Building Code</i> for weather protection.		903.2.5 Group H. <i>Automatic sprinkler systems</i> shall be provided in high-hazard occupancies as required in Sections 903.2.5.1 through 903.2.5.3. Exception: <i>Hazardous materials storage</i> canopies complying with the provisions of Section 414.6.1 of the <i>Building Code</i> for weather protection.	No change to Houston amendment.
903.2.6 Group I. An <i>automatic sprinkler system</i> shall be provided throughout buildings with a Group I <i>fire area</i> . Exceptions: 1. An <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.2 shall be permitted in Group I-1 facilities. 2. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be allowed in Group I-1 facilities when in compliance with all of the following: 2.1. A hydraulic design information sign is located on the system riser; 2.2. Exception Condition 1 of Section 903.4 is not applied; and facilities. 2.3. Systems shall be maintained in accordance with 2. An automatic sprinkler system is not required where Group I-4 day care facilities are at the requirements level of Section 903.3.1.2. exit discharge and where every room where care is provided has not fewer than one exterior exit door. 3. An 3. In buildings where Group I-4 day care is provided on levels other than the level of exit discharge, an <i>automatic sprinkler system</i> is not required in accordance with Section 903.3.1.1 shall be installed on the entire floor where day care is provided, all floors between the level of care facilities are at and the <i>level of exit discharge</i> and where every room where care is provided has at least one exterior all floors below the level of <i>exit door</i>. discharge other than areas classified as an open parking garage. 4. In buildings where Group I-4 day care is provided on levels other than the level of exit discharge, an automatic sprinkler system in accordance with Section 903.3.1.1 shall be installed on the entire floor where care is provided and all floors between the level of care and the level of exit discharge, all floors below the level of exit discharge, other than areas classified as an open parking garage.		903.2.6 Group I. An <i>automatic sprinkler system</i> shall be provided throughout buildings with a Group I <i>fire area</i> . Exceptions: 1. An <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.2 shall be permitted in Group I-1 Condition 1 facilities. 2. An <i>automatic sprinkler system</i> is not required where Group I-4 day care facilities are at the <i>level of exit discharge</i> and where every room where care is provided has not fewer than one exterior <i>exit door</i>. 3. In buildings where Group I-4 day care is provided on levels other than the <i>level of exit discharge</i>, an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 shall be installed on the entire floor where care is provided, all floors between the level of care and the <i>level of exit discharge</i> and all floors below the <i>level of exit discharge</i> other than areas classified as an open parking garage.	Changed wording to be in line with base code, no change to Houston amendment.
	903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists: 1. A Group M fire area exceeds 12,000 square feet (1115 m2).		New base code section for sprinklers in Group F-1, distilled spirits.

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	2. A Group M fire area is located more than three stories above grade plane . 3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m2). 4. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m2).		
	903.2.7.2 Group M upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m2).		New base code section for Group M, upholstered furniture/mattresses
		903.2.8 Group R. An <i>automatic sprinkler system</i> installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R <i>fire area</i> . Exception: One- or two-family dwellings not greater than three stories in height.	Amended to add exemption for one or two family dwellings.
	~~[F]~~ 903.2.8.2 Group R-4, Condition 1. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4, Condition 1 occupancies.		Added clarification, no major change to code.
	~~[F]~~ 903.2.8.3 Group R-4, Condition 2. An automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4, Condition 2 occupancies. ~~Attics shall be protected in accordance with Section 903.2.8.3.1 or 903.2.8.3.2.~~		Added clarification, no major change to code.
	~~[F] 903.2.8.3.1 Attics used for living purposes, storage or fuel-fired equipment.~~ Attics used for living purposes, storage or fuel-fired equipment shall be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.		Base code section removed.
	~~[F] 903.2.8.3.2 Attics not used for living purposes, storage or fuel-fired equipment.~~ Attics not used for living purposes, storage or fuel-fired equipment shall be protected in accordance with one of the following: 1. Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with Section 907.2.10. 2. Attics constructed of noncombustible materials. 3. Attics constructed of fire retardant treated wood framing complying with Section 2303.2 of the International Building Code. 4. The automatic sprinkler system shall be extended to provide protection throughout the attic space.		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists: 1. A Group S-1 fire area exceeds 12,000 square feet (1115 m2). 2. A Group S-1 fire area is located more than three stories above grade plane . 3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m2). 4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m2). ~~5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m2).~~		Base code language removed.
	903.2.9.3 Group S-1 distilled spirits or wine. An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.		New base code section for Group S-1 distilled spirits.
	903.2.9.4 Group S-1 upholstered furniture and mattresses. An automatic sprinkler system shall be provided throughout a Group S-1 fire area where the area used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²). Exception: Self-service storage facilities not greater than one story above grade plane where all storage spaces can be accessed directly from the exterior.		New base code section for Group S-1 upholstered furniture/mattresses.
	903.2.10 Group S-2 enclosed parking garages. An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages—in accordance with Section 406.6 of the International Building Code where either any of the following conditions exists: 1. Where the fire area of the enclosed parking garage, in accordance with Section 406.6 of the International Building Code, exceeds 12,000 square feet (1115 m²). 2. Where the enclosed parking garage, in accordance with Section 406.6 of the International Building Code, is located beneath other groups. Exception: Enclosed parking garages located beneath Group R-3 occupancies. 3. Where the fire area of the open parking garage, in accordance with Section 406.5 of the International Building Code, exceeds 48,000 square feet (4460 m²).		New base code provisions for Group S-2 enclosed parking garages.
	903.2.10.2 Mechanical-access enclosed parking garages. An approved automatic sprinkler system shall be provided throughout buildings used for the storage of motor vehicles in a mechanical-access enclosed parking garage. The portion of the building that contains the mechanical-access enclosed parking garage shall be protected with a specially engineered automatic sprinkler system.		New base code section for mechanical-accessed parking garages.

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	903.2.11.1 Stories without openings. An automatic sprinkler system shall be installed throughout all stories, including basements, of all buildings where the floor area exceeds 1,500 square feet (139.4 m²) and where there ~~is not provided not fewer than one of the following types of exterior wall openings:~~ re the story does not comply with the following criteria for exterior wall openings: 1. Openings below grade that lead directly to ground level by an exterior stairway complying with Section 1011 or an outside ramp complying with Section 1012. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on ~~at least~~ not fewer than one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm). 2. Openings entirely above the adjoining ground level totaling not less than 20 square feet (1.86 m²) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on ~~at least~~ not fewer than one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm). The height of the bottom of the clear opening shall not exceed 44 inches (1118 mm) measured from the floor.		Added clarification, no major change to code.
	903.2.11.1.1 Opening dimensions and access. Openings shall have a minimum dimension of not less than 30 inches (762 mm). ~~S-~~ Access to such openings shall be ~~accessible to~~ provided for the fire department from the exterior and shall not be obstructed in a manner such that fire fighting or rescue cannot be accomplished from the exterior.		Added clarification, no major change to code.
	903.2.11.1.2 Openings on one side only. Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22 860 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings ~~as specified above~~ shall be provided on not fewer than two sides of the story.		Added clarification, no major change to code.
	903.2.11.2 Rubbish and linen chutes. An automatic sprinkler system shall be installed at the top of rubbish and linen chutes and in their terminal rooms. Chutes shall have additional sprinkler heads installed at alternate floors and at the lowest intake. Where a rubbish chute extends through a building more than one floor below the lowest intake, the extension shall have sprinklers installed that are recessed from the drop area of the chute and protected from freezing in accordance with Section 903.3.1.1. Such sprinklers shall be installed at alternate floors, beginning with the second level below the last intake and ending with the floor above the discharge. ~~Chute~~ Access to sprinklers in chutes shall be ~~accessible~~ provided for servicing.		Added clarification, no major change to code.

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	903.2.11.3 Buildings 55 feet or more in height. An automatic sprinkler system shall be installed throughout buildings that have one or more stories with an occupant load of 30 or more located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access, measured to the finished floor. Exception: Occupancies in Group F-2. Exceptions: 1. ~~Open parking structures.~~ 2. ~~Occupancies in Group F-2.~~		Added clarification, no major change to code.
	903.2.11.6 Other required suppression fire protection systems. In addition to the requirements of Section 903.2, the provisions indicated in Table 903.2.11.6 require the installation of a fire ~~suppression~~ protection system for certain buildings and areas.		Added clarification, no major change to code.

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	TABLE 903.2.11.6 ADDITIONAL REQUIRED FIRE SUPPRESSION SYSTEMS <table><tr><th>SECTION</th><th>SUBJECT</th></tr><tr><td>914.2.1</td><td>Covered and open mall buildings</td></tr><tr><td>914.3.1</td><td>High-rise buildings</td></tr><tr><td>914.4.1</td><td>Atriums</td></tr><tr><td>914.5.1</td><td>Underground structures</td></tr><tr><td>914.6.1</td><td>Stages</td></tr><tr><td>914.7.1</td><td>Special amusement buildings</td></tr><tr><td>914.8.2</td><td>Airport traffic control towers</td></tr><tr><td>914.8.3, 914.8.6</td><td>Aircraft hangars</td></tr><tr><td>914.9</td><td>Flammable finishes</td></tr><tr><td>914.10</td><td>Drying rooms</td></tr><tr><td>914.11.1</td><td>Ambulatory care facilities</td></tr><tr><td>1029.6.2.3</td><td>Smoke-protected assembly seating</td></tr><tr><td>1103.5.1</td><td>Existing Group A occupancies</td></tr><tr><td>1103.5.12</td><td>Pyroxylin plastic storage in existing buildings</td></tr><tr><td>1103.5.23</td><td>Existing Group I-2 occupancies</td></tr><tr><td>1103.5.34</td><td>Existing Group I-2, Condition 2 occupancies</td></tr><tr><td>1103.5.4</td><td>Pyroxylin plastics</td></tr><tr><td>2108.2</td><td>Dry cleaning plants</td></tr><tr><td>2108.3</td><td>Dry cleaning machines</td></tr><tr><td>2309.3.2.6.2</td><td>Hydrogen motor fuel-dispensing area canopies</td></tr><tr><td>2404.2</td><td>Spray finishing in Group A, E, I or R</td></tr><tr><td>2404.4</td><td>Spray booths and spray rooms</td></tr><tr><td>2405.2</td><td>Dip-tank rooms in Group A, I or R</td></tr><tr><td>2405.4.1</td><td>Dip tanks</td></tr><tr><td>2405.9.4</td><td>Hardening and tempering tanks</td></tr><tr><td>2703.10</td><td>HPM facilities</td></tr><tr><td>2703.10.1.1</td><td>HPM work station exhaust</td></tr><tr><td>2703.10.2</td><td>HPM gas cabinets and exhausted enclosures</td></tr><tr><td>2703.10.3</td><td>HPM exit access corridor</td></tr><tr><td>2703.10.4</td><td>HPM exhaust ducts</td></tr><tr><td>2703.10.4.1</td><td>HPM noncombustible ducts</td></tr><tr><td>2703.10.4.2</td><td>HPM combustible ducts</td></tr><tr><td>2807.3</td><td>Lumber production conveyor enclosures</td></tr><tr><td>2808.7</td><td>Recycling facility conveyor enclosures</td></tr><tr><td>3006.1</td><td>Class A and B ovens</td></tr><tr><td>3006.2</td><td>Class C and D ovens</td></tr><tr><td>Table 3206.2</td><td>Storage fire protection</td></tr><tr><td>3206.4</td><td>Storage</td></tr><tr><td>3704.5</td><td>Storage of more than 1,000 cubic feet of loose combustible fibers</td></tr><tr><td>5003.8.4.1</td><td>Gas rooms</td></tr><tr><td>5003.8.5.3</td><td>Exhausted enclosures</td></tr><tr><td>5004.5</td><td>Indoor storage of hazardous materials</td></tr></table><table><tr><th>SECTION</th><th>SUBJECT</th></tr><tr><td>5005.1.8</td><td>Indoor dispensing of hazardous materials</td></tr><tr><td>5104.4.1</td><td>Aerosol product warehouses</td></tr><tr><td>5106.3.2</td><td>Aerosol display and merchandising areas</td></tr><tr><td>5306.2.1</td><td>Exterior medical gas storage room</td></tr><tr><td>5306.2.2</td><td>Interior medical gas storage room</td></tr><tr><td>5306.2.3</td><td>Medical gas storage cabinet</td></tr><tr><td>5606.5.2.1</td><td>Storage of smokeless propellant</td></tr><tr><td>5606.5.2.3</td><td>Storage of small arms primers</td></tr><tr><td>5704.3.7.5.1</td><td>Flammable and combustible liquid storage rooms</td></tr><tr><td>5704.3.8.4</td><td>Flammable and combustible liquid storage warehouses</td></tr><tr><td>5705.3.7.3</td><td>Flammable and combustible liquid Group H-2 or H-3 areas</td></tr><tr><td>6004.1.2</td><td>Gas cabinets for highly toxic and toxic gas</td></tr><tr><td>6004.1.3</td><td>Exhausted enclosures for highly toxic and toxic gas</td></tr><tr><td>6004.2.2.6</td><td>Gas rooms for highly toxic and toxic gas</td></tr><tr><td>6004.3.3</td><td>Outdoor storage for highly toxic and toxic gas</td></tr><tr><td>6504.1.1</td><td>Pyroxylin plastic storage cabinets</td></tr><tr><td>6504.1.3</td><td>Pyroxylin plastic storage vaults</td></tr><tr><td>6504.2</td><td>Pyroxylin plastic storage and manufacturing</td></tr></table> For SI: 1 cubic foot = 0.023 m³.	SECTION	SUBJECT	914.2.1	Covered and open mall buildings	914.3.1	High-rise buildings	914.4.1	Atriums	914.5.1	Underground structures	914.6.1	Stages	914.7.1	Special amusement buildings	914.8.2	Airport traffic control towers	914.8.3, 914.8.6	Aircraft hangars	914.9	Flammable finishes	914.10	Drying rooms	914.11.1	Ambulatory care facilities	1029.6.2.3	Smoke-protected assembly seating	1103.5.1	Existing Group A occupancies	1103.5.12	Pyroxylin plastic storage in existing buildings	1103.5.23	Existing Group I-2 occupancies	1103.5.34	Existing Group I-2, Condition 2 occupancies	1103.5.4	Pyroxylin plastics	2108.2	Dry cleaning plants	2108.3	Dry cleaning machines	2309.3.2.6.2	Hydrogen motor fuel-dispensing area canopies	2404.2	Spray finishing in Group A, E, I or R	2404.4	Spray booths and spray rooms	2405.2	Dip-tank rooms in Group A, I or R	2405.4.1	Dip tanks	2405.9.4	Hardening and tempering tanks	2703.10	HPM facilities	2703.10.1.1	HPM work station exhaust	2703.10.2	HPM gas cabinets and exhausted enclosures	2703.10.3	HPM exit access corridor	2703.10.4	HPM exhaust ducts	2703.10.4.1	HPM noncombustible ducts	2703.10.4.2	HPM combustible ducts	2807.3	Lumber production conveyor enclosures	2808.7	Recycling facility conveyor enclosures	3006.1	Class A and B ovens	3006.2	Class C and D ovens	Table 3206.2	Storage fire protection	3206.4	Storage	3704.5	Storage of more than 1,000 cubic feet of loose combustible fibers	5003.8.4.1	Gas rooms	5003.8.5.3	Exhausted enclosures	5004.5	Indoor storage of hazardous materials	SECTION	SUBJECT	5005.1.8	Indoor dispensing of hazardous materials	5104.4.1	Aerosol product warehouses	5106.3.2	Aerosol display and merchandising areas	5306.2.1	Exterior medical gas storage room	5306.2.2	Interior medical gas storage room	5306.2.3	Medical gas storage cabinet	5606.5.2.1	Storage of smokeless propellant	5606.5.2.3	Storage of small arms primers	5704.3.7.5.1	Flammable and combustible liquid storage rooms	5704.3.8.4	Flammable and combustible liquid storage warehouses	5705.3.7.3	Flammable and combustible liquid Group H-2 or H-3 areas	6004.1.2	Gas cabinets for highly toxic and toxic gas	6004.1.3	Exhausted enclosures for highly toxic and toxic gas	6004.2.2.6	Gas rooms for highly toxic and toxic gas	6004.3.3	Outdoor storage for highly toxic and toxic gas	6504.1.1	Pyroxylin plastic storage cabinets	6504.1.3	Pyroxylin plastic storage vaults	6504.2	Pyroxylin plastic storage and manufacturing		Minor updates to base code table.
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2703.10.1.1	HPM work station exhaust																																																																																																																														
2703.10.2	HPM gas cabinets and exhausted enclosures																																																																																																																														
2703.10.3	HPM exit access corridor																																																																																																																														
2703.10.4	HPM exhaust ducts																																																																																																																														
2703.10.4.1	HPM noncombustible ducts																																																																																																																														
2703.10.4.2	HPM combustible ducts																																																																																																																														
2807.3	Lumber production conveyor enclosures																																																																																																																														
2808.7	Recycling facility conveyor enclosures																																																																																																																														
3006.1	Class A and B ovens																																																																																																																														
3006.2	Class C and D ovens																																																																																																																														
Table 3206.2	Storage fire protection																																																																																																																														
3206.4	Storage																																																																																																																														
3704.5	Storage of more than 1,000 cubic feet of loose combustible fibers																																																																																																																														
5003.8.4.1	Gas rooms																																																																																																																														
5003.8.5.3	Exhausted enclosures																																																																																																																														
5004.5	Indoor storage of hazardous materials																																																																																																																														
SECTION	SUBJECT																																																																																																																														
5005.1.8	Indoor dispensing of hazardous materials																																																																																																																														
5104.4.1	Aerosol product warehouses																																																																																																																														
5106.3.2	Aerosol display and merchandising areas																																																																																																																														
5306.2.1	Exterior medical gas storage room																																																																																																																														
5306.2.2	Interior medical gas storage room																																																																																																																														
5306.2.3	Medical gas storage cabinet																																																																																																																														
5606.5.2.1	Storage of smokeless propellant																																																																																																																														
5606.5.2.3	Storage of small arms primers																																																																																																																														
5704.3.7.5.1	Flammable and combustible liquid storage rooms																																																																																																																														
5704.3.8.4	Flammable and combustible liquid storage warehouses																																																																																																																														
5705.3.7.3	Flammable and combustible liquid Group H-2 or H-3 areas																																																																																																																														
6004.1.2	Gas cabinets for highly toxic and toxic gas																																																																																																																														
6004.1.3	Exhausted enclosures for highly toxic and toxic gas																																																																																																																														
6004.2.2.6	Gas rooms for highly toxic and toxic gas																																																																																																																														
6004.3.3	Outdoor storage for highly toxic and toxic gas																																																																																																																														
6504.1.1	Pyroxylin plastic storage cabinets																																																																																																																														
6504.1.3	Pyroxylin plastic storage vaults																																																																																																																														
6504.2	Pyroxylin plastic storage and manufacturing																																																																																																																														

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TABLE 903.2.11.6 ADDITIONAL REQUIRED FIRE SUPPRESSION PROTECTION SYSTEMS			
SECTION	SUBJECT		
903.2.10.2	Mechanical-access enclosed parking garages		
914.2.1	Covered and open mall buildings		
914.3.1	High-rise buildings		
914.4.1	Atriums		
914.5.1	Underground structures		
914.6.1	Stages		
914.7.1	Special amusement buildings		
914.8.2	Airport traffic control towers		
914.8.3, 914.8.6	Aircraft hangars		
914.9	Flammable finishes		
914.10	Drying rooms		
914.11.1	Ambulatory care facilities		
1030.6.2.3	Smoke-protected assembly seating		
1103.5.1	Existing Group A occupancies		
1103.5.2	Pyroxylin plastic storage in existing buildings		
1103.5.3	Existing Group I-2 occupancies		
1103.5.5	Existing Group I-2, Condition 2 occupancies		
1103.5.5	Pyroxylin plastics		
Table 1207.7, Table 1207.8, Table 1206.9, Table 1206.10	Stationary and mobile energy storage systems		
2108.2	Dry cleaning plants		
2108.3	Dry cleaning machines		
2309.3.1.5.2	Hydrogen motor fuel-dispensing area canopies		
2404.2	Spray finishing in Group A, E, I or R		
2404.4	Spray booths and spray rooms		
2405.2	Dip-tank rooms in Group A, I or R		
2405.4.1	Dip tanks		
2405.9.4	Hardening and tempering tanks		
2703.10	HPM facilities		
2703.10.1.1	HPM work station exhaust		
2703.10.2	HPM gas cabinets and exhausted enclosures		
2703.10.3	HPM exit access corridor		
2703.10.4	HPM exhaust ducts		
2703.10.4.1	HPM noncombustible ducts		
2703.10.4.2	HPM combustible ducts		
2807.3	Lumber production conveyor enclosures		
2808.7	Recycling facility conveyor enclosures		
3006.1	Class A and B ovens		
3006.2	Class C and D ovens		
Table 3206.2	Storage fire protection		
3206.4	Storage		
3210.1.1	Record storage over 12 feet		
3704.5	Storage of more than 1,000 cubic feet of loose combustible fibers		
5003.8.4.1	Gas rooms		
5003.8.5.3	Exhausted enclosures		
5004.5	Indoor storage of hazardous materials		
5005.1.8	Indoor dispensing of hazardous materials		
5104.4.1	Aerosol product warehouses		
5106.3.2	Aerosol display and merchandising areas		
5306.2.1	Exterior medical gas storage room		
5306.2.2	Interior medical gas storage room		
5306.2.3	Medical gas storage cabinet		
5606.5.2.1	Storage of smokeless propellant		
5606.5.2.3	Storage of small arms primers		
5704.3.7.5.1	Flammable and combustible liquid storage rooms		
5704.3.8.4	Flammable and combustible liquid storage warehouses		
5705.3.7.3	Flammable and combustible liquid Group H-2 or H-3 areas		
6004.1.2	Gas cabinets for highly toxic and toxic gas		
6004.1.3	Exhausted enclosures for highly toxic and toxic gas		
6004.2.2.6	Gas rooms for highly toxic and toxic gas		
6004.3.3	Outdoor storage for highly toxic and toxic gas		
6504.1.1	Pyroxylin plastic storage cabinets		
6504.1.3	Pyroxylin plastic storage vaults		
6504.2	Pyroxylin plastic storage and manufacturing		
For SI: 1 cubic foot = 0.028 m³			

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	903.2.12 During construction. Automatic sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with Section 3313.4.		Base code renumbering.
		903.3.1.1.1 Exempt locations. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an <i>approved</i> automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from a room merely because it is damp, of <i>fire-resistance-rated construction</i> or contains electrical equipment. 1. A room where the application of water, or flame and water, constitutes a serious life or fire hazard. 2. A room or space where sprinklers are considered undesirable because of the nature of the contents, where <i>approved</i> by the fire-code building official. 3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a <i>fire-resistance rating</i> of not less than 2 hours. 4. Rooms or areas that are of noncombustible construction with wholly noncombustible contents. 5. Fire service access elevator machine rooms and machinery spaces. 6. Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with Section 3008 of the International Building Code.	New amendment to put wording in line with Houston building code.
	903.3.1.1.2 Bathrooms. In Group R occupancies, ~~other than Group R-4 occupancies,~~ sprinklers shall not be required in bathrooms that do not exceed 55 square feet (5 m ²) in area and are located within individual dwelling units or sleeping units, provided that walls and ceilings, including the walls and ceilings behind a shower enclosure or tub, are of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating.		Added clarification, no major change to code.
	903.3.1.2 NFPA 13R sprinkler systems. Automatic sprinkler systems in Group R occupancies ~~up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane~~ shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:- 1. Four stories or less above grade plane. 2. The floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access. 3. The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access.	903.3.1.2 NFPA 13R sprinkler systems. <i>Automatic sprinkler systems</i> in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions: 1. Four stories or fewer above <i>grade plane</i>. 2. For other than Group R-2 occupancies, ~~the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.~~ 3. For Group R-2 occupancies, the roof assembly is less than 45 feet (13 716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the	New Houston amendment accepted during Public Comment that incorporates language from 2024 IBC.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the International Building Code shall be measured from grade plane ~~the horizontal assembly creating separate buildings.~~	distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. 34. The floor level of the lowest <i>story</i> is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access. The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 of the ~~International~~ Building Code shall be measured from <i>grade plane</i> .	
	903.3.1.2.1 Balconies and decks. Sprinkler protection shall be provided for exterior balconies, decks and ground floor patios of dwelling units and sleeping units where either of the following conditions exists: 1. The building is of Type V construction, provided that there is a roof or deck above. ~~Sidewall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch (25 mm) to 6 inches (152 mm) below the structural members and a maximum distance of 14 inches (356 mm) below the deck of the exterior balconies and decks that are constructed of open wood joist construction.~~ 2. Exterior balconies, decks and ground floor patios of dwelling units and sleeping units are constructed in accordance with Section 705.2.3.1, Exception 3 of the International Building Code. Sidewall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch (25 mm) to 6 inches (152 mm) below the structural members and a maximum distance of 14 inches (356 mm) below the deck of the exterior balconies and decks that are constructed of open wood joist construction.		New base code provisions for sprinkler installations.
	903.3.1.2.2 Open-ended corridors. Corridors and balconies in the means of egress. Sprinkler protection shall be provided in corridors and for balconies in the means of egress where any of the following conditions apply: 1. Corridors with combustible floor or walls. 2. Corridors with an interior change of direction exceeding 45 degrees (0.79 rad). 3. Corridors that are less than 50 percent open to the outside atmosphere at the ends. 4. Open-ended corridors and associated exterior stairways and ramps as specified in Section 1027.6, Exception 3.		New base code provisions for sprinkler installations.

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	5. Egress balconies not complying with Sections 1021.2 and 1021.3.		
	903.3.1.2.3 Attics. Attic protection shall be provided as follows: 1. Attics that are used or intended for living purposes or storage shall be protected by an automatic sprinkler system. 2. Where fuel-fired equipment is installed in an unsprinklered attic, not fewer than one quick-response intermediate temperature sprinkler shall be installed above the equipment. 3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or 510.4 of the International Building Code, attics not required by Item 1 to have sprinklers shall comply with one of the following if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of ~~required~~ fire department vehicle access needed to meet the provisions in Section 503: 3.1. Provide automatic sprinkler system protection. 3.2. Construct the attic using noncombustible materials. 3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the International Building Code. 3.4. Fill the attic with noncombustible insulation. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503. 4. Group R-4, Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following: 4.1. Provide automatic sprinkler system protection. 4.2. Provide a heat detection system throughout the attic that is arranged to activate the building fire alarm system. 4.3. Construct the attic using noncombustible materials.		New base code provisions for sprinkler installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	4.4. Construct the attic using fire-retardant-treated wood complying with Section 2303.2 of the International Building Code. 4.5. Fill the attic with noncombustible insulation.		
	903.3.2 Quick-response and residential sprinklers. Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in all of the following areas in accordance with Section 903.3.1 and their listings: 1. Throughout all spaces within a smoke compartment containing care recipient sleeping units in Group I-2 in accordance with the International Building Code. 2. Throughout all spaces within a smoke compartment containing gas fireplace appliances and decorative gas appliances in Group I-2 in accordance with the International Building Code. 23. Throughout all spaces within a smoke compartment containing treatment rooms in ambulatory care facilities. 34. Dwelling units and sleeping units in Group I-1 and R occupancies. 45. Light-hazard occupancies as defined in NFPA 13.		New base code provisions for sprinkler installations.
	903.3.3 Obstructed locations. Automatic sprinklers shall be installed with due regard to obstructions that will delay activation or obstruct the water distribution pattern and shall be in accordance with the applicable automatic sprinkler system standard that is being used. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers. Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.		New base code provisions for sprinkler installations.
	903.4 Sprinkler system supervision and alarms. Valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a listed fire alarm control unit. Exceptions: 1. Automatic sprinkler systems protecting one- and two-family dwellings . 2. Limited area sprinkler systems in accordance with Section 903.3.8. 3. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the automatic sprinkler system , and a separate shutoff valve for the automatic sprinkler system is not provided. 4. Jockey pump control valves that are sealed or locked in the open position.		New base code provisions for sprinkler installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position. 6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position. 7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position. 8. Underground key or hub gate valves in roadway boxes.		
	903.4.1 Monitoring. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved supervising station or, where approved by the fire code official, shall sound an audible signal at a constantly attended location. Exception: Backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated. Exceptions: 1. ~~Underground key or hub valves in roadway boxes provided by the municipality or public utility are not required to be monitored.~~ 2 ~~Backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.~~		No Houston amendment.
903.3.6 Hose threads. Fire hose threads and fittings used in connection with <i>automatic sprinkler systems</i> shall be ~~as prescribed by the fire code official~~ <u>National Hose Standard hose threads.</u>		903.3.6 Hose threads. Fire hose threads and fittings used in connection with <i>automatic sprinkler systems</i> shall be as prescribed by the fire code official <u>National Hose Standard hose threads.</u>	No change to Houston amendment.
903.3.7 Fire department connections. Fire department connections for <i>automatic sprinkler systems</i> shall be installed in accordance with Section 912. <u>Fire department connections shall have 2½-inch (64 mm) hose connections. Fire department connections shall be located on the street side of the building, unobstructed, fully visible, and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the fire code official.</u>		903.3.7 Fire department connections. Fire department connections for <i>automatic sprinkler systems</i> shall be installed in accordance with Section 912. <u>Fire department connections shall have 2½-inch (64 mm) hose connections. Fire department connections shall be located on the street side of the building, unobstructed, fully visible, and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the fire code official.</u>	No change to Houston amendment.
	~~904.14~~ 904.12 Aerosol fire-extinguishing systems. Aerosol fire-extinguishing systems shall be installed, maintained, periodically inspected, tested and maintained in accordance with Sections 901 and 904.4, NFPA 2010, and in accordance with their listing. Such devices and appurtenances shall be listed and installed in compliance with manufacturer's instructions.		New base code section for alternative fire-extinguishing system.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~904.14.1~~ 904.12.1 Maintenance. Not less than semiannually, an inspection shall be conducted by a trained person to assess whether the system is in working order. Not less than annually, a certified fire suppression contractor having knowledge of and training in the installation, operation and maintenance of the specific fire-extinguishing system shall inspect, test, service and maintain such system in accordance with this section and the manufacturer's specifications and servicing manuals. Records of inspections and testing shall be maintained.		New base code section for maintenance of alternative fire-extinguishing systems.
904.12 Commercial cooking systems. { EDITORIAL NOTE: THE PORTION OF THE TEXT BETWEEN THE SECTION NUMBER AND TITLE AND THE EXCEPTION SHALL REMAIN AS SET FORTH IN THE 2015 IFC.} Exception: Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B and <i>listed, labeled</i> and installed in accordance with Section ~~304.1~~ 303.1 and 516.0 of the <i>International Mechanical Code</i> . Moved to 904.13	~~904.12~~ 904.13 Commercial cooking systems. The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Preengineered automatic dry- and wet-chemical extinguishing systems shall be tested in accordance with UL 300 and listed and labeled for the intended application. Other types of automatic fire-extinguishing systems shall be listed and labeled for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, NFPA 96, its listing and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types shall be installed in accordance with the referenced standard indicated, as follows: 1. Carbon dioxide extinguishing systems, NFPA 12. 2. Automatic sprinkler systems, NFPA 13. 3. Automatic water mist systems, NFPA 750. 4. Foam-water sprinkler system or foam-water spray systems, NFPA 16. 5. Dry-chemical extinguishing systems, NFPA 17. 6. Wet-chemical extinguishing systems, NFPA 17A. Exception: Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B and listed, labeled and installed in accordance with Section 304.1 of the International Mechanical Code.	904.13 Commercial cooking systems. The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Preengineered automatic dry- and wet-chemical extinguishing systems shall be tested in accordance with UL 300 and <i>listed</i> and <i>labeled</i> for the intended application. Other types of automatic fire-extinguishing systems shall be <i>listed</i> and <i>labeled</i> for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, NFPA 96, its listing and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types shall be installed in accordance with the referenced standard indicated, as follows: { EDITORIAL NOTE: THE PORTION OF THE TEXT BETWEEN THIS SECTION NUMBER AND THE EXCEPTION SHALL REMAIN AS SET FORTH IN THE 2021 IFC.} Exception: Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B and <i>listed, labeled</i> and installed in accordance with Section ~~304.1~~ 303.1 and 516.0 of the <i>International Mechanical Code</i> .	Updated Section number to account for added/removed sections, no major change to Houston amendment.
	~~904.12.1~~ 904.13.1 Manual system operation.		Base code renumbering.
	~~904.12.2~~ 904.13.2 System interconnection.		Base code renumbering.
	~~904.12.3~~ 904.13.3 Carbon dioxide systems.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~904.12.3.1~~ 904.13.3.1 Ventilation system.		Base code renumbering.
	~~904.12.4~~ 904.13.4 Special provisions for automatic sprinkler systems. Automatic sprinkler systems protecting commercial-type cooking equipment shall be supplied from a separate, ~~readily accessible~~ , indicating-type control valve that is identified. Access to the control valve shall be provided.		Base code renumbering.
	~~904.12.5 Portable fire extinguishers for commercial cooking equipment.~~ Portable fire extinguishers shall be provided within a 30-foot (9144 mm) distance of travel from commercial-type cooking equipment. Cooking equipment involving solid fuels or vegetable or animal oils and fats shall be protected by a Class K rated portable extinguisher in accordance with Section 904.12.5.1 or 904.12.5.2, as applicable.		Base code section removed.
	~~904.12.5.1 Portable fire extinguishers for solid fuel cooking appliances.~~ Solid fuel cooking appliances, whether or not under a hood, with fireboxes 5 cubic feet (0.14 m ³) or less in volume shall have a minimum 2.5-gallon (9 L) or two 1.5-gallon(6 L) Class K wet-chemical portable fire extinguishers located in accordance with Section 904.12.5.		Base code section removed.
	~~904.12.5.2 Class K portable fire extinguishers for deep fat fryers.~~ Where hazard areas include deep fat fryers, listed Class K portable fire extinguishers shall be provided as follows: 1. For up to four fryers having a maximum cooking medium capacity of 80 pounds (36.3 kg) each: one Class K portable fire extinguisher of a minimum 1.5-gallon (6 L) capacity. 2. For every additional group of four fryers having a maximum cooking medium capacity of 80 pounds (36.3 kg) each: one additional Class K portable fire extinguisher of a minimum 1.5-gallon (6 L) capacity shall be provided. 3. For individual fryers exceeding 6 square feet (0.55 m ²) in surface area: Class K portable fire extinguishers shall be installed in accordance with the extinguisher manufacturer's recommendations.		Base code section removed.
	~~904.12.6 Operations and maintenance.~~ Automatic fire-extinguishing systems protecting commercial cooking systems shall be maintained in accordance with Sections 904.12.6.1 through 904.12.6.3.		Base code section removed.
	~~904.12.6.1 Existing automatic fire-extinguishing systems.~~ Where changes in the cooking media, positioning of cooking equipment or replacement of cooking equipment occur in existing commercial cooking systems, the automatic fire-		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~extinguishing system shall be required to comply with the applicable provisions of Sections 904.12 through 904.12.4.~~		
	~~904.12.6.2 Extinguishing system service. Automatic fire-extinguishing systems shall be serviced at least every six months and after activation of the system. Inspection shall be by qualified individuals, and a certificate of inspection shall be forwarded to the fire code official upon completion.~~		Base code section removed.
	~~904.12.6.3 Fusible link and sprinkler head replacement. Fusible links and automatic sprinkler heads shall be replaced at least annually, and other protection devices shall be serviced or replaced in accordance with the manufacturer's instructions. Exception: Frangible bulbs are not required to be replaced annually.~~		Base code section removed.
	~~904.13 Domestic cooking systems in Group I-2 Condition 1. In Group I-2 Condition 1 occupancies where cooking facilities are installed in accordance with Section 407.2.6 of the International Building Code, the domestic cooking hood provided over the cooktop or range shall be equipped with an automatic fire-extinguishing system of a type recognized for protection of domestic cooking equipment. Preengineered automatic extinguishing systems shall be tested in accordance with UL 300A and listed and labeled for the intended application. The system shall be installed in accordance with this code, its listing and the manufacturer's instructions.~~		Base code section removed.
	~~904.13.1 Manual system operation and interconnection. Manual actuation and system interconnection for the hood suppression system shall be in accordance with Sections 904.12.1 and 904.12.2, respectively.~~		Base code section removed.
	~~904.13.2 Portable fire extinguishers for domestic cooking equipment in Group I-2 Condition 1. A portable fire extinguisher complying with Section 906 shall be installed within a 30-foot (9144 mm) distance of travel from domestic cooking appliances.~~		Base code section removed.
	904.12.5 904.13.5 Operations and maintenance. Automatic fire-extinguishing systems protecting commercial cooking systems shall be maintained in accordance with Sections 904.12.5.1 through 904.12.5.3.		New base code section for commercial cooking system fire protection maintenance.
	904.12.5.1 904.13.5.1 Existing automatic fire-extinguishing systems. Where changes in the cooking media, positioning of cooking equipment or replacement of cooking equipment occur in existing commercial cooking systems, the automatic fire-extinguishing system shall be required to comply with the applicable provisions of Sections 904.12 through 904.12.4.		New base code section for commercial cooking system fire protection maintenance.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~904.12.5.2~~ 904.13.5.2 Extinguishing system service. Automatic fire-extinguishing systems shall be serviced not less frequently than every six months and after activation of the system. Inspection shall be by qualified individuals, and a certificate of inspection shall be forwarded to the fire code official upon completion.		New base code section for commercial cooking system fire protection maintenance.
	~~904.12.5.3~~ 904.13.5.3 Fusible link and sprinkler head replacement. Fusible links and automatic sprinkler heads shall be replaced annually, and other protection devices shall be serviced or replaced in accordance with the manufacturer's instructions. Exception: Frangible bulbs are not required to be replaced annually.		New base code section for commercial cooking system fire protection maintenance.
	~~904.13~~ 904.14 Domestic cooking systems facilities. Cooktops and ranges installed in the following occupancies shall be protected in accordance with Section 904.13.1: 1. In Group I-1 occupancies where domestic cooking facilities are installed in accordance with Section 420.8 of the International Building Code. 2. In Group I-2, ~~Condition 1~~ occupancies where domestic cooking facilities are installed in accordance with Section 407.2.6 of the International Building Code. 3. In Group R-2 college dormitories where domestic cooking facilities are installed in accordance with Section 420.10 of the International Building Code.		New base code section for domestic cooking system fire protection maintenance.
	~~904.13.1~~ 904.14.1 Protection from fire. Cooktops and ranges shall be protected in accordance with Section 904.13.1.1 or 904.13.1.2.		New base code section for domestic cooking system fire protection maintenance.
	~~904.13.1.1~~ 904.14.1.1 Automatic fire-extinguishing system. The domestic recirculating or exterior vented cooking hood provided over the cooktop or range shall be equipped with an approved automatic fire-extinguishing system complying with the following: 1. The automatic fire-extinguishing system shall be of a type recognized for protection of domestic cooking equipment. Preengineered automatic fire-extinguishing systems shall be listed and labeled in accordance with UL 300A and installed in accordance with the manufacturer's instructions. 2. Manual actuation of the fire-extinguishing system shall be provided in accordance with Section 904.12.1. 3. Interconnection of the fuel and electric power supply shall be in accordance with Section 904.12.2.		New base code section for domestic cooking system fire protection maintenance.
	~~904.13.1.2~~ 904.14.1.2 Ignition prevention. Cooktops and ranges shall include burners that have been tested and listed to prevent ignition of cooking oil with burners turned on to their maximum heat settings and allowed to operate for 30 minutes.		New base code section for domestic cooking system fire protection maintenance.

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	905.1 General. Standpipe systems shall be provided in new buildings and structures in accordance with Sections 905.2 through 905.10 ~~1~~ . In buildings used for high-piled combustible storage, fire protection shall be in accordance with Chapter 32.		Added clarification, no major change to code.
905.2.1 Two-way standpipe connections. Class I and Class III standpipe systems shall be equipped with a two-way fire department inlet connection. Systems with three or more standpipes shall be provided with not less than two two-way fire department inlet connections.		905.2.1 Two-way standpipe connections. Class I and Class III standpipe systems shall be equipped with a two-way fire department inlet connection. Systems with three or more standpipes shall be provided with not less than two two-way fire department inlet connections.	No change to Houston amendment
905.3.1 Height. Class III standpipe systems shall be installed throughout buildings where the floor level of the highest story is located more than 30 feet (9,144 mm) above the lowest level of the fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9,144 mm) below the highest level of fire department vehicle access. Exceptions: 1. Class I standpipes are allowed in buildings equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 or 903.3.1.2. 2. ~~Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45,720 mm) above the lowest level of fire department vehicle access.~~ 3. ~~Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.~~ 2. Class I standpipes are allowed in <i>basements</i> equipped throughout with an <i>automatic sprinkler system</i>. 3. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following: 3.1 Recessed loading docks for four vehicles or less. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.	905.3.1 Height. Class III standpipe systems shall be installed throughout buildings where ~~the floor level any of the highest story is following condition exist: Located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.~~ 1. Four or more stories are above or below grade plane. 2. The floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access. 3. The floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access. Exceptions: 1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. 2. Class I standpipes are allowed in Group B and E occupancies. 3. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access. 34. Class I ~~manual dry~~ standpipes are allowed in open parking garages ~~that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.~~ 45. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system. 5. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following: 5.1. Recessed loading docks for four vehicles or less. 5.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.		Added clarification, no major change to code. Houston amendment removed to go with base code.

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	~~54.~~ Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system. ~~65.~~ Class I standpipes are allowed in buildings where occupant-use hose lines will not be utilized by trained personnel or the fire department. ~~76.~~ In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following: ~~76.1.~~ Recessed loading docks for four vehicles or less. ~~76.2.~~ Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.		
905.3.2 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an <i>occupant load</i> exceeding 1,000 persons. Exceptions: ~~1.~~ Open-air-seating spaces without enclosed spaces. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.		905.3.2 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an <i>occupant load</i> exceeding 1,000 persons. Exceptions: ~~1.~~ Open-air-seating spaces without enclosed spaces. ~~2.~~ Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.	No change to Houston amendment
	905.3.3 Covered and open mall buildings. Covered mall and open mall buildings shall be equipped throughout with a standpipe system where required by Section 905.3.1. Mall buildings not required to be equipped with a standpipe system by Section 905.3.1 shall be equipped with Class I hose connections connected to the automatic sprinkler system sized to deliver water at 250 gallons per minute (946.4 L/min) at the ~~most~~ hydraulically most remote hose connection while concurrently supplying the automatic sprinkler system demand. The standpipe system shall be designed not to exceed a 50 pounds per square inch (psi) (345 kPa) residual pressure loss with a flow of 250 gallons per minute (946.4 L/min) from the fire department connection to the hydraulically most remote hose connection. Hose connections shall be provided at each of the following locations: 1. Within the mall at the entrance to each exit passage-way or corridor. 2. At each floor-level landing within interior exit stairways opening directly on the mall. 3. At exterior public entrances to the mall of a covered mall building. 4. At public entrances at the perimeter line of an open mall building. 5. At other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 200 feet (60 960 mm) from a hose connection.		Added clarification, no major change to code.

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905.3.4 Stages. Amendment Deleted in the 2012 IFC and IBC needed to be correlated to the IFC changes reverting to model code. Exception: Where the building or area is equipped throughout with an <i>automatic sprinkler system</i> , a 1½-inch (38 mm) hose connection shall be installed in accordance with NFPA 13 or in accordance with NFPA 14 for Class II or III standpipes.		905.3.4 Stages. Stages greater than 1,000 square feet (93 m²) in area shall be equipped with a Class III wet stand-pipe system with 1½-inch and 2½-inch (38 mm and 64 mm) hose connections on each side of the stage. Exception: Where the building or area is equipped throughout with an <i>automatic sprinkler system</i> , a 1½-inch (38 mm) hose connection shall be installed in accordance with NFPA 13 or in accordance with NFPA 14 for Class II or III standpipes.	No change to Houston amendment
905.3.5 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system		905.3.5 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system	No change to Houston amendment
	905.3.8 Rooftop gardens and landscaped roofs. Buildings or structures that have rooftop gardens or landscaped roofs and that are equipped with a standpipe system shall have the standpipe system extended to the roof level on which the rooftop garden or landscaped roof is located.		Added clarification, no major change to code.
905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations: 1. In every required <i>interior exit stairway</i> , a hose connection shall be provided for each story above and below grade plane. Hose connections shall be located at an intermediate the main floor landing between stories, unless otherwise specified approved by the fire code official. {EDITORIAL NOTE: REMAINDER OF SECTION REMAINS AS IS IN THE 2015 IFC.}	905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations: 1. In every required interior exit stairway, a hose connection shall be provided for each story above and below grade plane. Hose connections shall be located at the median intermediate in floor landing between stories, unless otherwise approved by the fire code official. Exception: A single hose connection shall be permitted to be installed in the open corridor or open breezeway between open stairs that are not greater than 75 feet (22 860 mm) apart. 2. On each side of the wall adjacent to the exit opening of a horizontal exit. Exception: Where floor areas adjacent to a horizontal exit are reachable from an interior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the horizontal exit. 3. In every exit passageway, at the entrance from the exit passageway to other areas of a building. Exception: Where floor areas adjacent to an exit passageway are reachable from an interior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the exit passageway to other areas of the building. 4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an exit passageway or exit corridor to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an exit passageway or exit corridor to the mall.		Added clarification, no major change to code. Previous Houston amendment removed to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of an interior exit stairway with access to the roof provided in accordance with Section 1011.12. 6. Where the most remote portion of a nonsprinklered floor or story is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or story is more than 200 feet (60 960 mm) from a hose connection, the fire code official is authorized to require that additional hose connections be provided in approved locations.		
	905.5 Location of Class II standpipe hose connections. Class II standpipe hose connections shall ~~be accessible and shall be located~~ so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose. Class II standpipe hose connections shall be located where they will have ready access.		Added clarification, no major change to code.
905.8 Dry standpipes. Dry standpipes shall not be installed. Exception: ~~Where subject to freezing and in accordance with NFPA 14.~~		905.8 Dry standpipes. Dry standpipes shall not be installed. Exception: ~~Where subject to freezing and in accordance with NFPA 14.~~	No change to Houston amendment
	905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4. Where a fire alarm system is provided, a signal shall be transmitted to the control unit. Exceptions: - Valves to underground key or hub valves in roadway ~~boxes provided by the municipality or public utility~~ do not require supervision. - Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.		Added clarification, no major change to code.
	905.11 Locking standpipe outlet caps. The fire code official is authorized to require locking caps on the outlets on ~~dry~~ standpipes where the responding fire department carries key wrenches for the removal that are compatible with locking FDC connection caps.		Added clarification, no major change to code.
	905.12 Existing buildings.		Base code renumbering.

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905.12 Design pressure. Design pressure at the uppermost valve for a Class II standpipe system shall be 35 psi (241.316505 kPa).		905.12 Design pressure. Design pressure at the uppermost valve for a Class II standpipe system shall be 35 psi (241.316505 kPa).	No change to Houston amendment
	906.1 Where required. Portable fire extinguishers shall be installed in all of the following locations: 1. In new and existing Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies. Exceptions: 1. In Group R-2 occupancies, portable fire extinguishers shall be required only in locations specified in Items 2 through 6 where each dwelling unit is provided with a portable fire extinguisher having a minimum rating of 1-A:10-B:C. 2. ~~Within 30 feet (9144 mm) of commercial cooking equipment~~ 2. In Group E occupancies, portable fire extinguishers shall be required only in locations specified in Items 2 through 6 where each classroom is provided with a portable fire extinguisher having a minimum rating of 2-A:20-B:C. 3. In storage areas of Group S occupancies where forklift, powered industrial truck or powered cart operators are the primary occupants, fixed extinguishers, as specified in NFPA 10, shall not be required where in accordance with all of the following: 3.1. Use of vehicle-mounted extinguishers shall be approved by the fire code official. 3.2. Each vehicle shall be equipped with a 10-pound, 40A:80B:C extinguisher affixed to the vehicle using a mounting bracket approved by the extinguisher manufacturer or the fire code official for vehicular use. 3.3. Not less than two spare extinguishers of equal or greater rating shall be available on-site to replace a discharged extinguisher. 3.4. Vehicle operators shall be trained in the proper operation, use and inspection of extinguishers. 3.5. Inspections of vehicle-mounted extinguishers shall be performed daily. 2. Within 30 feet (9144 mm) distance of travel from commercial cooking equipment and from domestic cooking equipment in Group I-1; I-2, Condition 1; and R-2 college dormitory occupancies. 3. In areas where flammable or combustible liquids are stored, used or dispensed. 4. On each floor of structures under construction, except Group R-3 occupancies, in accordance with Section 3315.1. 5. Where required by the sections indicated in Table 906.1.		New base code requirements for fire extinguishers.

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	6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the fire code official. Exception: Portable fire extinguishers are not required at normally unmanned Group U occupancy buildings or structures where a portable fire extinguisher suitable to the hazard of the location is provided on the vehicle of visiting personnel.																																																																																						
906.2 General requirements. Portable fire extinguishers shall be selected, installed and maintained in accordance with this section, and NFPA 10 and Houston Fire Department LSB Standard No. 01, “Installation and Maintenance of Portable Fire Extinguishers.” {EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2015 IFC.}		906.2 General requirements. Portable fire extinguishers shall be selected, installed and maintained in accordance with this section, and NFPA 10 and Houston Fire Department LSB Standard No. 01, “Installation and Maintenance of Portable Fire Extinguishers.” [EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2021 IFC.]	No change to Houston amendment																																																																																				
	TABLE 906.1 ADDITIONAL REQUIRED PORTABLE FIRE EXTINGUISHERS <table><tr><th>SECTION</th><th>SUBJECT</th></tr><tr><td>303.5</td><td>Asphalt kettles</td></tr><tr><td>307.5</td><td>Open burning</td></tr><tr><td>308.1.3</td><td>Open flames—torches</td></tr><tr><td>309.4</td><td>Powered industrial trucks</td></tr><tr><td>1204.10</td><td>Portable generators</td></tr><tr><td>2005.2</td><td>Aircraft towing vehicles</td></tr><tr><td>2005.3</td><td>Aircraft welding apparatus</td></tr><tr><td>2005.4</td><td>Aircraft fuel-servicing tank vehicles</td></tr><tr><td>2005.5</td><td>Aircraft hydrant fuel-servicing vehicles</td></tr><tr><td>2005.6</td><td>Aircraft fuel-dispensing stations</td></tr><tr><td>2007.7</td><td>Heliports and helistops</td></tr><tr><td>2108.4</td><td>Dry cleaning plants</td></tr><tr><td>2305.5</td><td>Motor fuel-dispensing facilities</td></tr><tr><td>2310.6.4</td><td>Marine motor fuel-dispensing facilities</td></tr><tr><td>2311.6</td><td>Repair garages</td></tr><tr><td>2404.4.1</td><td>Spray-finishing operations</td></tr><tr><td>2405.4.2</td><td>Dip-tank operations</td></tr><tr><td>2406.4.2</td><td>Powder-coating areas</td></tr><tr><td>2804.3</td><td>Lumberyards/woodworking facilities</td></tr><tr><td>2808.8</td><td>Recycling facilities</td></tr><tr><td>2809.5</td><td>Exterior lumber storage</td></tr><tr><td>2903.5</td><td>Organic-coating areas</td></tr><tr><td>3006.3</td><td>Industrial ovens</td></tr><tr><td>3107.9</td><td>Tents and membrane structures</td></tr><tr><td>3206.10</td><td>High-piled storage</td></tr><tr><td>3316.1</td><td>Buildings under construction or demolition</td></tr><tr><td>3318.3</td><td>Roofing operations</td></tr><tr><td>3408.2</td><td>Tire rebuilding/storage</td></tr><tr><td>3504.2.6</td><td>Welding and other hot work</td></tr><tr><td>3604.4</td><td>Marinas</td></tr><tr><td>3703.6</td><td>Combustible fibers</td></tr><tr><td>5703.2.1</td><td>Flammable and combustible liquids, general</td></tr><tr><td>5704.3.3.1</td><td>Indoor storage of flammable and combustible liquids</td></tr><tr><td>5704.3.7.5.2</td><td>Liquid storage rooms for flammable and combustible liquids</td></tr><tr><td>5705.4.9</td><td>Solvent distillation units</td></tr><tr><td>5706.2.7</td><td>Farms and construction sites—flammable and combustible liquids storage</td></tr><tr><td>5706.4.10.1</td><td>Bulk plants and terminals for flammable and combustible liquids</td></tr><tr><td>5706.5.4.5</td><td>Commercial, industrial, governmental or manufacturing establishments—fuel dispensing</td></tr><tr><td>5706.6.4</td><td>Tank vehicles for flammable and combustible liquids</td></tr><tr><td>5906.5.7</td><td>Flammable solids</td></tr><tr><td>6108.2</td><td>LP-gas</td></tr></table>	SECTION	SUBJECT	303.5	Asphalt kettles	307.5	Open burning	308.1.3	Open flames—torches	309.4	Powered industrial trucks	1204.10	Portable generators	2005.2	Aircraft towing vehicles	2005.3	Aircraft welding apparatus	2005.4	Aircraft fuel-servicing tank vehicles	2005.5	Aircraft hydrant fuel-servicing vehicles	2005.6	Aircraft fuel-dispensing stations	2007.7	Heliports and helistops	2108.4	Dry cleaning plants	2305.5	Motor fuel-dispensing facilities	2310.6.4	Marine motor fuel-dispensing facilities	2311.6	Repair garages	2404.4.1	Spray-finishing operations	2405.4.2	Dip-tank operations	2406.4.2	Powder-coating areas	2804.3	Lumberyards/woodworking facilities	2808.8	Recycling facilities	2809.5	Exterior lumber storage	2903.5	Organic-coating areas	3006.3	Industrial ovens	3107.9	Tents and membrane structures	3206.10	High-piled storage	3316.1	Buildings under construction or demolition	3318.3	Roofing operations	3408.2	Tire rebuilding/storage	3504.2.6	Welding and other hot work	3604.4	Marinas	3703.6	Combustible fibers	5703.2.1	Flammable and combustible liquids, general	5704.3.3.1	Indoor storage of flammable and combustible liquids	5704.3.7.5.2	Liquid storage rooms for flammable and combustible liquids	5705.4.9	Solvent distillation units	5706.2.7	Farms and construction sites—flammable and combustible liquids storage	5706.4.10.1	Bulk plants and terminals for flammable and combustible liquids	5706.5.4.5	Commercial, industrial, governmental or manufacturing establishments—fuel dispensing	5706.6.4	Tank vehicles for flammable and combustible liquids	5906.5.7	Flammable solids	6108.2	LP-gas		Minor update to base code table.
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3206.10	High-piled storage																																																																																						
3316.1	Buildings under construction or demolition																																																																																						
3318.3	Roofing operations																																																																																						
3408.2	Tire rebuilding/storage																																																																																						
3504.2.6	Welding and other hot work																																																																																						
3604.4	Marinas																																																																																						
3703.6	Combustible fibers																																																																																						
5703.2.1	Flammable and combustible liquids, general																																																																																						
5704.3.3.1	Indoor storage of flammable and combustible liquids																																																																																						
5704.3.7.5.2	Liquid storage rooms for flammable and combustible liquids																																																																																						
5705.4.9	Solvent distillation units																																																																																						
5706.2.7	Farms and construction sites—flammable and combustible liquids storage																																																																																						
5706.4.10.1	Bulk plants and terminals for flammable and combustible liquids																																																																																						
5706.5.4.5	Commercial, industrial, governmental or manufacturing establishments—fuel dispensing																																																																																						
5706.6.4	Tank vehicles for flammable and combustible liquids																																																																																						
5906.5.7	Flammable solids																																																																																						
6108.2	LP-gas																																																																																						
	TABLE 906.3(2) FIRE EXTINGUISHERS FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS WITH DEPTHS OF LESS THAN OR EQUAL TO 0.25- INCH^a		Added clarification, no major change to code.																																																																																				
	906.3.1 Class A fire hazards. The minimum sizes and distribution of portable fire extinguishers for occupancies that involve primarily Class A fire hazards, the minimum sizes and distribution shall comply with Table 906.3(1).		Added clarification, no major change to code.																																																																																				

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	906.3.2 Class B fire hazards. Portable fire extinguishers for occupancies involving flammable or combustible liquids with depths ~~of less than or equal to 0.25- inch (6.4 mm)~~ shall be selected and placed in accordance with Table 906.3(2). Portable fire extinguishers for occupancies involving flammable or combustible liquids with a depth of greater than 0.25-inch (6.4 mm) shall be selected and placed in accordance with NFPA 10.		Added clarification, no major change to code.
	906.4 Cooking grease equipment fires. Fire extinguishers provided for the protection of cooking ~~grease fires~~ equipment shall be of an approved type compatible with the automatic fire-extinguishing system agent. Cooking equipment involving solid fuels or vegetable or animal oils and fats shall be protected by a Class K-rated portable extinguisher in accordance with Sections 906.1, Item 2, 906.4.1 and 906.4.2 as applicable.		New base code requirements for fire extinguishers.
	906.4.1 Portable fire extinguishers for solid fuel cooking appliances. Solid fuel cooking appliances, whether or not under a hood, with fireboxes 5 cubic feet (0.14 m3) or less in volume shall have a minimum 2.5-gallon (9 L) or two 1.5-gallon(6 L) Class K wet-chemical portable fire extinguishers located in accordance with Section 906.1.		New base code requirements for fire extinguishers.
	906.4.4. Class K portable fire extinguishers for deep fat fryers. Where hazard areas include deep fat fryers, listed Class K portable fire extinguishers shall be provided as follows: 1. For up to four fryers having a maximum cooking medium capacity of 80 pounds (36.3 kg) each: one Class K portable fire extinguisher of a minimum 1.5-gallon (6 L) capacity 2. For every additional group of four fryers having a maximum cooking medium capacity of 80 pounds (36.3 kg) each: one additional Class K portable fire extinguisher of a minimum 1.5-gallon (6 L) capacity shall be provided. 3. For individual fryers exceeding 6 square feet (0.55 m²) in surface area: Class K portable fire extinguishers shall be installed in accordance with the extinguisher manufacturer's recommendations.		New base code requirements for fire extinguishers.
	906.5 Conspicuous location. Portable fire extinguishers shall be located in conspicuous locations where they will ~~be~~ have readily accessible and ~~be~~ immediately available for use. These locations shall be along normal paths of travel, unless the fire code official determines that the hazard posed indicates the need for placement away from normal paths of travel.		Added clarification, no major change to code.
	906.8 Cabinets. Cabinets used to house portable fire extinguishers shall not be locked. Exceptions: 1. Where portable fire extinguishers subject to malicious use or damage are provided with a means of ready access.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2. In Group I-3 occupancies and in mental health areas in Group I-2 occupancies, access to portable fire extinguishers shall be permitted to be locked or to be located in staff locations provided that the staff has keys.		
	907.1.2 Fire alarm shop drawings. Shop drawings for fire alarm systems shall be prepared in accordance with NFPA 72 and submitted for review and approval prior to system installation, and shall include, but not be limited to, all of the following where applicable to the system being installed: 1. A floor plan that indicates the use of all rooms. 2. Locations of alarm-initiating devices. 3. Locations of alarm notification appliances, including candela ratings for visible alarm notification appliances. 4. Design minimum audibility level for occupant notification. 5. Location of fire alarm control unit, transponders and notification power supplies. 6. Annunciators. 7. Power connection. 8. Battery calculations. 9. Conductor type and sizes. 10. Voltage drop calculations. 11. Manufacturers' data sheets indicating model numbers and listing information for equipment, devices and materials. 12. Details of ceiling height and construction. 13. The interface of fire safety control functions. 14. Classification of the supervising station.		Added clarification, no major change to code.
907.2 Where required—new buildings and structures. An <i>approved</i> fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Section 907.2.1 through 907.2.23 and provide occupant notification in accordance with Section 907.5 unless other requirements are provided by another section of this code. Not fewer than one manual fire alarm box shall be provided in an <i>approved</i> location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, a single fire alarm box shall be installed. Exceptions: 1. The manual fire alarm box is not required for fire alarm systems dedicated to elevator recall control and supervisory service. 2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the <i>fire code official</i> to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is accessible to the public. <u>In other than Group H occupancies, a fire alarm system shall not be required in open buildings.</u>	907.2 Where required—new buildings and structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.23 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code. Not fewer than one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, a single fire alarm box shall be installed. Exceptions: 1. The manual fire alarm box is not required for fire alarm systems dedicated to elevator recall control and supervisory service. 2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is accessible open to the public.	907.2 Where required—new buildings and structures. An <i>approved</i> fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Section 907.2.1 through 907.2.23 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code. Not fewer than one manual fire alarm box shall be provided in an <i>approved</i> location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, a single fire alarm box shall be installed. Exceptions: 1. The manual fire alarm box is not required for fire alarm systems dedicated to elevator recall control and supervisory service. 2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the <i>fire code official</i> to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is open to the public. 3. <u>In other than Group H occupancies, a fire alarm system shall not be required in open buildings.</u>	Updated language of Houston amendment to be in line with base code, no major change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more, or where the Group A occupant load is more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Section 707.3.10 of the International Building Code shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy. Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.		Added clarification, no major change to code.
907.2.2 Group B. A manual fire alarm system shall be installed in Group B occupancies where one of the following conditions exists: 1. The combined Group B <i>occupant load</i> of all floors is 500 or more. 2. The Group B <i>occupant load</i> is more than 100 persons above or below the lowest <i>level of exit discharge</i> . 3. The <i>fire area</i> contains an ambulatory care facility. Exception: ~~Manual~~ In other than high-rise buildings, manual fire alarm boxes are not required where the building is equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.	907.2.2 Group B. A manual fire alarm system, which activates the occupant notification system in accordance with Section 907.5, shall be installed in Group B occupancies where one of the following conditions exists: 1. The combined Group B occupant load of all floors is 500 or more. 2. The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge . 3. The fire area contains an ambulatory care facility. Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.	907.2.2 Group B. A manual fire alarm system, which activates the occupant notification system in accordance with Section 907.5, shall be installed in Group B occupancies where one of the following conditions exists: 1. The combined Group B <i>occupant load</i> of all floors is 500 or more. 2. The Group B <i>occupant load</i> is more than 100 persons above or below the lowest <i>level of exit discharge</i> . 3. The <i>fire area</i> contains an ambulatory care facility. Exception: ~~Manual~~ In other than high-rise buildings, manual fire alarm boxes are not required where the building is equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.	Updated language of Houston amendment to be in line with base code, no major change to amendment.
	907.2.2.1 Ambulatory care facilities. Fire areas containing ambulatory care facilities shall be provided with an electronically supervised automatic smoke detection system installed within the ambulatory care facility and in public use areas outside of tenant spaces, including public corridors and elevator lobbies. Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 provided that the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.		Added clarification, no major change to code.
907.2.3 Group E. A manual and automatic fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E occupancies. When <i>automatic sprinkler systems</i> or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.	907.2.3 Group E. A manual fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E occupancies. ~~When~~ Where automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.	907.2.3 Group E. A manual and automatic fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E occupancies. ~~When~~ Where ~~automatic sprinkler systems~~ or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.	Added clarification, no major change to code. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
{EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2015 IFC.}	Exceptions: 1. A manual fire alarm system is not required in Group E occupancies with an occupant load of 50 or less. 2. Emergency voice/alarm communication systems meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall not be required in Group E occupancies with occupant loads of 100 or less, provided that activation of the manual fire alarm system initiates an approved occupant notification signal in accordance with Section 907.5. 3. Manual fire alarm boxes ~~are shall not be~~ required in Group E occupancies where all of the following apply: 3.1. Interior corridors are protected by smoke detectors. 3.2. Auditoriums, cafeterias, gymnasiums and similar areas are protected by heat detectors or other approved detection devices. 3.3. Shops and laboratories involving dusts or vapors are protected by heat detectors or other approved detection devices. 3.4. Manual activation is provided from a normally occupied location. 4. Manual fire alarm boxes shall not be required in Group E occupancies where all of the following apply: 4.1. The building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1. 4.2. The emergency voice/alarm communication system will activate on sprinkler water flow. 4.3. Manual activation is provided from a normally occupied location.	{EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2021 IFC.}	
907.2.3.1 Group E educational. Smoke detectors shall be installed in any interior corridor serving as an exit and in storerooms, mechanical rooms, janitorial rooms and similar areas. Smoke detectors shall not be required in toilet rooms, classrooms or offices. Exception: <i>Approved</i> heat detectors may be installed in lieu of smoke detectors with fire marshal approval.		907.2.3.1 Group E educational. Smoke detectors shall be installed in any interior corridor serving as an exit and in storerooms, mechanical rooms, janitorial rooms and similar areas. Smoke detectors shall not be required in toilet rooms, classrooms or offices. Exception: <i>Approved</i> heat detectors may be installed in lieu of smoke detectors with fire marshal approval.	No change to Houston amendment.
907.2.3.2 Group E child day care facilities. Unless a fire alarm system meeting the requirements of Section 907.2.3 is provided, a smoke alarm shall be provided in each occupiable area of child day care facilities with an <i>occupant load</i> of less than 30. Where more than one smoke alarm is required, the smoke alarms shall be interconnected in such a manner that activation of one alarm shall activate all the alarms.		907.2.3.2 Group E child day care facilities. Unless a fire alarm system is provided meeting the requirements of Section 907.2.3, a smoke alarm shall be provided in accordance with 907.2.11.8.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
907.2.3.3 Smoke detectors. The distance between smoke detectors shall not exceed a nominal spacing of 30 feet (9,144 mm) and there shall be detectors within a distance of one-half the nominal spacing, measured at right angles, from all walls or partitions extending upward to within the top 15 percent of the ceiling height.			Previous Houston amendment relocated to Section 907.2.11.8.1.
	907.2.6 Group I. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group I occupancies. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in accordance with Sections 907.2.6.1, 907.2.6.2 and 907.2.6.3.3. Exceptions: 1. Manual fire alarm boxes in sleeping units of Group I-1 and I-2 occupancies shall not be required at exits if located at all care providers' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that the distances of travel required in Section 907.4.2.1 are not exceeded. that such manual fire alarm boxes are visible and provided with ready access, and the distances of travel required in Section 907.4.2.1 are not exceeded. 2. Occupant notification systems are not required to be activated where private mode signaling installed in accordance with NFPA 72 is approved by the fire code official and staff evacuation responsibilities are included in the fire safety and evacuation plan required by Section 404.		Added clarification, no major change to code.
907.2.6.4 Group I-4. Group I-4 occupancies shall have a manual fire alarm and an automatic fire detection system installed in accordance with 907.2.3.		907.2.6.4 Group I-4. Group I-4 occupancies shall have a manual fire alarm and an automatic fire detection system installed in accordance with 907.2.3.	No change to Houston amendment.
	907.2.6.3.3 Automatic smoke detection system. An automatic smoke detection system shall be installed throughout resident housing areas, including sleeping units and contiguous day rooms, group activity spaces and other common spaces normally accessible open to residents. Exceptions: 1. Other approved smoke detection arrangements providing equivalent protection, including, but not limited to, placing detectors in exhaust ducts from cells or behind protective guards listed for the purpose, are allowed when where necessary to prevent damage or tampering. 2. Sleeping units in Use Conditions 2 and 3 as described in Section 308 of the International Building Code.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Smoke detectors are not required in sleeping units with four or fewer occupants in smoke compartments that are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.		
	907.2.8.3 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.140.		Base code renumbering.
	907.2.9.2 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.140.		Base code renumbering.
	~~907.2.10 Group R-4. Fire alarm systems and smoke alarms shall be installed in Group R-4 occupancies as required in Sections 907.2.10.1 through 907.2.10.3.~~		Base code section removed.
	~~907.2.10.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-4 occupancies.~~ Exceptions: 1. ~~A manual fire alarm system is not required in buildings not more than two stories in height where all individual sleeping units and contiguous attic and crawl spaces to those units are separated from each other and public or common areas by not less than 1-hour fire partitions and each individual sleeping unit has an exit directly to a public way, egress court or yard.~~ 2. ~~Manual fire alarm boxes are not required throughout the building where all of the following conditions are met:~~ 2.1. ~~The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.~~ 2.2. ~~The notification appliances will activate upon sprinkler water flow.~~ 2.3. ~~Not fewer than one manual fire alarm box is installed at an approved location.~~ 3. ~~Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits where located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that the distances of travel required in Section 907.4.2.1 are not exceeded.~~		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~907.2.10.2 Automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in corridors, waiting areas open to corridors and habitable spaces other than sleeping units and kitchens.~~ Exceptions: ~~1. Smoke detection in habitable spaces is not required where the facility is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.~~ ~~2. An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.~~		Base code section removed.
	~~907.2.10.3 Smoke alarms. Single and multiple station smoke alarms shall be installed in accordance with Section 907.2.11.~~		Base code section removed.
	907.2.10 Group S. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S public- and self-storage occupancies three stories or greater in height for interior corridors and interior common areas. Visible notification appliances are not required within storage units. Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.		New base code section for Group S fire alarm requirements.
		907.2.11.8 Group E child day care facilities. Unless a fire alarm system is provided meeting the requirements of Section 907.2.3, a smoke alarm shall be provided in each occupiable area of child day care facilities with an <i>occupant load</i> of less than 30. Where more than one smoke alarm is required, the smoke alarm interconnection and power source shall be in accordance with Section 907.2.11.5 and 907.2.11.6, and smoke alarms installed in such a manner that activation of one alarm shall activate all the alarms.	No change to Houston amendment, relocated from Section 907.2.3.2.
		907.2.11.8.1 Detector Spacing. The distance between smoke detectors shall not exceed a nominal spacing of 30 feet (9144 mm) and there shall be detectors within a distance of one-half the nominal spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height.	No change to Houston amendment, relocated from Section 907.2.3.3.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	907.2.13.2 Fire department communication system. Where a wired communication system is approved in lieu of an in-building, two-way emergency responder radio communication coverage system in accordance with Section 510, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 and shall operate between a fire command center complying with Section 508, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside interior exit stairways. The fire department communication device shall be provided at each floor level within the interior exit stairway .		Added clarification, no major change to code.
	907.2.14.3 Multiple-channel voice evacuation. In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, voice evacuation systems for high-rise buildings shall be multiple-channel systems.		New requirements for voice evacuation systems for high-rise buildings.
	~~907.2.13~~ 907.2.14 Atriums connecting more than two stories.		Base code renumbering.
	907.2.16 Aerosol storage uses. Aerosol storage product rooms and general-purpose warehouses containing aerosol products shall be provided with an approved manual fire alarm system where required by this code.		Added clarification, no major change to code.
	907.2.22 Covered and open mall buildings. Where the total floor area exceeds 50,000 square feet (4645 m²) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided. Access to emergency voice/alarm communication systems serving a mall, required or otherwise, shall be accessible to provided for the fire department. The system shall be provided in accordance with Section 907.5.2.2.		Added clarification, no major change to code.
	907.2.22.2 Other airport traffic control towers. Airport traffic control towers with a single exit or where sprinklers are not installed throughout shall be provided with smoke detectors in all of the following locations: 1. Airport traffic control cab. 2. Electrical and mechanical equipment rooms. 3. Airport terminal radar and electronics rooms. 4. Office spaces incidental to the tower operation. 5. Lounges for employees, including sanitary facilities. 6. Means of egress. 7. ~~Accessible utility shafts.~~ ~~907.2.23 Battery rooms. An automatic smoke detection system shall be installed in areas containing stationary~~		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~storage battery systems with a liquid capacity of more than 50 gallons (189 L).~~ 7. Utility shafts where access to smoke detectors can be provided.		
	907.2.223 Battery rooms Energy storage systems. An automatic smoke detection system or radiant-energy detection system shall be installed in rooms, areas and walk-in units containing stationary energy storage battery systems as required in Section 1206.2.		Updates to base code language for ESS.
	907.2.234 Capacitor energy storage systems. An automatic smoke detection system shall be installed in areas containing capacitor energy storage systems as required by Section 1206.3.		New base code section for ESS.
	907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building's fire alarm control unit ~~when~~ where a fire alarm system is required by Section 907.2. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the International Mechanical Code. In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal and not as a fire alarm. They shall not be used as a substitute for required open area detection. Exceptions: 1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances. 2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and an audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.		Added clarification, no major change to code.
	907.3.2 Spacial Delayed-egress locking systems. Where Spacial Delayed-egress locking systems are installed on means of egress doors in accordance with Section 1010.1.9.7 or 1010.1.9.8 , an automatic ~~smoke or heat~~ detection system shall be installed as required by that section.		Added clarification, no major change to code.
	907.4 Initiating devices. Where ~~manual or automatic alarm initiation is required as part of a fire alarm system, the initiating a~~ fire alarm system is required by another section of this code, occupant notification in accordance with Section 907.5 shall be initiated by one or more of the following. Initiating devices shall		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	be installed in accordance with Sections 907.4.1 through 907.4.3.1. 1. Manual fire alarm boxes. 2. Automatic fire detectors. 3. Automatic sprinkler system waterflow devices. 4. Automatic fire-extinguishing systems.		
	907.4.2.1 Location. Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each exit. In buildings not protected by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, additional manual fire alarm boxes shall be located so that the ~~exit access travel~~ distance of travel to the nearest box does not exceed 200 feet (60 960 mm).		Added clarification, no major change to code.
907.4.2.4 Signs. ~~Where fire alarm systems are not monitored by a supervising station, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS—CALL FIRE DEPARTMENT.~~ Exception: ~~Where the manufacturer has permanently provided this information on the manual fire alarm box.~~	907.4.2.4 Signs. Where fire alarm systems are not monitored by an approved supervising station in accordance with Section 907.6.6, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: “WHEN ALARM SOUNDS—CALL FIRE DEPARTMENT.” Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.	907.4.2.4 Signs. ~~Where fire alarm systems are not monitored by an approved supervising station in accordance with Section 907.6.6, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS—CALL FIRE DEPARTMENT.~~ Exception: ~~Where the manufacturer has permanently provided this information on the manual fire alarm box.~~	Added clarification, no major change to code. No change to Houston amendment.
	907.4.2.6 Unobstructed and unobscured. Manual fire alarm boxes shall be provided with ready accessible, unobstructed, unobscured and visible at all times.		Added clarification, no major change to code.
	907.5 Occupant notification systems. ~~A fire alarm system shall annunciate at the fire alarm control unit and shall initiate occupant notification upon activation.~~ Occupant notification by fire alarms shall be in accordance with Sections 907.5.1 through 907.5.2.3.3. ~~Where a fire alarm system is required by another section of this code, it shall be activated by:~~ Occupant notification by smoke alarms in Group R-1 and R-2 occupancies shall comply with Section 907.5.2.1.3.2. ~~1. Automatic fire detectors.~~ ~~2. Automatic sprinkler system waterflow devices.~~ ~~3. Manual fire alarm boxes.~~ ~~4. Automatic fire extinguishing systems.~~ Exception: ~~Where notification systems are allowed elsewhere in Section 907 to annunciate at a constantly attended location.~~		Added clarification, no major change to code.
	907.5.1 Alarm activation and annunciation. Upon activation, fire alarm systems shall initiate occupant notification and shall annunciate at the fire alarm control unit, or where allowed elsewhere by Section 907, at a constantly attended location.		New base code section for alarm activation.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	907.5.1.1 Presignal feature. A presignal feature shall ~~not be installed unless provided where approved by the fire code official and the fire department.~~ Where a presignal feature is provided, ~~a signal~~ approved. The presignal shall be annunciated at an approved constantly attended location ~~approved by the fire department code official, so that occupant notification can be activated~~ having the capability to activate the occupant notification system in the event of fire or other emergency.		Added clarification, no major change to code.
	907.5.2.1 Audible alarms. Audible alarm notification appliances shall be provided and emit a distinctive sound that is not to be used for any purpose other than that of a fire alarm. Exceptions: 1. Audible alarm notification appliances are not required in critical care areas of Group I-2; Condition 2 occupancies that are in compliance with Section 907.2.6, Exception 2. 2. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2; Condition 2 suite shall be an acceptable alternative to the installation of audible alarm notification appliances throughout ~~the~~ a suite or unit in Group I-2; Condition 2 occupancies that are in compliance with Section 907.2.6, Exception 2. 3. Where provided, audible notification appliances located in each enclosed occupant evacuation elevator lobby in accordance with Section 3008.9.1 of the International Building Code shall be connected to a separate notification zone for manual paging only.		Added clarification, no major change to code.
907.5.2.2 Emergency voice/alarm communication systems. Emergency voice/alarm communication systems required by this code shall be designed and installed in accordance with NFPA 72. The operation of any automatic fire detector, sprinkler waterflow device or manual fire alarm box shall automatically sound an alert tone followed by voice instructions giving <i>approved</i> information and directions for a general or staged evacuation in accordance with the building's fire safety and evacuation plans required by Section 404. In high-rise buildings, the system shall operate on at least the alarming floor, the floor above and the floor below. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be provided as follows: 1. Elevator groups. 2. <i>Interior exit stairways.</i> 3. Each floor. 4. <i>Areas of refuge</i> as defined in Chapter 2. <u>Alarms shall not sound in elevator groups or exit stairs.</u>			Removed Houston amendment to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
Exception: In Group I-1 and I-2 occupancies, the alarm shall sound in a constantly attended area and a general occupant notification shall be broadcast over the overhead page.			
	907.5.2.1.2 Maximum sound pressure. The ~~maximum total sound pressure level for audible alarm~~ produced by combining the ambient sound pressure level with all audible notification appliances ~~operating~~ shall ~~be not exceed~~ 110 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than ~~95~~ 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.		Added clarification, no major change to code.
	907.5.2.1.3 Audible signal frequency in Group R-1 and R-2 sleeping rooms. Audible signal frequency in Group R-1 and R-2 occupancies shall be in accordance with Sections 907.5.2.1.3.1 and 907.5.2.1.3.2		New base code section for Group R-1 and R-2 fire alarms.
	907.5.2.1.3.1 Fire alarm system signal. In sleeping rooms of Group R-1 and R-2 occupancies, the audible alarm activated by a fire alarm system shall be a 520-Hz low-frequency signal complying with NFPA 72.		New base code section for Group R-1 and R-2 fire alarms.
	907.5.2.1.3.2 Smoke alarm signal in sleeping rooms. In sleeping rooms of Group R-1 and R-2 occupancies that are required by Section 907.2.8 or 907.2.9 to have a fire alarm system, the audible alarm signal activated by single- or multiple-station smoke alarms in the dwelling unit or sleeping unit shall be a 520-Hz signal complying NFPA 72. Where a sleeping room smoke alarm is unable to produce a 520-Hz signal, the 520-Hz alarm signal shall be provided by a listed notification appliance or a smoke detector with an integral 520-Hz sounder.		New base code section for Group R-1 and R-2 fire alarms.
	907.5.2.2.3 Alternative uses. The emergency voice/ alarm communication system shall be allowed to be used for other announcements, provided ~~that~~ the manual fire alarm use takes precedence over any other use.		Added clarification, no major change to code.
	907.5.2.2.4 Emergency voice/alarm communication captions. Where stadiums, arenas and grandstands ~~are required to caption audible public announcements in accordance with Section 1108.2.7.3 of the International Building Code, the~~ have 15,000 fixed seats or more and provide audible public announcements, the emergency/voice alarm communication system shall ~~be~~ provide pre-		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~recorded or real-time captioned~~ . Prerecorded or live emergency captions shall be from an approved location constantly attended by personnel trained to respond to an emergency.		
	907.5.2.2.5 Emergency Standby power. Emergency voice/alarm communications systems shall be provided with emergency standby power in accordance with Section 1203. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.		Added clarification, no major change to code.
	907.5.2.3 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through 907.5.2.3.3. Exceptions: 1. Visible alarm notification appliances are not required in alterations, except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed. 2. Visible alarm notification appliances shall not be required in exits as defined in Chapter 2. 3. Visible alarm notification appliances shall not be required in elevator cars. 4. Visual alarm notification appliances are not required in critical care areas of Group I-2, Condition 2 occupancies that are in compliance with Section 907.2.6, Exception 2. 5. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2, Condition 2 suite shall be an acceptable alternative to the installation of visible alarm notification appliances throughout the suite or unit in Group I-2, Condition 2 occupancies that are in compliance with Section 907.2.6, Exception 2.		New requirements for visible fire alarms in healthcare facilities.
	907.5.2.3.2 Groups I-1 and R-1. ~~Group I-1 Habitable and spaces R-1 in dwelling units or~~ and sleeping units in Group I-1 and R-1 occupancies in accordance with Table 907.5.2.3.2 shall be provided with a visible alarm notification. ~~Appliance~~ Visible alarm shall be activated by both the in-room smoke alarm and the building fire alarm system.		Added clarification, no major change to code.
	907.5.2.3.3 Group R-2. In Group R-2 occupancies required by Section 907 to have a fire alarm system, ~~all~~ each story that contains dwelling units and sleeping units shall be provided with the future capability to support future visible alarm notification appliances in accordance with Chapter 10 1 of ICC A117.1. Such capability shall ~~be permitted to include the potential for future interconnection of the building fire alarm system with the unit smoke alarms, replacement of audible appliances with combination~~		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~audible/visible appliances, or future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances. accommodate wired or wireless equipment. The future capability shall include one of the following:~~ ~~1. The interconnection of the building fire alarm system with the unit smoke alarms.~~ ~~2. The replacement of audible appliances with combination audible/visible appliances, or future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.~~ ~~3. The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.~~		
	907.5.2.3.3.1 Wired equipment. Where wired equipment is used to comply with the future capability required by Section 907.5.2.3.3, the system shall include one of the following capabilities: - The replacement of audible appliances with combination audible/visible appliances or additional visible notification appliances. - The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances. - For wired equipment, the fire alarm power supply and circuits shall have not less than 5-percent excess capacity to accommodate the future addition of visible alarm notification appliances, and a single access point to such circuits shall be available on every story. Such circuits shall not be required to be extended beyond a single access point on a story. The fire alarm system shop drawings required by Section 907.1.2 shall include the power supply and circuit documentation to accommodate the future addition of visible notification appliances.		New base code section for wired equipment capability requirements.
	907.6.2 Power supply. The primary and secondary power supply for the fire alarm system shall be provided in accordance with NFPA 72. Exception: Backup power for single-station and multiple-station smoke alarms as required in Section 907.2.14.6.		Base code renumbering.
	907.6.4.2 High-rise buildings. In high-rise buildings, a separate zone by floor shall be provided for each of the following types of alarm-initiating devices where provided: - Smoke detectors. - Sprinkler waterflow devices. - Manual fire alarm boxes.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	4. Other approved types of automatic fire ~~detection devices or suppression~~ protection systems.		
	907.6.6 Monitoring. Fire alarm systems required by this chapter or by the International Building Code shall be monitored by an approved supervising station in accordance with NFPA 72. Exception: Monitoring by a supervising station is not required for: 1. Single- and multiple-station smoke alarms required by Section 907.2.14 0 . 2. Smoke detectors in Group I-3 occupancies. 3. Automatic sprinkler systems in one- and two-family dwellings.		Base code renumbering.
907.6.6.1 Automatic telephone-dialing devices. Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any fire department telephone number ~~unless approved by the fire chief.~~	907.6.6.1 Automatic telephone-dialing devices. ~~Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any fire department telephone number unless approved by the fire chief.~~ Transmission of alarm signals. Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any fire department telephone number unless approved by the fire chief. Transmission of alarm signals to a supervising station shall be in accordance with NFPA 72.		Updated base code section for alarm signal transmission. Removed Houston amendment to go with base code.
	907.6.6.2 MIY monitoring. Direct transmission of alarms associated with monitor it yourself (MIY) transmitters to a public safety answering point (PSAP) shall not be permitted unless approved by the fire code official.		New base code section for MIY monitoring requirements.
	~~907.6.6.2~~ 907.6.6.3 Termination of monitoring service.		Base code renumbering.
	907.8.2 Testing. Testing shall be performed in accordance with the schedules in NFPA 72 or more frequently where required by the fire code official. Records of testing shall be maintained. Exception: Devices or equipment that are inaccessible ~~for~~ because of safety considerations shall be tested during scheduled shutdowns where approved by the fire code official, but not less than every 18 months.		Added clarification, no major change to code.
	907.8.3 Smoke detector sensitivity. Smoke detector sensitivity shall be checked within one year after installation and every alternate year thereafter. After the second calibration test, where sensitivity tests indicate that the detector has remained within its listed and marked sensitivity range (or 4-percent obscuration light ~~grey~~ pink smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to not more than 5 years. Where the frequency is extended, records of detector-caused nuisance alarms and subsequent trends of these alarms shall be maintained. In zones or areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	907.8.4 Sensitivity test method. To verify that each smoke detector is within its listed and marked sensitivity range, it shall be tested using one of the following methods: 1. A calibrated test method. 2. The manufacturer's calibrated sensitivity test instrument. 3. Listed control equipment arranged for the purpose. 4. A smoke detector/control unit arrangement whereby the detector causes a signal at the control unit where the detector's sensitivity is outside its acceptable sensitivity range. 5. Another calibrated sensitivity test method acceptable to the fire code official. Detectors found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and recalibrated or replaced. Exceptions: 1. Detectors listed as field adjustable shall be permitted to be either adjusted within the listed and marked sensitivity range and cleaned and recalibrated or they shall be replaced. 2. This requirement shall not apply to single station smoke alarms.		Base code section removed.
	907.8.4.1 Sensitivity testing device. Smoke detector sensitivity shall not be tested or measured using a device that administers an unmeasured concentration of smoke or other aerosol into the detector.		Base code section removed.
	907.8.5 907.8.4 Inspection, testing and maintenance.		Base code renumbering.
	907.10 Smoke alarm maintenance. Smoke alarms shall be tested and maintained in accordance with the manufacturer's instructions. Smoke alarms shall be replaced when they fail to respond to operability tests, or when they exceed 10 years from the date of manufacture, unless an earlier replacement is specified in the manufacturer's published instructions.		No Houston amendment.
	908.2 Group H-5 occupancy. Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 2703.12. A continuous gas detection system shall be provided for HPM gases in accordance with Section 2703.13.		Base code section removed.
	908.3 Highly toxic and toxic materials. Where required by Section 6004.2.2.10, a gas detection system shall be provided for indoor storage and use of highly toxic and toxic compressed gases.		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~908.4 Ozone gas generator rooms. A gas detection system shall be provided in ozone gas generator rooms in accordance with Section 6005.3.2.~~		Base code section removed.
	~~908.5 Repair garages. A flammable gas detection system shall be provided in repair garages for vehicles fueled by nonodorized gases in accordance with Section 2311.7.2.~~		Base code section removed.
	~~908.6 Refrigeration systems. Refrigeration system machinery rooms shall be provided with a refrigerant detector in accordance with Section 606.8.~~		Base code section removed.
	~~908.7 Carbon dioxide (CO2) systems. Emergency alarm systems in accordance with Section 5307.5.2 shall be provided where required for compliance with Section 5307.5.~~		Base code section removed.
	908.3 Fire alarm system interface. Where an emergency alarm system is interfaced with a building's fire alarm system, the signal produced at the fire alarm control unit shall be a supervisory signal.		New base code requirement for fire alarm system interface signals.
	909.1 Scope and purpose. This section applies to mechanical or passive smoke control systems where they are required for new buildings or portions thereof by provisions of the International Building Code or this code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations or for assistance in fire suppression or overhaul activities. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-venting removal provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the International Mechanical Code.		Added clarification, no major change to code.
	909.5.3 Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by fire door assemblies complying with Section 716.5.3 of the International Building Code. Exceptions: Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with Section 907.3.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. Fixed openings between smoke zones that are protected utilizing the airflow method. 3. In Group I-1, Condition 2, Group I-2, and ambulatory care facilities, where a pair of opposite-swinging doors are installed across a corridor in accordance with Section 909.5.3.1, the doors shall not be required to be protected in accordance with Section 716 of the International Building Code. The doors shall be close-fitting within operational tolerances and shall not have a center mullion or undercuts in excess of 3/4-inch (19.1 mm) louvers or grilles. The doors shall have head and jamb stops and astragals or rabbets at meeting edges and, where permitted by the door manufacturer's listing, positive-latching devices are not required. 4. In Group I-2 and ambulatory care facilities, where such doors are special-purpose horizontal sliding, accordion or folding door assemblies installed in accordance with Section 1010.1.4.3 and are automatic closing by smoke detection in accordance with Section 716.5.2.9.3.6 of the International Building Code. 5. Group I-3. 6. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.		
	909.5.3.1 Group I-1, Condition 2, Group I-2, and ambulatory care facilities. In Group I-1, Condition 2, Group I-2, and ambulatory care facilities, where doors are installed across a corridor, the doors shall be automatic closing by smoke detection in accordance with Section 716.5.2.9.3.6 of the International Building Code and shall have a vision panel with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested.		Added clarification, no major change to code.
	909.6.1 Minimum pressure difference. The minimum pressure difference across a smoke barrier used to separate smoke zones shall be not less than 0.05-inch water gage (0.0124 kPa) in fully sprinklered buildings. In buildings allow permitted to be other than fully sprinklered, the smoke control system shall be designed to achieve pressure differences not less than two times the maximum calculated pressure difference produced by the design fire.		Added clarification, no major change to code.
	909.6.3 Pressurized stairways and elevator hoistways. Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with Section 909 as smoke control systems, in addition to the requirements of Section 909.21 of this code and Section 909.20 of the International Building Code. Sections 909.20 and 909.21.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	909.7.1 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. ~~In no case shall a~~ A irflow toward the fire shall not exceed 200 feet per minute (1.02 m/s). Where the calculated airflow exceeds this limit, the airflow method shall not be used.		Added clarification, no major change to code.
	909.11 Standby power. Smoke control systems shall be provided with standby power in accordance with Section ~~612043~~ .		Base code renumbering.
909.12.2 Wiring. In addition to meeting requirements of ~~NEPA 70~~ the <i>Electrical Code</i> , ~~all~~ mechanical smoke control wiring, regardless of voltage, shall be fully enclosed within continuous raceways. The requirement of this section shall apply only to wiring extending from the fire alarm system control unit that activates any required smoke control system component such as relays, fans, dampers, or stair pressurization systems.		909.12.2 Wiring. In addition to meeting requirements of NEPA 70 the <i>Electrical Code</i> , all mechanical smoke control wiring, regardless of voltage, shall be fully enclosed within continuous raceways. The requirement of this section shall apply only to wiring extending from the fire alarm system control unit that activates any required smoke control system component such as relays, fans, dampers, or stair pressurization systems.	No change to Houston amendment
	909.12.4 Automatic control. Where completely automatic control is required or used, the automatic-control sequences shall be initiated from an appropriately zoned automatic sprinkler system complying with Section 903.3.1.1, manual controls ~~that are~~ provided with readily accessible ~~for~~ the fire department and any smoke detectors required by the engineering analysis.		Added clarification, no major change to code.
909.13.1 Materials. Control air tubing shall be hard drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100°F (593°C) and liquidus below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only. Exception: Nonmetallic tubing used within control panels and at the final connection to devices, provided all of the following conditions are met: 1. Tubing shall comply with the requirements of Section 602.2.31-3 of the <i>International Mechanical Code</i> . {EDITORIAL NOTE: THE REMAINDER OF SECTION 909.13.1 SHALL REMAIN AS SET FORTH IN THE 2015 IFC.}	909.13.1 Materials. Control air tubing shall be hard drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100°F (593°C) and liquidus below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only. Exception: Nonmetallic tubing used within control panels and at the final connection to devices, provided that all of the following conditions are met: 1. Tubing shall comply with the requirements of Section 602.2.1.3 of the International Mechanical Code. 2. Tubing and the connected device shall be completely enclosed within a galvanized or paint-grade steel enclosure having a minimum thickness of 0.0296 inch (0.7534 mm) (No. 22 gage). Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or Teflon or by suitable brass compression to male-barbed adapter.	909.13.1 Materials. Control air tubing shall be hard drawn copper, Type L, ACR in accordance with ASTM B42, ASTM B43, ASTM B68/B68M, ASTM B88, ASTM B251 and ASTM B280. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B16.18 or ASME B16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100°F (593°C) and liquidus below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only. Exception: Nonmetallic tubing used within control panels and at the final connection to devices, provided that all of the following conditions are met: 1. Tubing shall comply with the requirements of Section 602.2.31-3 of the <i>International Mechanical Code</i> . {EDITORIAL NOTE: THE REMAINDER OF SECTION 909.13.1 SHALL REMAIN AS SET FORTH IN THE 2021 IFC.}	Added clarification, no major change to code. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3. Tubing shall be identified by appropriately documented coding. 4. Tubing shall be neatly tied and supported within the enclosure. Tubing bridging cabinets and doors or moveable devices shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing ~~servicing~~ connected to devices on doors shall be fastened along hinges.		
	909.15 Control diagrams. Identical control diagrams showing all devices in the system and identifying their location and function shall be maintained current and kept on file with the fire code official, the fire department and in the fire command center in a format and manner approved by the fire ~~chief~~ code official.		Added clarification, no major change to code.
	909.17 System response time. Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as dampers and fans) in the sequence necessary to prevent physical damage to the fans, dampers, ducts and other equipment. For purposes of smoke control, the fire fighter's control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total response time, including that necessary for detection, shutdown of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. Upon receipt of an alarm condition at the fire alarm control panel, fans, dampers and automatic doors shall have achieved their proper operating state and the final status shall be indicated at the smoke control panel within 90 seconds. The system response time for each component and their sequential relationships shall be detailed in the required rational analysis and verification of their installed condition reported in the required final report.		Added clarification, no major change to code.
	[BF] 909.20 Smokeproof enclosures. Where required by Section 1023.12, a smokeproof enclosure shall be constructed in accordance with this section. A smokeproof enclosure shall consist of an interior exit stairway or ramp that is enclosed in accordance with the applicable provisions of Section 1023 and an open exterior balcony or ventilated vestibule meeting the requirements of this section. Where access to the roof is required, such access shall be from the smokeproof enclosure where a smokeproof enclosure is required.		New base code section for smokeproof enclosures.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	[BF] 909.20.1 Access. Access to the stairway or ramp shall be by way of a vestibule or an open exterior balcony. The minimum dimension of the vestibule shall be not less than the required width of the corridor leading to the vestibule but shall not have a width of less than 44 inches (1118 mm) and shall not have a length of less than 72 inches (1829 mm) in the direction of egress travel.		New base code section for minimum access dimensions.
	[BF] 909.20.2 Construction. The smokeproof enclosure shall be separated from the remainder of the building by not less than 2-hour fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both. Openings are not permitted other than the required means of egress doors. The vestibule shall be separated from the stairway or ramp by not less than 2-hour fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both. The open exterior balcony shall be constructed in accordance with the fire-resistance-rating requirements for floor assemblies.		New base code section for construction of smokeproof enclosures.
	[BF] 909.20.2.1 Door closers. Doors in a smokeproof enclosure shall be self-closing or automatic closing by actuation of a smoke detector in accordance with Section 716.2.6.6 of the International Building Code and shall be installed at the floor-side entrance to the smokeproof enclosure. The actuation of the smoke detector on any door shall activate the closing devices on all doors in the smokeproof enclosure at all levels. Smoke detectors shall be installed in accordance with Section 907.3.		New base code section for self-closing/automatic doors in smokeproof enclosures.
	[BF] 909.20.3 Natural ventilation alternative. The provisions of Sections 909.20.3.1 through 909.20.3.3 shall apply to ventilation of smokeproof enclosures by natural means.		New base code section for smokeproof enclosure ventilation.
	[BF] 909.20.3.1 Balcony doors. Where access to the stairway or ramp is by way of an open exterior balcony, the door assembly into the enclosure shall be a fire door assembly in accordance with Section 716 of the International Building Code.		New base code section for balcony doors in smokeproof enclosures.
	[BF] 909.20.3.2 Vestibule doors. Where access to the stairway or ramp is by way of a vestibule, the door assembly into the vestibule shall be a fire door assembly complying with Section 716 of the International Building Code. The door assembly from the vestibule to the stairway shall have not less than a 20-minute fire protection rating complying with Section 716 of the International Building Code.		New base code section for vestibule doors in smokeproof enclosures.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	[BF] 909.20.3.3 Vestibule ventilation. Each vestibule shall have a minimum net area of 16 square feet (1.5 m2) of opening in a wall facing an outer court, yard or public way that is not less than 20 feet (6096 mm) in width.		New base code section for vestibule ventilation.
	[BF] 909.20.4 Mechanical ventilation alternative. The provisions of Sections 909.20.4.1 through 909.20.4.4 shall apply to ventilation of smokeproof enclosures by mechanical means.		New base code section for mechanical ventilation alternative.
	[BF] 909.20.4.1 Vestibule doors. The door assembly from the building into the vestibule shall be a fire door assembly complying with Section 716.2.2.1 of the International Building Code. The door assembly from the vestibule to the stairway or ramp shall have not less than a 20-minute fire protection rating and shall meet the requirements for a smoke door assembly in accordance with Section 716.2.2.1 of the International Building Code. The door shall be installed in accordance with NFPA 105.		New base code section for vestibule doors in smokeproof enclosures.
	[BF] 909.20.4.2 Vestibule ventilation. The vestibule shall be supplied with not less than one air change per minute and the exhaust shall be not less than 150 percent of supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate, tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches (152 mm) of the floor level. The top of the exhaust register shall be located at the top of the smoke trap but not more than 6 inches (152 mm) down from the top of the trap, and shall be entirely within the smoke trap area. Doors in the open position shall not obstruct duct openings. Duct openings with controlling dampers are permitted where necessary to meet the design requirements, but dampers are not otherwise required.		New base code section for vestibule ventilation.
	[BF] 909.20.4.2.1 Engineered ventilation system. Where a specially engineered system is used, the system shall exhaust a quantity of air equal to not less than 90 air changes per hour from any vestibule when in emergency operation mode and shall be sized to handle three vestibules simultaneously. Smoke detectors shall be located at the floor-side entrance to each vestibule and shall activate the system for the affected vestibule. Smoke detectors shall be installed in accordance with Section 907.3.		New base code section for engineering ventilation.
	[BF] 909.20.4.3 Smoke trap. The vestibule ceiling shall be not less than 20 inches (508 mm) higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward-moving air column. The height shall not be decreased unless approved and justified by design and test.		New base code section for smoke trap requirements in vestibules.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	[BF] 909.20.4.4 Stairway or ramp shaft air movement system. The stairway or ramp shaft shall be provided with a dampered relief opening and supplied with sufficient air to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) in the shaft relative to the vestibule with all doors closed.		New base code section for air movement systems.
	[BF] 909.20.5 Stairway and ramp pressurization alternative. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the vestibule is not required, provided that each interior exit stairway or ramp is pressurized to not less than 0.10 inch of water (25 Pa) and not more than 0.35 inch of water (87 Pa) in the shaft relative to the building measured with all interior exit stairway and ramp doors closed under maximum anticipated conditions of stack effect and wind effect.		New base code section for pressurization alternatives.
	[BF] 909.20.6 Ventilating equipment. The activation of ventilating equipment required by the alternatives in Sections 909.20.4 and 909.20.5 shall be by smoke detectors installed at each floor level at an approved location at the entrance to the smokeproof enclosure. When the closing device for the stairway and ramp shaft and vestibule doors is activated by smoke detection or power failure, the mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.3.		New base code section for ventilating equipment.
	[BF] 909.20.6.1 Ventilation systems. Smokeproof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following: 1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both. 2. Equipment, control wiring, power wiring and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both. 3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour fire barriers constructed in accordance with Section 707 of the International Building Code		New base code section for ventilating systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both. Exception: Control wiring and power wiring located outside of a 2-hour fire barrier construction shall be protected using any one of the following methods: 1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 2 hours. 2. Where encased with not less than 2 inches (51 mm) of concrete. 3. Electrical circuit protective systems shall have a fire-resistance rating of not less than 2 hours. Electrical circuit protective systems shall be installed in accordance with their listing requirements.		
	[BF] 909.20.6.2 Standby power. Mechanical vestibule and stairway and ramp shaft ventilation systems and automatic fire detection systems shall be provided with standby power in accordance with Section 603.		New base code section for standby power in vestibules.
	[BF] 909.20.6.3 Acceptance and testing. Before the mechanical equipment is approved, the system shall be tested in the presence of the building official to confirm that the system is operating in compliance with these requirements.		New base code section requiring acceptance and testing of mechanical equipment.
	[BF] 909.21.5 Standby power. The pressurization system shall be provided with standby power in accordance with Section ~~612~~ 612.043 .		Base code renumbering.
	~~909.20~~ 909.22 Maintenance.		Base code renumbering.
	~~909.20.1~~ 909.22.1 Schedule.		Base code renumbering.
	~~909.20.2~~ 909.22.2 Records.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~909.20.3~~ 909.22.3 Testing.		Base code renumbering.
	~~909.20.4~~ 909.22.4 Dedicated smoke control systems.		Base code renumbering.
	~~909.20.5~~ 909.22.5 Nondedicated smoke control systems.		Base code renumbering.
	~~909.20.6~~ 909.22.6 Components bypassing weekly test.		Base code renumbering.
	910.3.4 Vent operation. Smoke and heat vents shall be capable of being operated by approved automatic and manual means.		New base code section for smoke and heat vent operation.
	910.3.5 Fusible link temperature rating. Where vents are installed in areas provided with automatic fire sprinklers and the vents operate by fusible link, the fusible link shall have a temperature rating of 360°F (182°C).		New base code section for fusible link requirements.
	910.4.3 System design criteria. The mechanical smoke removal system shall be sized to exhaust the building at a minimum rate of two air changes per hour based upon the volume of the building or portion thereof without contents. The capacity of each exhaust fan shall not exceed 30,000 cubic feet per minute (14.2 m³/see).		Added clarification, no major change to code.
	910.4.5 Manual control location. Manual controls shall be located so as where they are able to be accessible accessed by the fire service from an exterior door of the building and protected against interior fire exposure separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both.		Added clarification, no major change to code.
	910.5 Maintenance and testing. ~~S-~~ Maintenance and testing of smoke and heat vents and mechanical smoke removal systems shall be maintained in an operative condition in accordance with Sections 910.5.1 ~~or~~ and 910.5.2. A written record of inspection, testing and maintenance that includes the date, identification of		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	personnel involved, any unsatisfactory result, corrective action taken and replaced parts shall be maintained on the premises.		
	910.5.1 Smoke and heat vents. Smoke and heat vents shall be maintained in an operative condition. Inspection, testing and maintenance shall be in accordance with NFPA 204 and ~~Section 910.5.1.1~~ expect as follows: 910.5.1.1 Fusible links. ~~Fusible links for smoke and heat vents shall be replaced whenever fused, damaged or painted.~~ 1. Mechanically operated smoke and heat vents shall be inspected annually and operationally tested not less than every 5 years. 2. Gravity dropout smoke and heat vents shall be inspected annually. 3. Fused, damaged or painted fusible links shall be replaced.		Added clarification, no major change to code.
	910.5.2 Mechanical smoke removal systems. Mechanical smoke removal systems shall be maintained in accordance with NFPA 204 and the equipment manufacturer's maintenance instructions and ~~Sections 910.5.2.1 through 910.5.2.4.~~ expect as follows: 910.5.2.1 Frequency. ~~Systems shall be operationally tested not less than once per year. Testing shall include the operation of all system components, including control elements.~~ 910.5.2.2 Testing. ~~Operational testing of the mechanical smoke removal system shall include all equipment such as fans, controls and make-up air openings.~~ 910.5.2.3 Schedule. ~~A routine maintenance and operational testing program shall be initiated and a written schedule for routine maintenance and operational testing shall be established.~~ 910.5.2.4 Written record. ~~A written record of mechanical smoke exhaust system testing and maintenance shall be maintained on the premises. The written record shall include the date of the maintenance, identification of the servicing personnel and notification of any unsatisfactory condition and the corrective action taken, including parts replaced.~~ 1. Systems shall be inspected and operationally tested annually. 2. Testing shall include the operation of all system components, controls and ancillary equipment, such as		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary																																																																																																																									
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	911.1 General. Explosion control shall be provided in the following locations: 1. Where a structure, room or space is occupied for purposes involving explosion hazards as identified in Table 911.1. 2. Where quantities of hazardous materials specified in Table 911.1 exceed the maximum allowable quantities in Table 5003.1.1(1). Such areas shall be provided with explosion (deflagration) venting, explosion (deflagration) prevention systems or barricades in accordance with this section and NFPA 68, NFPA 69 or NFPA 495 as applicable. Deflagration venting shall not be utilized as a means to protect buildings from detonation hazards.		Added clarification, no major change to code.																																																																																																																									
	<table><tr><th colspan="4">TABLE 911.1 EXPLOSION CONTROL REQUIREMENTS^f</th></tr><tr><th rowspan="2">MATERIAL</th><th rowspan="3">CLASS</th><th colspan="2">EXPLOSION CONTROL METHODS</th></tr><tr><th>Barricade construction</th><th>Explosion (deflagration) venting or explosion (deflagration) prevention systems</th></tr><tr><th colspan="4">Hazard Category</th></tr><tr><td>Combustible dusts^a</td><td>—</td><td>Not required</td><td>Required</td></tr><tr><td>Cryogenic fluids</td><td>Flammable</td><td>Not required</td><td>Required</td></tr><tr><td rowspan="6">Explosives</td><td>Division 1.1</td><td>Required</td><td>Not required</td></tr><tr><td>Division 1.2</td><td>Required</td><td>Not required</td></tr><tr><td>Division 1.3</td><td>Not required</td><td>Required</td></tr><tr><td>Division 1.4</td><td>Not required</td><td>Required</td></tr><tr><td>Division 1.5</td><td>Required</td><td>Not required</td></tr><tr><td>Division 1.6</td><td>Required</td><td>Not required</td></tr><tr><td rowspan="2">Flammable gas</td><td>Gaseous</td><td>Not required</td><td>Required</td></tr><tr><td>Liquefied</td><td>Not required</td><td>Required</td></tr><tr><td rowspan="2">Flammable liquids</td><td>IA^b</td><td>Not required</td><td>Required</td></tr><tr><td>IB^c</td><td>Not required</td><td>Required</td></tr><tr><td rowspan="2">Organic peroxides</td><td>Unclassified detonable</td><td>Required</td><td>Not permitted</td></tr><tr><td>I</td><td>Required</td><td>Not permitted</td></tr><tr><td>Oxidizer liquids and solids</td><td>4</td><td>Required</td><td>Not permitted</td></tr><tr><td rowspan="2">Pyrophoric</td><td>Gases</td><td>Not required</td><td>Required</td></tr><tr><td>4</td><td>Required</td><td>Not permitted</td></tr><tr><td rowspan="3">Unstable (reactive)</td><td>3 detonable</td><td>Required</td><td>Not permitted</td></tr><tr><td>3 nondetonable</td><td>Not required</td><td>Required</td></tr><tr><td>3</td><td>Not required</td><td>Required</td></tr><tr><td rowspan="2">Water-reactive liquids and solids</td><td>3</td><td>Not required</td><td>Required</td></tr><tr><td>2^g</td><td>Not required</td><td>Required</td></tr><tr><th colspan="4">Special Uses</th></tr><tr><td>Acetylene generator rooms</td><td>—</td><td>Not required</td><td>Required</td></tr><tr><td>Electrochemical energy storage systems^d</td><td>—</td><td>Not required</td><td>Required</td></tr><tr><td>Energy storage systems^e</td><td>—</td><td>Not required</td><td>Required</td></tr><tr><td>Grain processing</td><td>—</td><td>Not required</td><td>Required</td></tr><tr><td>Liquefied petroleum gas distribution facilities</td><td>—</td><td>Not required</td><td>Required</td></tr><tr><td rowspan="2">Where explosion hazards exist^f</td><td>Detonation</td><td>Required</td><td>Not permitted</td></tr><tr><td>Deflagration</td><td>Not required</td><td>Required</td></tr></table> a. Combustible dusts <i>where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.8.2. that are generated during manufacturing or processing</i>-See definition of "Combustible dust" in Chapter 2. b. Storage or use. c. In open use or dispensing. d. Rooms containing dispensing and use of hazardous materials where an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process. e. A method of explosion control shall be provided where Class 2 water-reactive materials can form potentially explosive mixtures. f. Explosion venting is not required for Group H-5 Fabrication Areas complying with Chapter 27 and the <i>International Building Code</i>. g. Where explosion control is required in Section 1207.6.3.	TABLE 911.1 EXPLOSION CONTROL REQUIREMENTS ^f				MATERIAL	CLASS	EXPLOSION CONTROL METHODS		Barricade construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems	Hazard Category				Combustible dusts ^a	—	Not required	Required	Cryogenic fluids	Flammable	Not required	Required	Explosives	Division 1.1	Required	Not required	Division 1.2	Required	Not required	Division 1.3	Not required	Required	Division 1.4	Not required	Required	Division 1.5	Required	Not required	Division 1.6	Required	Not required	Flammable gas	Gaseous	Not required	Required	Liquefied	Not required	Required	Flammable liquids	IA ^b	Not required	Required	IB ^c	Not required	Required	Organic peroxides	Unclassified detonable	Required	Not permitted	I	Required	Not permitted	Oxidizer liquids and solids	4	Required	Not permitted	Pyrophoric	Gases	Not required	Required	4	Required	Not permitted	Unstable (reactive)	3 detonable	Required	Not permitted	3 nondetonable	Not required	Required	3	Not required	Required	Water-reactive liquids and solids	3	Not required	Required	2 ^g	Not required	Required	Special Uses				Acetylene generator rooms	—	Not required	Required	Electrochemical energy storage systems^d	—	Not required	Required	Energy storage systems^e	—	Not required	Required	Grain processing	—	Not required	Required	Liquefied petroleum gas distribution facilities	—	Not required	Required	Where explosion hazards exist ^f	Detonation	Required	Not permitted	Deflagration	Not required	Required		New updates to explosion control table.
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	911.4 Deflagration venting. Deflagration venting shall be of an approved type and installed in accordance with the provisions of this code and NFPA 68.		New base code section for deflagration venting.																																																																																																																									
	911.4 911.5 Barricades.		Base code renumbering.																																																																																																																									

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	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~~ code official .		Added clarification, no major change to code.
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 <i>approved</i> by the ~~fire chief~~ <u>fire code official</u> .	912.2.1 Visible location. Fire department connections shall be located on the street side of buildings or facing approved fire apparatus access roads , fully visible and recognizable from the street, fire apparatus access road or nearest point of fire department vehicle access or as otherwise approved by the fire ~~chief~~ code official .		Added clarification, no major change to code. Previous Houston amendment removed to go with base code.
912.3 Fire hose threads. Fire hose threads used in connection with standpipe systems shall be <i>approved</i> and shall be compatible with ~~fire department~~ <u>National Hose Standard</u> hose threads.		912.3 Fire hose threads. Fire hose threads used in connection with standpipe systems shall be <i>approved</i> and shall be compatible with ~~fire department~~ <u>National Hose Standard</u> hose threads.	No change to Houston amendment
	912.4 Access. Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or any other fixed or moveable object. Access to fire department connections shall be approved by the fire ~~chief~~ code official . Exception: Fences, where provided with an access gate equipped with a sign complying with the legend requirements of Section 912.5 and a means of emergency operation. The gate and the means of emergency operation shall be approved by the fire ~~chief~~ code official and maintained operational at all times.		Added clarification, no major change to code.
	912.4.2 Clear space around connections. A working space of not less than 36 inches (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided and maintained in front of and to the sides of wall-mounted fire department connections and around the circumference of free-standing fire department connections, except as otherwise required or approved by the fire ~~chief~~ code official .		Added clarification, no major change to code.
912.7 Inspection, testing and maintenance. Fire department connections shall be periodically inspected, tested and maintained in accordance with NFPA 25 and Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment." ~~The owner shall maintain a written Rrecords of inspections, testing and maintenance onsite at a location designated by the fire code official, and it shall be made available upon request maintained.~~		912.7 Inspection, testing and maintenance. Fire department connections shall be periodically inspected, tested and maintained in accordance with NFPA 25 and Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment." The owner shall maintain a written Rrecords of inspections, testing and maintenance <u>onsite at a location designated by the fire code official, and it shall be made available upon request maintained.</u>	No change to Houston amendment
	913.1 General. Where provided, fire pumps for fire protection systems shall be installed in accordance with this section and NFPA 20. Exception: Pumps for automatic sprinkler systems installed in accordance with Section 903.3.1.3 or Section P2904 of the International Residential Code.		New base code exception for fire pumps.
		913.1.1 Listing Fire pumps shall be listed by FM Global, UL Solutions or other approved agency and shall not deliver less than the required flow and pressure in accordance with the listing.	New Houston amendment for fire pump requirements. Refer to Technical Memo #03 for more information on Fire Pump/Break Tank updates to the Houston Construction Code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		913.1.2 Automatic Operation. Fire pumps shall be automatic operation. (See the Electrical Code for additional requirements.)	New Houston amendment for fire pump requirements. Refer to Technical Memo #03 for more information on Fire Pump/Break Tank updates to the Houston Construction Code.
	913.2.2 Circuits supplying fire pumps. Cables used for survivability of circuits supplying fire pumps shall be protected using one of the following methods: 1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 1 hour. 2. Electrical circuit protective systems shall have a fire-resistance rating of not less than 1 hour. Electrical circuit protective systems shall be installed in accordance with their listing requirements. 3. Construction having a fire-resistance rating of not less than 1 hour. 4. The cable or raceway is encased in a minimum of 2 inches (51 mm) of concrete. Exception: This section shall not apply to cables, or portions of cables, located within a fire pump room or generator room that is separated from the remainder of the occupancy with fire-resistance-rated construction.		New requirements for circuits that supply fire pumps.
913.4 Valve supervision. Where provided, the fire pump suction, discharge and bypass valves, and isolation valves on the backflow prevention device or assembly shall be supervised open by one of the following methods: 1. Central-station, proprietary or remote-station signaling service. 2. Local signaling service that will cause the sounding of an audible signal at a constantly attended location. 3. ~~Locking valves open.~~ ~~Sealing of valves and approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.~~		913.4 Valve supervision. Where provided, the fire pump suction, discharge and bypass valves, and isolation valves on the backflow prevention device or assembly shall be supervised open by one of the following methods: 1. Central-station, proprietary or remote-station signaling service. 2. Local signaling service that will cause the sounding of an audible signal at a <i>constantly attended location</i> . 3. ~~Locking valves open.~~ 4. ~~Sealing of valves and approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.~~	No change to Houston amendment
		913.6 Minimum Suction pressure. Fire pumps taking direct suction from the city water supply shall be designed such that the city water pressure does not drop to less than 20 psi at 150 percent of rated capacity of the selected pump. Where the public water supply is not adequate to meet the minimum suction pressure requirements, an alternative water supply shall be provided in accordance with Section 507.2. The tank size cannot be less than the full fire protection demand without the refill rate included unless it meets the requirements of a break tank per NFPA 22.	New Houston amendment for fire pump requirements. Refer to Technical Memo #03 for more information on Fire Pump/Break Tank updates to the Houston Construction Code.
	914.2.3 Emergency voice/alarm communication system. Where the total floor area exceeds 50,000 square feet (4645 m ²) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided. ~~E~~ Access to emergency voice/alarm communication systems serving a mall, required or otherwise, shall be ~~access provided for~~ the fire		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	department. The system shall be provided in accordance with Section 907.5.2.2.		
	914.2.4 Fire department access to equipment. Rooms or areas containing controls for air-conditioning systems, ~~automatic fire extinguishing systems, automatic sprinkler systems or other detection, suppression or control elements~~ or fire protection systems shall be identified for use by the fire department.		Added clarification, no major change to code.
	914.3.1.1 Number of sprinkler risers and system design. Each sprinkler system zone in buildings that are more than 420 feet (128 m) in height shall be supplied by ~~not~~ fewer than two risers. Each riser shall supply sprinklers on alternate floors. If more than two risers are provided for a zone, sprinklers on adjacent floors shall not be supplied from the same riser.		Added clarification, no major change to code.
	914.3.1.2 Water supply to required fire pumps. In all buildings that are more than 420 feet (128 m) in building height, and buildings of Type IVA and IVB construction that are more than 120 feet (36.6 m) in building height, required fire pumps shall be supplied by connections to ~~not~~ fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate. Exception: Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through ~~not~~ fewer than one of the connections.		New base code requirements adding Type IVA and IVB to fire pump water supply requirements.
	914.3.6 Emergency responder ~~radio~~ communication coverage. In-building, two-way emergency responder ~~radio communication~~ coverage shall be provided in accordance with Section 510.		Added clarification, no major change to code.
	914.6.1 Automatic sprinkler system. Stages shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1. Sprinklers shall be installed under the roof and gridiron and under all catwalks and galleries over the stage. Sprinklers shall be installed in dressing rooms, performer lounges, shops and storerooms accessory to such stages. Exceptions: 1. Sprinklers are not required under stage areas less than 4 feet (1219 mm) in clear height utilized exclusively for storage of tables and chairs, provided that the concealed space is separated from the adjacent spaces by Type X gypsum board not less than 5/8 inch (15.9 mm) in thickness. 2. Sprinklers are not required for stages 1,000 square feet (93 m²) or less in area and 50 feet (15 240 mm) or		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs and a single backdrop. 3. Sprinklers are not required within portable orchestra enclosures on stages.		
	914.7 Special amusement buildings areas. Special amusement buildings areas shall comply with Sections 914.7.1 and 914.7.2.		Added clarification, no major change to code.
	914.7.1 Automatic sprinkler system. Special Buildings containing special amusement buildings areas shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where the special amusement building area is temporary, the sprinkler water supply shall be of an approved temporary means. Exception: Automatic sprinklers are not required where the total floor area of a temporary special amusement building area is less than 1,000 square feet (93 m2) and the exit access travel distance from any point in the special amusement area to an exit is less than 50 feet (15 240 mm).		Added clarification, no major change to code.
	914.7.2 Automatic smoke detection. Special amusement buildings areas shall be equipped with an automatic smoke detection system in accordance with Section 907.2.12.		Added clarification, no major change to code.
	914.9 Application of flammable finishes. An automatic sprinkler system or fire-extinguishing system shall be provided in all spray, dip rooms and immersing spaces and storage rooms, and shall be installed in accordance with Chapter 9.		Added clarification, no major change to code.
	915.1.3 Fuel-burning forced-air furnaces. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms served by a fuel-burning, forced-air furnace. Exception: Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where a carbon monoxide detector is provided in the first room or area served by each main duct leaving the furnace, and the carbon monoxide alarm signals are automatically transmitted to an approved location.		Added clarification, no major change to code.
	915.1.4 Fuel-burning appliances outside of dwelling units, sleeping units and classrooms. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms located in buildings that contain fuel-burning appliances or fuel-burning fireplaces. Exceptions: 1. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where there are now without communicating openings between the fuel-burning appliance or fuel-burning		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	fireplace and the dwelling unit, sleeping unit or classroom. 2. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where a carbon monoxide ~~detection~~ detector is provided in one of the following locations: 2.1. In an approved location between the fuel-burning appliance or fuel-burning fireplace and the dwelling unit, sleeping unit or classroom. 2.2. On the ceiling of the room containing the fuel-burning appliance or fuel-burning fireplace.		
	915.1.5 Private garages. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms in buildings with attached private garages. Exceptions: 1. Carbon monoxide detection shall not be required ~~where there are no in~~ communicating openings between the private garage and the dwelling unit, sleeping unit or classroom. 2. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms located more than one story above or below a private garage. 3. Carbon monoxide detection shall not be required where the private garage connects to the building through an open-ended corridor. 4. Where a carbon monoxide ~~detection~~ detector is provided in an approved location between openings to a private garage and ~~dwelling units, sleeping units or classrooms, carbon monoxide detection shall not be required in the~~ dwelling units, sleeping units or classrooms.		Added clarification, no major change to code.
	915.2.3 Group E occupancies. Carbon monoxide ~~detection~~ detector shall be installed in classrooms in Group E occupancies. Carbon monoxide alarm signals shall be automatically transmitted to an on-site location that is staffed by school personnel. Exception: Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies with an occupant load of 30 or less.		Added clarification, no major change to code.
	915.3 ~~D~~Carbon monoxide detection equipment.		Added clarification, no major change to code.
	915.4.3 Locations. Carbon monoxide alarms shall only be installed in dwelling units and in sleeping units. They shall not be installed in locations where the code requires carbon monoxide detectors to be used.		New base code provisions for carbon monoxide location requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	915.4.4 Combination alarms.		Base code renumbering.
	915.5.3 Combination detectors. Combination carbon monoxide/smoke detectors installed in carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide detectors, provided that they are listed in accordance with UL 2075 and UL 268.		Added clarification, no major change to code.
	915.6.1 Enclosed parking garages. Carbon monoxide and nitrogen dioxide detectors installed in enclosed parking garages in accordance with the International Mechanical Code, Section 404.1 shall be maintained in accordance with the manufacturer's instructions and their listing. Detectors that become inoperable or begin producing end-of-life signals shall be replaced.		New base code requirement for carbon monoxide and nitrogen dioxide detectors installed in parking garages.
SECTION 916 <u>GAS DETECTION SYSTEMS</u>	SECTION 916 <u>GAS DETECTION SYSTEMS</u>		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.1 Gas detection systems. <u>Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.</u>	916.1 Gas detection systems. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.2 Permits. <u>Permits shall be required as set forth in Section 105.6.53.</u>	916.2 Permits. Permits shall be required as set forth in Section 105.7.11.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.2.1 Construction documents. <u>Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code shall be provided with the application for permit.</u>	916.2.1 Construction documents. Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code shall be provided with the application for permit.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
	916.3 Equipment. Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.4 Power connections. <u>Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.</u>	916.4 Power connections. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.		Previous Houston amendment removed as gas detection system requirements are now part of base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
916.5 Emergency and standby power. Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.	916.5 Emergency and standby power. Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.	916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows: 1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes. 2. For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes, in accordance with Section 6004.2.2.7. Where a less frequent or delayed sampling interval is approved.	916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows: 1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes. 2. For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes, in accordance with Section 6004.2.2.7. 3. Where a less frequent or delayed sampling interval is approved.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds: 1. For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL). 2. For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system. Upon activation of a gas detection alarm, alarm signals or other required responses shall be as specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.	916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds: 1. For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL). 2. For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system. Upon activation of a gas detection alarm, alarm signals or other required responses shall be as specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.9 Signage. Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.	916.9 Signage. Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.10 Fire alarm system connections. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.	916.10 Fire alarm system connections. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.		Previous Houston amendment removed as gas detection system requirements are now part of base code.
916.11 Inspection, testing and sensor calibration. Inspection and testing of gas detection systems shall be conducted not less than annually. Sensor calibration shall be confirmed at the time of sensor installation and calibration shall be performed at the frequency specified by the sensor manufacturer.	916.11 Inspection, testing and sensor calibration. Inspection and testing of gas detection systems shall be conducted not less than annually. Sensor calibration shall be confirmed at the time of sensor installation and calibration shall be performed at the frequency specified by the sensor manufacturer.		Previous Houston amendment removed as gas detection system requirements are now part of base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 917 MASS NOTIFICATION SYSTEMS		New base code section for mass notification systems.
	917.1 College and university campuses. Prior to construction of a new building requiring a fire alarm system on a multiple-building college or university campus having a cumulative building occupant load of 1,000 or more, a mass notification risk analysis shall be conducted in accordance with NFPA 72. Where the risk analysis determines a need for mass notification, an approved mass notification system shall be provided in accordance with the findings of the risk analysis.		New base code section for mass notification systems.
2015 Houston IFC – Chapter 10 Means of Egress	2021 IFC – Chapter 10 – Means of Egress	2021 Houston Amendments	Code Change Summary
	SECTION 1001 ADMINISTRATION.		
1001.1.1 Accessory Stairs, Ramps, Doors and Landings. <u>Unless specifically address in this code, accessory stairs, ramps, doors and landings that are not components of a means of egress system shall meet the appropriate provisions of this code for the application and scope of work proposed, as if they are components of a means of egress system.</u>		1001.1.1 Accessory Stairs, Ramps, Doors and Landings. Unless specifically address in this code, accessory stairs, ramps, doors and landings that are not components of a <i>means of egress</i> system shall meet the appropriate provisions of the <i>building code</i> for the application and scope of work proposed.	Minor change to Houston amendment language to clarify intent and enforcement.
[F] 1001.3 Maintenance. <i>Means of egress</i> shall be maintained in accordance with <u>Section 1031 of the ~~International~~ Fire Code.</u>			Removed Houston amendment to go with base code.
	[F] SECTION 1002 DEFINITIONS MAINTENANCE AND PLANS [F] 1002.1 Definitions Maintenance. The following terms are defined in Chapter 2: Means of egress shall be maintained in accordance with the International Fire Code. ACCESSIBLE MEANS OF EGRESS. AISLE. AISLE ACCESSWAY. ALTERNATING TREAD DEVICE. AREA OF REFUGE. BLEACHERS. BREAKOUT. COMMON PATH OF EGRESS TRAVEL. CORRIDOR. DOOR, BALANCED. EGRESS COURT. EMERGENCY ESCAPE AND RESCUE OPENING. EXIT. EXIT ACCESS. EXIT ACCESS DOORWAY. EXIT ACCESS RAMP.		New base code definitions.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	EXIT ACCESS STAIRWAY. EXIT DISCHARGE. EXIT DISCHARGE, LEVEL OF. EXIT, HORIZONTAL. EXIT PASSAGEWAY. EXTERIOR EXIT RAMP. EXTERIOR EXIT STAIRWAY. FIRE EXIT HARDWARE. FIXED SEATING. FLIGHT. FLOOR AREA, GROSS. FLOOR AREA, NET. FOLDING AND TELESCOPIC SEATING. GRANDSTAND. GUARD. HANDRAIL. INTERIOR EXIT RAMP. INTERIOR EXIT STAIRWAY. LOW ENERGY POWER-OPERATED DOOR. MEANS OF EGRESS. MERCHANDISE PAD. NOSING. OCCUPANT LOAD. OPEN-ENDED CORRIDOR. PANIC HARDWARE. PHOTOLUMINESCENT. POWER-ASSISTED DOOR. POWER-OPERATED DOOR. PUBLIC WAY. RAMP. SCISSOR STAIRWAY. SELF-LUMINOUS. SMOKE-PROTECTED ASSEMBLY SEATING. STAIR. STAIRWAY. STAIRWAY, SPIRAL. WINDER.		
	[F] 1002.2 Fire safety and evacuation plans. Fire safety and evacuation plans shall be provided for all occupancies and buildings where required by the International Fire Code. Such fire safety and evacuation plans shall comply with the applicable provisions of Sections 401.2 and 404 of the International Fire Code.		New base code section for fire safety and evacuation plans.
	SECTION 1003 GENERAL MEANS OF EGRESS		
	1003.2 Ceiling height. The means of egress shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) above the finished floor. Exceptions: 1. Sloped ceilings in accordance with Section 1208.2 1207.2.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2. Ceilings of dwelling units and sleeping units within residential occupancies in accordance with Section ~~1207.2~~ 1207.2 . 3. Allowable projections in accordance with Section 1003.3. 4. Stair headroom in accordance with Section 1011.3. 5. Door height in accordance with Section 1010.1.1. 6. Ramp headroom in accordance with Section 1012.5.2. 7. The clear height of floor levels in vehicular and pedestrian traffic areas of public and private parking garages in accordance with Section ~~406.4.1~~ 406.2.2 . 8. Areas above and below mezzanine floors in accordance with Section 505.2.		
	1003.3.1 Headroom. Protruding objects are permitted to extend below the minimum ceiling height required by Section 1003.2 where a minimum headroom of 80 inches (2032 mm) is provided over any ~~walking surface~~ circulation path , including walks, corridors, aisles and passageways. Not more than 50 percent of the ceiling area of a means of egress shall be reduced in height by protruding objects. Exception: Door closers and stops shall not reduce headroom to less than 78 inches (1981 mm). A barrier shall be provided where the vertical clearance ~~above acirculation path~~ is less than 80 inches (2032 mm) high above the finished floor . The leading edge of such a barrier shall be located 27 inches (686 mm) maximum above the ~~finished~~ finished floor.		Added clarification, no major change to code.
	1003.3.2 Post-mounted objects. A free-standing object mounted on a post or pylon shall not overhang that post or pylon more than 4 inches (102 mm) where the lowest point of the leading edge is more than 27 inches (686 mm) and less than 80 inches (2032 mm) above the ~~walking surface~~ finished floor . Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (686 mm) maximum or 80 inches (2032 mm) minimum above the finished floor or ground. Exception: These requirements shall not apply to sloping portions of handrails between the top and bottom riser of stairs and above the ramp run.		Added clarification, no major change to code.
	1003.3.3 Horizontal projections. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the ~~finished~~ finished floor shall not project horizontally more than 4 inches (102 mm) into the circulation path. Exception: Handrails are permitted to protrude 4 1/2 inches (114 mm) from the wall ~~or guard~~ .		Added clarification, no major change to code.
	~~1003.4 Floor~~ Slip-resistant surface. ~~walking surface~~ Circulation paths of the means of egress shall have a slip-resistant surface and be securely attached.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1003.5 Elevation change. Where changes in elevation of less than 12 inches (305 mm) exist in the <i>means of egress</i>, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), <i>ramps</i> complying with Section 1012 shall be used. Where the difference in elevation is 6 inches (152 mm) or less, the <i>ramp</i> shall be equipped with either <i>handrails</i> or floor finish materials that contrast with adjacent floor finish materials. Exceptions: 1. A single step with a maximum riser height of 7 inches (178 mm) is permitted for buildings with occupancies in Groups F, H, R-2, R-3, S and U at exterior doors not required to be accessible by Chapter 11. Steps at exterior doors complying with Section 1010.1.4. 2. A <i>stair</i> with a single riser or with two risers and a tread is permitted at locations not required to be <i>accessible</i> by Chapter 11 where the risers and treads comply with Section 1011.5, the minimum depth of the tread is 13 inches (330 mm) and not less than one <i>handrail</i> complying with Section 1014 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the <i>stair</i>. 3. A step is permitted in <i>aisles</i> serving seating that has a difference in elevation less than 12 inches (305 mm) at locations not required to be <i>accessible</i> by Chapter 11, provided that the risers and treads comply with Section ~~1029.13-1030.14~~ and the <i>aisle</i> is provided with a <i>handrail</i> complying with Section ~~1029.15-1030.16~~. Throughout a <i>story</i> in a Group I-2 occupancy, any change in elevation in portions of the <i>means of egress</i> that serve nonambulatory persons shall be by means of a <i>ramp</i> or sloped walkway.		Added clarification, no major change to code.
	SECTION 1004 OCCUPANT LOAD		
	~~1004.1.1~~ 1004.2 Cumulative occupant loads.		Base code renumbering.
	~~1004.1.1.1~~ 1004.2.1 Intervening spaces or accessory areas.		Base code renumbering.
	~~1004.1.1.2~~ 1004.2.2 Adjacent levels for mezzanines.		Base code renumbering.
	~~1004.1.1.3~~ 1004.2.3 Adjacent stories.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1004.3 Multiple function occupant load. Where an area under consideration contains multiple functions having different occupant load factors, the design occupant load for such area shall be based on the floor area of each function calculated independently.		New base code section for determining means of egress in multiple function occupant load.
	1004.4 Multiple occupancies. Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.		New base code section for determining means of egress in multiple occupancies.
	~~1004.1.2-1004.5 Areas without fixed seating.~~ The number of occupants shall be computed at the rate of one occupant per unit of area as prescribed in Table ~~1004.1.2-1004.5~~ . For areas without fixed seating, the occupant load shall be not less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table ~~1004.1.2-1004.5~~ . Where an intended function is not listed in Table ~~1004.1.2-1004.5~~ , the building official shall establish a function based on a listed function that most nearly resembles the intended function. Exception: Where approved by the building official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.		Base code renumbering.
	TABLE ~~1004.1.2-1004.5~~ MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT		Base code renumbering.
	~~1004.3 Increased occupant load~~ The occupant load permitted in any building, or portion thereof, is permitted to be increased from that number established for the occupancies in Table 1004.1.2, provided that all other requirements of the code are met based on such modified number and the occupant load does not exceed one occupant per 7 square feet (0.65 m ²) of occupiable floor space. Where required by the building official, an approved aisle, seating or fixed equipment diagram substantiating any increase in occupant load shall be submitted. Where required by the building official, such diagram shall be posted.		Base code section removed.
	~~1004.4-1004.6 Fixed seating.~~ For areas having fixed seats and aisles, the occupant load shall be determined by the number of fixed seats installed therein. The occupant load for areas in which fixed seating is not installed, such as waiting spaces, shall be determined in accordance with Section ~~1004.1.2-1004.5~~ and added to the number of fixed seats. The occupant load of wheelchair spaces and the associated companion seat shall be based on one occupant for each		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	wheelchair space and one occupant for the associated companion seat provided in accordance with Section 1108.2.3. For areas having fixed seating without dividing arms, the occupant load shall be not less than the number of seats based on one person for each 18 inches (457 mm) of seating length. The occupant load of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating booth.		
	~~1004.5~~ 1004.7 Outdoor areas. Yards, patios, occupied roofs, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with means of egress as required by this chapter. The occupant load of such outdoor areas shall be assigned by the building official in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, means of egress requirements for the building shall be based on the sum of the occupant loads of the building plus the outdoor areas. Exceptions: 1. Outdoor areas used exclusively for service of the building need only have one means of egress. 2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.		Base code renumbering.
	~~1004.6 Multiple occupancies.~~ Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served		Base code section removed.
	1004.8 Concentrated business use areas. The occupant load factor for concentrated business use shall be applied to telephone call centers, trading floors, electronic data processing centers and similar business use areas with a higher density of occupants than would normally be expected in a typical business occupancy environment. Where approved by the building official, the occupant load for concentrated business use areas shall be the actual occupant load, but not less than one occupant per 50 square feet (4.65 m2) of gross occupiable floor space		New base code section for concentrated business use areas occupant load.
	1004.9 Posting of occupant load. Every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space, for the intended configurations. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or the owner's authorized agent.		New base code section for posting of occupant load.
	SECTION 1005 MEANS OF EGRESS SIZING		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1005.3.1 Stairways. The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6 mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story. Exceptions: 1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2. 2. Facilities with smoke-protected assembly seating shall be permitted to use the capacity factors in Table 1029.6.2 indicated for stepped aisles for exit access or exit stairways where the entire path for means of egress from the seating to the exit discharge is provided with a smoke control system complying with Section 909. 3. Facilities with ~~outdoor smoke-protected open-air~~ assembly seating shall be permitted to the capacity factors in Section 1029.6.3 indicated for stepped aisles for exit access or exit stairways where the entire path for means of egress from the seating to the exit discharge is open to the outdoors.		Added clarification, no major change to code.
	1005.3.2 Other egress components. The capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant. Exceptions: 1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inch (3.8 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2. 2. Facilities with smoke-protected assembly seating shall be permitted to use the capacity factors in Table 1029.6.2 indicated for level or ramped aisles for means of egress components other than stairways where the entire path for means of egress		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	from the seating to the exit discharge is provided with a smoke control system complying with Section 909. 3. Facilities with outdoor smoke-protected open-air assembly seating shall be permitted to the capacity factors in Section 1029.6.3 indicated for level or ramped aisles for means of egress components other than stairways where the entire path for means of egress from the seating to the exit discharge is open to the outdoors.		
	SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS 1006.1 General. The number of exits or exit access doorways required within the means of egress system shall comply with the provisions of Section 1006.2 for spaces, including mezzanines, and Section 1006.3 for stories or occupied roofs .		Added clarification, no major change to code.
	1006.2.1 Egress based on occupant load and common path of egress travel distance. Two <i>exits</i> or <i>exit access doorways</i> from any space shall be provided where the design <i>occupant load</i> or the <i>common path of egress</i> travel distance exceeds the values <i>listed</i> in Table 1006.2.1. The cumulative <i>occupant load</i> from adjacent rooms, areas or spaces shall be determined in accordance with Section 1004.2. Exceptions: 1. ~~In Group R-2 and R-3 occupancies, one means of egress is permitted within and from individual dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped through out with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the common path of egress travel does not exceed 125 feet (38 100 mm).~~ The number of <i>exits</i> from foyers, lobbies, vestibules or similar spaces need not be based on cumulative <i>occupant loads</i> for areas discharging through such spaces, but the capacity of the <i>exits</i> from such spaces shall be based on applicable cumulative <i>occupant loads</i> . 2. <i>Care suites</i> in Group I-2 occupancies complying with <u>Section 407.4</u> . 3. <u>Unoccupied mechanical rooms and penthouses are not required to comply with the common path of egress travel distance measurement.</u>		Added clarification, no major change to code. New exception included for unoccupied mechanical rooms and penthouses.
	TABLE 1006.2.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY		
	1006.2.2 Egress based on use. The numbers, <u>configuration and types of components</u> of <i>exits</i> or access to <i>exits</i> shall be provided in the uses described in Sections 1006.2.2.1 through ~~1006.2.2.5~~ 1006.2.2.6 .		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1006.2.2.2 Refrigeration machinery rooms. Machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two <i>exits</i> or exit access doorways. Where two <i>exit access doorways</i> are required, one such doorway is permitted to be served by a fixed ladder or an <i>alternating tread device</i> . <i>Exit access doorways</i> shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room. All portions of machinery rooms shall be within 150 feet (45 720 mm) of an <i>exit</i> or <i>exit access doorway</i> . An increase in <i>exit access</i> travel distance is permitted in accordance with Section 1017.1. ~~Doors-Exit~~ and <i>exit access doorways</i> shall swing in the direction of egress travel and shall be equipped with panic hardware , regardless of the <i>occupant load</i> served. ~~Doors-Exit and exit access doorways~~ shall be tight fitting and <i>self-closing</i> .		Added clarification, no major change to code.
	1006.2.2.4 Group I-4 means of egress Electrical rooms. ~~Group I-4 facilities, rooms or spaces where care is provided for more than 10 children that are 21/2 years of age or less, shall have access to not less than two exits or exit access doorways.~~ The location and number of exit or exit access doorways shall be provided for electrical rooms in accordance with Section 110.26 of NFPA 70 for electrical equipment rated 1,000 volts or less, and Section 110.33 of NFPA 70 for electrical equipment rated over 1,000 volts. Panic hardware shall be provided where required in accordance with Section 1010.2.9.2.		New electrical room requirements.
	1006.2.2.6 Groups R-3 and R-4. Where Group R-3 occupancies are permitted by Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the exit access travel distance for Group R-3 shall be not more than 125 feet (38 100 mm). Where Group R-4 occupancies are permitted by Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the exit access travel distance for Group R-4 shall be not more than 75 feet (22 860 mm).		New exit access travel for sprinklered R-3 and R-4 occupancies.
	1006.3 Egress from stories or occupied roofs. The <i>means of egress</i> system serving any <i>story</i> or occupied roof shall be provided with the number of separate and distinct exits or access to <i>exits</i> based on the aggregate <i>occupant load</i> served in accordance with this section. ~~Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required number of exits or access to exits serving that story.~~		Added clarification, no major change to code.
	1006.3.1 Occupant load. ~~Where stairways serve more than one story, or more than one story and an occupied roof, only the occupant load of each story or occupied roof, considered individually, shall be used when calculating the required number of exits or access to exits serving that story.~~		New requirements for calculating occupant load for stairways serving more than one story.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1006.3.1~~ 1006.3.2 Adjacent story Path of egress travel. The path of egress travel to an exit shall not pass through more than one adjacent story. Exception: The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following: 1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit. 2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility. 3. Exit access stairways and ramps within an atrium complying with Section 404. 3. ~~4.~~ Exit access stairways and ramps in open parking garages that serve only the parking garage. 4. ~~5.~~ Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7. 5. ~~6.~~ Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities. 7. Exterior exit access stairways and ramps between occupied roofs.		New path of egress travel requirements and exceptions.
	~~1006.3.2~~ 1006.3.3 Egress based on occupant load. Each story and occupied roof shall have the minimum number of separate and distinct exits, or access to exits, as specified in Table 1006.3.3. A single exit or access to a single exit shall be permitted in accordance with Section 1006.3.4. The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupied roof shall be maintained until arrival at the exit discharge or a public way.		New egress based occupant load requirements.
	~~Table 1006.3.1~~ ~~Table 1006.3.2~~ Table 1006.3.3		Base code renumbering.
	~~1006.3.2~~ ~~1006.3.3~~ 1006.3.4 Single exits. A single exit or access to a single exit shall be permitted from any story or occupied roof where one of the following conditions exists: 1. The occupant load, number of dwelling units and ~~common path of egress~~ exit access travel distance ~~does not exceed the values in Table 1006.3.2(1) or 1006.3.2(2)~~ 1006.3.4(1) or 1006.3.4(2). 2. Rooms, areas and spaces complying with Section 1006.2.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit or access to a single exit.		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Parking garages where vehicles are mechanically parked shall be permitted to have one exit or access to a single exit. 4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit. 5. Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met: 5.1. The dwelling unit complies with Section 1006.2.1 as a space with one means of egress. 5.2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.		
	TABLE ~~1006.3.2(1)~~ 1006.3.23(1) STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES		Base code renumbering.
	TABLE ~~1006.3.2(2)~~ 1006.3.3(2) STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES		Base code renumbering.
	~~1006.3.2.1~~ ~~1006.3.3.1~~ 1006.3.4.1 Mixed occupancies. Where one exit, or exit access stairway or ramp providing access to exits at other stories, is permitted to serve individual stories, mixed occupancies shall be permitted to be served by single exits provided each individual occupancy complies with the applicable requirements of Table ~~1006.3.2(1)~~ or ~~1006.3.2(2)~~ 1006.3.23(1) or 1006.3.23(2) for that occupancy. Where applicable, cumulative occupant loads from adjacent occupancies shall be considered ~~to be~~ in accordance with the provisions of Section 1004.1. In each story of a mixed occupancy building, the maximum number of occupants served by a single exit shall be such that the sum of the ratios of the calculated number of occupants of the space divided by the allowable number of occupants indicated in Table ~~1006.3.2(2)~~ 1006.3.23(2) for each occupancy does not exceed one. Where dwelling units are located on a story with other occupancies, the actual number of dwelling units divided by four plus the ratio from the other occupancy does not exceed one.		Base code renumbering.
	TABLE ~~1006.3.3(1)~~ TABLE 1006.3.4(1)		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~TABLE 1006.3.3(2)~~ TABLE 1006.3.4(2)		Base code renumbering.
	SECTION 1007 EXIT AND EXIT ACCESS DOORWAY CONFIGURATION		
	SECTION 1008 MEANS OF EGRESS ILLUMINATION		
	1008.2.1 Illumination level under normal power. The <i>means of egress</i> illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. Along exit access stairways, exit stairways and at their required landings, the illumination level shall not be less than 10 footcandles (108 lux) at the walking surface when the stairway is in use. Exception: For auditoriums, theaters, concert and opera halls and similar assembly occupancies, the illumination at the walking surface is permitted to be reduced during performances by one of the following methods provided that the required illumination is automatically restored upon activation of a premises' <i>fire alarm system</i>. - Externally illuminated walking surfaces shall be permitted to be illuminated to not less than 0.2 footcandle (2.15 lux). - Steps, landings and the sides of <i>ramps</i> shall be permitted to be marked with <i>self-luminous</i> materials in accordance with Sections 1025.2.1, 1025.2.2 and 1025.2.4 by systems <i>listed</i> in accordance with UL 1994.		New illumination requirements along exit access stairways.
	1008.2.2 Exit discharge Group I-2. In Group I-2 occupancies where two or more exits are required, on the exterior landings required by Section ~~1010.6.4~~ 1010.1.6, means of ~~egress~~ illumination levels for the exit discharge shall be provided such that failure of any single ~~lighting unit~~ lamp in a luminaire shall not reduce the illumination level on that landing to less than 1 footcandle (11 lux).		Added clarification, no major change to code.
	1008.2.3 Exit discharge. Illumination shall be provided along the path of travel for the exit discharge from each exit to the public way. Exception: Illumination shall not be required where the path of the exit discharge meets both of the following requirements: The path of exit discharge is illuminated from the exit to a safe dispersal area complying with Section 1028.5.		New exit discharge illumination requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. A dispersal area shall be illuminated to a level not less than 1 footcandle (11 lux) at the walking surface.		
	1008.3.1 General. In the event of power supply failure in rooms and spaces that require two or more means of egress exits or access to exits , an emergency electrical system shall automatically illuminate all of the following areas: 1. <i>Aisles.</i> 2. <i>Corridors.</i> 3. <i>Exit access stairways and ramps.</i>		Added clarification, no major change to code.
	1008.3.2 Buildings. In the event of power supply failure in buildings that require two or more means of egress exits or access to exits , an emergency electrical system shall automatically illuminate all of the following areas: 1. <i>Interior exit access stairways and ramps.</i> 2. <i>Interior and exterior exit stairways and ramps.</i> 3. <i>Exit passageways.</i> 4. Vestibules and areas on the level of discharge used for <i>exit discharge</i> in accordance with Section 1028.2. 5. Exterior landings as required by Section 1010.1.5 for <i>exit doorways</i> that lead directly to the <i>exit discharge</i> .		Added clarification, no major change to code.
	1008.3.5 Illumination level under emergency power. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 footcandle (11 lux) and a minimum at any point of 0.1 footcandle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 footcandle (6 lux) average and a minimum at any point of 0.06 footcandle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded. In Group I-2 occupancies, failure of any single lighting unit lamp in a luminaire shall not reduce the illumination level to less than 0.2 foot-candle (2.2 lux).		Added clarification, no major change to code.
		1008.4 Testing and maintenance. The equipment providing emergency power for <i>means of egress</i> illumination and <i>exit signs</i> shall be maintained in an operable condition and in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment."	New Houston amendment for testing and maintenance of emergency power serving a means of egress.
	SECTION 1009 ACCESSIBLE MEANS OF EGRESS 1009.1 Accessible means of egress required. Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress are is required by Section 1006.2 or 1006.3 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress. Exceptions: 1. Accessible means of egress are not required to be provided in existing buildings.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~2.~~ 1. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1009.3, 1009.4 or 1009.5. 3. 2. In assembly areas with ramped aisles or stepped aisles, one accessible means of egress is permitted where the common path of egress travel is accessible and meets the requirements in Section 1029.8.		
	1009.2.1 Elevators required. In buildings where a required accessible floor or occupied roof is four or more stories above or below a <i>level of exit discharge</i>, not less than one required <i>accessible means of egress</i> shall be an elevator complying with Section 1009.4. Exceptions: 1. In buildings equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a <i>horizontal exit</i> and located at or above the <i>levels of exit discharge</i>. 2. In buildings equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a <i>ramp</i> conforming to the provisions of Section 1012.		Added clarification, no major change to code.
	1009.3 Stairways. In order to be considered part of an accessible means of egress, a stairway between stories shall ~~have a clear width of 48 inches (1219 mm) minimum between handrails and shall either incorporate an area of refuge within an enlarged floor level landing or shall be accessed from an area of refuge complying with Section 1009.6. Exit access stairways that connect levels in the same story are not permitted as part of an accessible means of egress~~ comply with Sections 1009.3.1 through 1009.3.3.		Added clarification, no major change to code.
	1009.3.1 Exit access stairways. Exit access stairways that connect levels in the same story are not permitted as part of an accessible means of egress. Exception: Exit access stairways providing means of egress from mezzanines are permitted as part of an accessible means of egress.		New exit access stairway requirements.
	1009.3.2 Stairway width. Stairways shall have a clear width of 48 inches (1219 mm) minimum between handrails. Exceptions: 1. ~~Exit access stairways providing means of egress from mezzanines are permitted as part of an accessible means of egress.~~ The clear width of 48 inches (1219 mm) between handrails is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 2. The clear width of 48 inches (1219 mm) between handrails is not required for stairways accessed from a refuge area in conjunction with a horizontal exit.		New exit stairway width requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3. The clear width of 48 inches (1219 mm) between handrails is not required for stairways accessed from a refuge area in conjunction with a horizontal exit.~~		
	1009.3.3 Area of refuge. Stairways shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from an area of refuge complying with Section 1009.6 Exceptions: ~~4. 1.~~ Areas of refuge are not required at exit access stairways where two-way communication is provided at the elevator landing in accordance with Section 1009.8. ~~5. 2.~~ Areas of refuge are not required at stairways in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. ~~6. 3.~~ Areas of refuge are not required at stairways serving open parking garages. ~~7. 4.~~ Areas of refuge are not required for smoke-protected or open-air assembly seating areas complying with Sections 1029.6.2 and 1029.6.3. ~~8. 5.~~ Areas of refuge are not required at stairways in Group R-2 occupancies. ~~9. 6.~~ Areas of refuge are not required for stairways accessed from a refuge area in conjunction with a horizontal exit.		Added clarification, no major change to code.
	1009.4 Elevators. In order to be considered part of an accessible means of egress, an elevator shall comply with Sections 1009.4.1 and 1009.4.2.		Added clarification, no major change to code.
	1009.4.1 Standby power. The elevator shall meet the emergency operation and signaling device requirements of Section 2.27 of ASME A17.1/CSA B44. Standby power shall be provided in accordance with Chapter 27 and Section 3003.		Added clarification, no major change to code.
	1009.4.2 Area of refuge. The elevator shall be accessed from an area of refuge complying with Section 1009.6. Exceptions: 1. Areas of refuge are not required at the elevator in open parking garages. 2. Areas of refuge are not required in buildings and facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. 3. Areas of refuge are not required at elevators not required to be located in a shaft in accordance with Section 712. 4. Areas of refuge are not required at elevators serving smoke-protected or open-air assembly seating areas complying with Sections 1029.6.2 and 1029.6.3.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5. Areas of refuge are not required for elevators accessed from a refuge area in conjunction with a horizontal exit.		
	1009.6.2 Stairway or elevator access. Every required <i>area of refuge</i> shall have <i>direct access</i> to a <i>stairway</i> complying with Section 1009.3 and 1023 or an elevator complying with Section 1009.4. Exception: An interior <i>area of refuge</i> at the level of <i>exit discharge</i> that provides <i>direct access</i> to an exterior <i>exit door</i> .		New exception for stairway/elevator access.
	1009.6.3 Size. Each <i>area of refuge</i> shall be sized to accommodate one <i>wheelchair space</i> of 30 inches by 48-52 inches (762 mm by 4249-1320 mm) for each 200 occupants or portion thereof, based on the <i>occupant load</i> of the <i>area of refuge</i> and areas served by the <i>area of refuge</i> . Such <i>wheelchair spaces</i> shall not reduce the <i>means of egress</i> minimum width or required capacity. Access to any of the required <i>wheelchair spaces</i> in an <i>area of refuge</i> shall not be obstructed by more than one adjoining <i>wheelchair space</i> .		Updated size requirements for areas of refuge.
	1009.7.2 Separation. Exterior walls separating the exterior area of assisted rescue from the interior of the building shall have a minimum fire-resistance rating of 1 hour, rated for exposure to fire from the inside. The fire-resistance-rated exterior wall construction shall extend horizontally not less than 10 feet (3048 mm) beyond the landing on either side of the landing or equivalent fire-resistance-rated construction is permitted to extend out perpendicular to the exterior wall not less than 4 feet (1220 mm) minimum on the side of the landing. The fire-resistance-rated construction shall extend vertically from the ground to a point not less than 10 feet (3048 mm) above the floor level of the area for assisted rescue or to the roof line, whichever is lower. Openings within such fire-resistance-rated exterior walls shall be protected in accordance with Section 716. Exception: The fire-resistance rating and opening protectives are not required in the exterior wall where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.		Added clarification, new exception included.
	1009.7.4 Stairways. Stairways that are part of the means of egress for the exterior area for assisted rescue shall provide a minimum clear width of 48 inches (1220 mm) between handrails. Exception: The minimum clear width of 48 inches (1220 mm) between handrails is not required at stairways serving buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.		Added clarification, no major change to code.
	1009.8 Two-way communication. A two-way communication system complying with Sections 1009.8.1 and 1009.8.2 shall be provided at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the level of exit discharge.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	Exceptions: 1. Two-way communication systems are not required at the landing serving each elevator or bank of elevators where the two-way communication system is provided within areas of refuge in accordance with Section 1009.6.5. 2. Two-way communication systems are not required on floors provided with ramps conforming to the provisions of Section 1012. 3. Two-way communication systems are not required at the landings serving only service elevators that are not designated as part of the accessible means of egress or serve as part of the required accessible route into a facility. 4. Two-way communication systems are not required at the landings serving only freight elevators. 5. Two-way communication systems are not required at the landing serving a private residence elevator. 6. Two-way communication systems are not required in Group I-2 or I-3 facilities.		
	1009.8.1 System requirements. Two-way communication systems shall provide communication between each required location and the <i>fire command center</i> or a central control point location <i>approved</i> by the fire department. Where the central control point is not a <i>constantly attended location</i> , ~~a~~ the two-way communication system shall have timed, automatic telephone dial-out capability to ~~a monitoring location that provides two-way communication with an approved supervising station~~ or 9-1-1. The two-way communication system shall include both audible and visible signals.		Added clarification, no major change to code.
	SECTION 1010 DOORS, GATES AND TURNSTILES 1010.1 Doors General. ~~Means Doors in the means of egress shall comply with the requirements of Sections 1010.1.1 through 1010.3.4. Exterior exit doors shall meet also comply with the requirements of this section. Doors serving a Section 1022.2.~~ Gates in the means of egress shall comply with the requirements of Sections 1010.4 and 1010.4.1. Turnstiles in the means of egress system shall meet comply with the requirements of this section and Section 1022.2. Doors Sections 1010.5 through 1010.5.4. Doors, gates and turnstiles provided for egress purposes in numbers greater than required by this code shall ~~meet~~ comply with the requirements of this section. ~~Doors in the Means means~~ of egress doors shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on means of egress doors. Means of egress doors shall not be concealed by curtains, drapes, decorations or similar materials.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1010.1.1 Size of doors. The required capacity of each door opening shall be sufficient for the <i>occupant load</i> thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in a Group I-2 occupancy used for the movement of beds shall provide a clear width not less than 41½ inches (1054 mm). The height of door openings shall be not less than 80 inches (2032 mm). In Group I-2, doors serving as means of egress doors where used for the movement of beds shall provide a minimum clear opening width of 41½ inches (1054 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. The minimum clear opening height of doors shall be not 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 Group R-2 and R-3 occupancies. In Group R-2 and R-3 <i>dwelling</i> and <i>sleeping units</i> that are not required to be an <i>Accessible unit, Type A unit</i> or <i>Type B unit</i>, the minimum and maximum width shall not apply to door openings that are not part of the required <i>means of egress</i>. 2. In Group I-3, door openings to resident <i>sleeping units</i> that are not required to be an <i>Accessible unit</i> shall have a minimum clear opening width of 28 inches (711 mm). 3. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum clear opening width. 4. The maximum width of door leaves in revolving doors that comply with Section 1010.3.1 shall not be limited. 5. Door openings within a dwelling unit or sleeping unit shall be not less than 78 inches (1981 mm) in height. The maximum width of door leaves in <i>power-operated doors</i> that comply with Section 1010.3.2 shall not be limited. 6. Exterior door openings in dwelling units and sleeping units, other than the required exit door, shall be not less than 76 inches (1930 mm) in height. Door openings within a <i>dwelling unit</i> or <i>sleeping unit</i> shall have a minimum clear opening height of 78 inches (1981 mm). 7. In other than Group R-1 occupancies, the minimum widths shall not apply to interior egress doors within a dwelling unit or sleeping unit that is		New door size requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~not required to be an Accessible unit, Type A unit or Type B unit. In dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, exterior door openings other than the required exit door shall have a minimum clear opening eight of 76 inches (1930 mm).~~ ~~8. Door openings required to be accessible within Type B units shall have a minimum clear width of 31.75 inches (806 mm). In Groups I-1, R-2, R-3 and R-4, in dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, the minimum clear opening widths shall not apply to interior egress doors.~~ ~~9. Doors to walk-in freezers and coolers less than 1,000 square feet (93 m2) in area shall have a maximum width of 60 inches (1524 mm). Door openings required to be accessible within Type B units intended for user passage shall have a minimum clear opening width of 31.75 inches (806 mm).~~ ~~10. Doors to walk-in freezers and coolers less than 1,000 square feet (93 m2) in area shall have a maximum width of 60 inches (1524 mm). Doors to walk-in freezers and coolers less than 1,000 square feet (93 m2) in area shall have a maximum width of 60 inches (1524 mm) nominal.~~ ~~11. The minimum clear opening width shall not apply to doors for nonaccessible shower or sauna compartments.~~ Doors serving nonaccessible single-user shower or sauna compartments, toilet stalls or dressing, fitting or changing rooms shall have a minimum clear opening width of 20 inches (508 mm). ~~12. The minimum clear opening width shall not apply to the doors for nonaccessible toilet stalls.~~		
	1010.1.1.1 Projections into clear width opening. There shall not be projections into the required clear opening width lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm). Exception: Door closers, overhead door stops, power door operators, and electromagnetic door stops locks shall be permitted to be 78 inches (1980 mm) minimum above the floor.		Added clarification, no major change to code.
	1010.1.2 Door swing Egress door types. Egress doors shall be of the ~~pivoted or side-hinged swinging type door.~~ pivoted door, or balanced door types. Exceptions: 1. Private garages, office areas, factory and storage areas with an <i>occupant load</i> of 10 or less. 2. Group I-3 occupancies used as a place of detention.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Critical or intensive care patient rooms within suites of health care facilities. 4. Doors within or serving a single <i>dwelling unit</i> in Groups R-2 and R-3. 5. In other than Group H occupancies, revolving doors complying with Section 1010.3.1. 6. In other than Group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies complying with Section 1010.3.3. 7. <i>Power-operated</i> doors in accordance with Section 1010.3.2. 8. Doors serving a bathroom within an individual <i>sleeping unit</i> in Group R-1. 9. In other than Group H occupancies, manually operated horizontal sliding doors are permitted in a <i>means of egress</i> from spaces with an <i>occupant load</i> of 10 or less.		
	1010.1.2.1 Direction of swing. ~~Pivot or side~~ Side- hinged swinging doors, pivoted doors and balance doors shall swing in the direction of egress travel where serving a room or area containing an <i>occupant load</i> of 50 or more persons or a Group H occupancy.		Added clarification, no major change to code.
	1010.1.3 Door opening force Forces to unlatch and open doors. ~~The force for pushing or pulling open interior swinging egress doors, other than fire doors, shall not exceed 5 pounds (22 N). These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. For other swinging doors, as well as sliding and folding doors, the door latch shall release when subjected to a 15-pound (67 N) force. The door shall be set in motion when subjected to a 30-pound (133 N) force. The door shall swing to a full open position when subjected to a 15-pound (67 N) force. The~~ forces to unlatch doors shall comply with the following: 1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (67 N). 2. Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm). The force to open doors shall comply with the following: 1. For interior swinging egress doors that are manually operated, other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N). 2. For other swinging doors, sliding doors, or folding doors, and doors required to be fire rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full-open position when subjected to not more than a 15-pound (67 N) force.		New requirements for door unlatching/opening force necessary.
	1010.1.3.2 Manual horizontal sliding doors. ~~Where a manual horizontal sliding door is required to latch, the latch or other mechanism shall prevent the door from~~		New requirements for manual horizontal sliding doors.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	rebounding into a partially open position when the door is closed.		
	1010.1.4.4.1 Remote operation of locks. Remote operation of locks complying with Section 1010.1.4.4 shall be permitted.		New requirements for remote operation of locks.
	~~1010.1.5~~ 1010.1.4 Floor elevation. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope). Exceptions: ~~Doors~~ At doors serving individual dwelling units ~~or sleeping units~~ in Groups R-2 and R-3 ~~where the following apply:~~ a door is permitted to open at the top step of an interior <i>flight</i> of stairs, provided that the door does not swing over the top step. ~~A door is permitted to open at the top step of an interior flight of stairs, provided that the door does not swing over the top step.~~ ~~Screen doors and storm doors are permitted to swing over stairs or landings.~~ ~~Exterior doors as provided for in Section 1003.5, Exception 1, and Section 1022.2, which are not on an accessible route.~~ At exterior doors serving Groups F, H, R-2 and S and where such doors are not part of an accessible route, the landing at an exterior door shall not be more than 7 inches (178 mm) below the landing on the egress side of the door, provided that the door, other than an exterior storm or screen door, does not swing over the landing. ~~In Group R-3 occupancies~~ At exterior doors serving Group U and individual dwelling units and sleeping units in Groups R-2 and R-3, and where such units are not required to be Accessible units, Type A units or Type B units, the landing at an exterior doorway shall be not more than 7¼ inches (197 mm) below the landing on the top egress side of the threshold, provided the door, other than an exterior door. Such doors, including storm or screen doors, ~~does not~~ shall be permitted to swing over ~~the~~ either landing. - Variations in elevation due to differences in finish materials, but not more than ½ inch (12.7 mm). - Exterior decks, patios or balconies that are part of Type B ~~dwelling units or sleeping units, that~~ have impervious surfaces and that are not more than 4 inches (102 mm) below the finished floor level of the adjacent interior space of the ~~dwelling unit or sleeping unit.~~		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	6. Doors serving equipment spaces not required to be <i>accessible</i> in accordance with Section 1103.2.9 and serving an <i>occupant load</i> of five or less shall be permitted to have a landing on one side to be not more than 7 inches (178 mm) above or below the landing on the egress side of the door.		
	~~4010.1.7~~ 1010.1.5 Landings at doors.		Base code renumbering.
	~~4010.1.7~~ 1010.1.6 Thresholds.		Base code renumbering.
	~~4010.1.8~~ 1010.1.7 Door arrangement.		Base code renumbering.
	1010.1.9.2 Hardware height. Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor. Locks used only for security purposes and not used for normal operation are permitted at any height. Exception: Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the ~~release of latch~~ release on self-latching devices at 54 inches (1370 mm) maximum above the finished floor or ground, provided ~~that~~ the self-latching devices are not also self-locking devices operated by means of a key, electronic opener or integral combination lock.		Added clarification, no major change to code.
	1010.1.9.3 Monitored or recorded egress. Where electrical systems that monitor or record egress activity are incorporated, the locking system shall comply with Section 1010.1.9.7, 1010.1.9.8, 1010.1.9.9, 1010.1.9.10 or 1010.1.9.11 or shall be readily openable from the egress side without the use of a key or special knowledge or effort.		New requirements for egress monitoring/recording systems.
	1010.1.9.34 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist: 1. Places of detention or restraint. 2. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and in places of religious worship, the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided: 2.1. The locking device is readily distinguishable as locked. 2.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background. 2.3. The use of the key-operated locking device is revocable by the building official for due cause. 3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts does not have a doorknob or surface-mounted hardware. 4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are operable from the inside without the use of a key or tool. 5. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures. 6. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.		
	~~1010.1.9.4~~ 1010.1.9.5 Bolt locks. Manually operated flush bolts or surface bolts are not permitted. Exceptions: 1. On doors not required for egress in individual dwelling units or sleeping units. 2. Where a pair of doors serves a storage or equipment room, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf. 3. Where a pair of doors serves an occupant load of less than 50 persons in a Group B, F or S occupancy, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf. The inactive leaf shall not contain doorknobs, panic bars or similar operating hardware. 4. Where a pair of doors serves a Group B, F or S occupancy, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf provided that such inactive leaf is not needed to meet egress capacity requirements and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The inactive leaf shall not contain doorknobs, panic bars or similar operating hardware. 5. Where a pair of doors serves patient care rooms in Group I-2 occupancies, self-latching edge- or surface-mounted bolts are permitted on the inactive leaf provided that the inactive leaf is not needed to meet egress capacity		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	requirements and the inactive leaf shall not contain doorknobs, panic bars or similar operating hardware.		
	~~1010.1.9.5~~ 1010.1.9.6 Unlatching. The unlatching of any door or leaf shall not require more than one operation. Exceptions: 1. Places of detention or restraint. 2. Where manually operated bolt locks are permitted by Section 1010.1.9.45. 3. Doors with automatic flush bolts as permitted by Section 1010.1.9.34, Item 3. 4. Doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.1.9.34, Item 4.		Base code renumbering.
	~~1010.1.9~~ 1010.2 Door operations.		Base code renumbering.
	~~1010.1.9.6~~ 1010.2.1 Unlatching. The unlatching of any door or leaf <u>for egress</u> shall <u>require</u> not ~~require~~ more than one operation <u>motion in a single linear or rotational direction to release all latching and all locking devices.</u> Exceptions: 1. Places of detention or restraint. 2. Where manually operated bolt locks are permitted by Section 1010.2.5. 3. Doors with automatic flush bolts as permitted by Section 1010.2.4, Item ~~3~~ 4. 4. Doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.2.4, Item ~~4~~ 5.		Added clarification, no major change to code.
	~~1010.1.9.1~~ 1010.2.2 Hardware.		Base code renumbering.
	~~1010.1.9.2~~ 1010.2.3 Hardware height.		Base code renumbering.
	~~1010.1.9.4~~ 1010.2.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist: 1. Places of detention or restraint. 2. <u>In Group I-1, Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.</u> 2. ~~3~~ In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and		New requirements for locks/latches in healthcare facilities, and certain egress court situations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	in places of religious worship , the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided: 2.1. <u>3.1.</u> The locking device is readily distinguishable as locked. 2.2. <u>3.2.</u> A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background. 2.3. <u>3.3.</u> The use of the key-operated locking device is revocable by the building official for due cause. 3.4. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts does not have a doorknob or surface-mounted hardware. 4. <u>5.</u> Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool. 5. <u>6.</u> Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures. 6. <u>7.</u> Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof. <u>8. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:</u> <u>8.1. The maximum occupant load shall be posted where required by Section 1004.9. Such signage shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.</u> <u>8.2. A weatherproof telephone or two-way communication system installed in accordance with Sections 1009.8.1 and 1009.8.2 shall be located adjacent to not less than one required exit access door on the exterior side.</u> <u>8.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.</u> <u>8.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m 2) in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.</u>		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	<u>8.5. A readily visible, durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating, "THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED." The letters on the sign shall be not less than 1 inch (25.4 mm) high on a contrasting background.</u> <u>8.6. The occupant load of the occupied exterior area shall not exceed 300 occupants in accordance with Section 1004.</u> <u>9. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.</u> <u>10. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet (23.23 m2) or less serving a private office space.</u>		
	~~1010.1.9.5~~ 1010.2.5 Bolt locks.		Base code renumbering.
	~~1010.1.9.5.1 1010.1.9.6.1 1010.2.6 Closet and bathroom doors in Group R-4 occupancies. In Group R-4 occupancies, Closet doors that latch in the closed position shall be openable from inside the closet, and bathroom doors that latch in the closed position shall be capable of being unlocked from the ingress side.~~		Added clarification, no major change to code.
	~~1010.1.9.11 1010.1.9.12~~ 1010.2.7 Stairway doors. Interior stairway means of egress doors shall be openable from both sides without the use of a key or special knowledge or effort. Exceptions: 1. Stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side. 2. This section shall not apply to doors arranged in accordance with Section 403.5.3. 3. ~~In stairways serving not more than four stories,~~ Stairway exit doors are permitted to be locked from the side opposite the egress side, provided ~~that~~ they are openable from the egress side and capable of being unlocked simultaneously without unlatching upon a signal from the fire command center, if present, or a signal by emergency personnel from a single location inside the main entrance to the building. 4. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group B, F, M and S occupancies where the only interior access to the tenant space is from a single exit stairway where permitted in Section ~~1006.3.2~~ 1006.3.3. 5. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group R-2 occupancies where the only interior access to the dwelling unit is from a		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	single exit stairway where permitted in Section ~~1006.3.2~~ 1006.3.3.		
	~~1010.1.4.4~~ 1010.2.8 Locking arrangements in educational occupancies. In Group E ~~and occupancies, Group B educational occupancies and Group I-4 occupancies,~~ egress doors from classrooms, offices and other occupied rooms shall be permitted to be provided with locking arrangements designed to keep intruders from entering the room where shall comply with all of the following conditions are met: 1. The door shall be capable of being unlocked from outside the room with a key or other <i>approved</i> means. 2. The door shall be openable from within the room in accordance with Section 1010.2. 3. Modifications shall not be made to listed <i>panic hardware, fire door hardware</i> or door closers. 4. Modifications to <i>fire door assemblies</i> shall be in accordance with NFPA 80. Remote locking or unlocking of doors from an approved location shall be permitted in addition to the unlocking operation in Item 1.		New requirements for locking arrangements in E occupancies.
	1010.2.9 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an <i>occupant load</i> of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than <i>panic hardware</i> or <i>fire exit hardware</i>. Exceptions: 1. A main exit of a Group A occupancy shall behave permitted to have locking devices in accordance with Section ~~1010.1.9.3~~ 1010.2.4, Item 2 3. 2. Doors provided with <i>panic hardware</i> or <i>fire exit hardware</i> and serving a Group A or E occupancy shall be permitted to be electromagnetically electrically locked in accordance with Section ~~1010.1.9.9 or 1010.1.9.10~~ 1010.2.11 or 1010.2.12. 3. Exit access doors serving occupied exterior areas shall be permitted to be locked in accordance with Section 1010.2.4, Item 8. 4. Courtrooms shall be permitted to be locked in accordance with Section 1010.2.13, Item 3. ~~Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.~~		New panic hardware requirements.
	1010.2.9.1 Refrigeration machinery room. Refrigeration machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two exit or exit access doorways that swing in the direction of egress travel and shall be equipped with <i>panic hardware</i> or <i>fire exit hardware</i>.		New panic hardware requirements for refrigeration machinery rooms.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1010.2.9.2 Rooms with electrical equipment. Exit or exit access doors serving transformer vaults, rooms designated for batteries or energy storage systems, or modular data centers shall be equipped with panic hardware or fire exit hardware. Rooms containing electrical equipment rated 800 amperes or more that contain overcurrent devices, switching devices or control devices and where the exit or exit access door is less than 25 feet (7620 mm) from the equipment working space as required by NFPA 70, such doors shall not be provided with a latch or lock other than panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.		New lock/latch requirements for rooms with electrical equipment.
	~~4010.1.10.1~~ 1010.2.9.3 Installation.		Base code renumbering.
	~~4010.1.10.2~~ 1010.2.9.4 Balanced doors.		Base code renumbering.
	~~4010.1.9.3~~ 1010.2.10 Monitored or recorded egress.		Base code renumbering.
	~~1010.1.9.9~~ ~~1010.1.9.10~~ 1010.2.11 Electromagnetically Door hardware release of electrically locked egress doors. Doors in the means of egress in buildings with an occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and doors to tenant spaces in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and Door hardware release of electric locking systems shall be permitted on doors in the means of egress in any occupancy except Group H where installed and operated in accordance with all of the following: 1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions. 2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.1.9.6. 3. Operation of the door hardware directly interrupts the power to the electromagnetic-electric lock and unlocks the door immediately. 4. Loss of power to the electric locking system automatically unlocks the door. 5. Where panic or fire exit hardware is required by Section 1010.1.10, operation of the panic or fire exit hardware also releases the electromagnetic-electric lock. 6. The locking system units shall be listed in accordance with UL 294.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1010.1.9.9~~ 1010.2.12 Sensor release of electrically locked egress doors. ~~The electric locks on sensor released doors located in a means of egress in buildings with an occupancy in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 and entrance doors to tenant spaces in occupancies in Group A, B, E, I-1, I-2, I-4, M, R-1 or R-2 are permitted.~~ Sensor release of electric locking systems shall be permitted on doors located in the <i>means of egress</i> in any occupancy except Group H where installed and operated in accordance with all of the following criteria: 1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors, and shall cause the electric locking system to unlock. 2. The electric locks shall be arranged to unlock by a signal from or loss of power to the sensor. 2. 3. Loss of power to the lock or locking system shall automatically unlock the ~~door~~ electric locks. 3. 4. The doors shall be arranged to unlock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device shall result in direct interruption of power to the electric lock—independent of other electronics—and the ~~doors~~ electric lock shall remain unlocked for not less than 30 seconds. 4. 5. Activation of the building <i>fire alarm system</i>, where provided, shall automatically unlock the ~~doors~~ electric lock, and the ~~doors~~ electric lock shall remain unlocked until the <i>fire alarm system</i> has been reset. 5. 6. Activation of the building <i>automatic sprinkler system</i> or fire detection system, where provided, shall automatically unlock the ~~doors~~ electric lock. The ~~doors~~ electric lock shall remain unlocked until the <i>fire alarm system</i> has been reset. 7. Emergency lighting shall be provided on the egress side of the door. 6. 7-8. The door locking system units shall be <i>listed</i> in accordance with UL 294.		Added clarification, no major change to code.
	~~1010.1.9.7~~ ~~1010.1.9.8~~ 1010.2.13 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving any the following ~~occupancy except Group A, E and H~~ in buildings that are equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 or an <i>approved automatic smoke or heat detection system</i> installed in accordance with Section 907. ~~The locking system shall be installed and operated in accordance with all of the following:~~ 1. ~~The delay electronics of the delayed egress locking system shall deactivate upon actuation of the automatic sprinkler system or automatic fire detection system, allowing immediate, free egress.~~		Delayed egress requirements have been reworked.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.~~ ~~3. The delayed egress locking system shall have the capability of being deactivated at the fire command center and other approved locations.~~ ~~4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only.~~ ~~Exception: Where approved, a delay of not more than 30 seconds is permitted on a delayed egress door.~~ ~~5. The egress path from any point shall not pass through more than one delayed egress locking system.~~ ~~Exception: In Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds.~~ ~~6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:~~ ~~6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.~~ ~~6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.~~ ~~6.3. The sign shall comply with the visual character requirements in ICC A117.1.~~ ~~Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.~~ ~~7. Emergency lighting shall be provided on the egress side of the door.~~ ~~8. The delayed egress locking system units shall be listed in accordance with UL 294.~~ ~~1. Group B, F, I, M, R, S and U occupancies.~~ ~~2. Group E classrooms with an <i>occupant load</i> of less than 50.~~ <u>3. In courtrooms in Group A-3 and B occupancies, delayed egress locking systems shall be permitted to be installed on exit or <i>exit access</i> doors, other than the main exit or <i>exit access</i> door, in buildings that are equipped</u>		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.~~ Exception: Delayed egress locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, serving a courtroom in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.		
	~~1010.1.9.8.1~~ 1010.2.13.1 Delayed egress locking system. The delayed egress locking system shall be installed and operated in accordance with all of the following: 1. The delay electronics of the delayed egress locking system shall activate upon actuation of the ~~automatic sprinkler system or automatic fire detection system~~, allowing immediate free egress. 2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress. 3. The delayed egress locking system shall have the capability of being deactivated at the <i>fire command center</i> and other <i>approved</i> locations. 4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay of electronics shall be by manual means only. Exception: Where <i>approved</i>, a delay of not more than 30 seconds is permitted on a delayed egress door. 5. The egress path from any point shall not pass through more than one delayed egress locking system. Exceptions: 1. In <u>Group I-1, Condition 2</u>, Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds. 2. In Group I-1, <u>Condition 1</u> or Group I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds and the building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware. Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area. 6.1. For doors that swing in the direction of egress, the sign shall read, "PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS." 6.2. For doors that swing in the opposite direction of egress, the sign shall read, "PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS." 6.3. The sign shall comply with the visual character requirements in ICC A117.1. 7. Emergency lighting shall be provided on the egress side of the door. 8. The delayed egress locking system units shall be <i>listed</i> in accordance with UL 294.		
	~~1010.1.9.6~~ ~~1010.1.9.7~~ 1010.2.14 Controlled egress doors in Groups I-1 and I-2. Electric locking systems, including electro-mechanical locking systems and electromagnetic locking systems, shall be permitted to be locked in the <i>means of egress</i> in Group I-1 or I-2 occupancies where the clinical needs of persons receiving care require their containment. Controlled egress doors shall be permitted in such occupancies where the building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 or an <i>approved automatic smoke or heat detection</i> system installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following: 1. The door locks shall unlock on actuation of the <i>automatic sprinkler system</i> or <i>automatic fire smoke detection system</i>. 2. The door locks shall unlock on loss of power controlling the lock or lock mechanism. 3. The door locking system shall be installed to have the capability of being unlocked by a switch located at the <i>fire command center</i>, a nursing station or other <i>approved</i> location. The switch shall directly break power to the lock. 4. A building occupant shall not be required to pass through more than one door equipped with a controlled egress locking system before entering an <i>exit</i>. 5. The procedures for unlocking the doors shall be described and <i>approved</i> as part of the emergency planning and preparedness required by Chapter 4 of the <i>International Fire Code</i>. 6. All clinical staff shall have the keys, codes or other means necessary to operate the locking systems.		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	7. Emergency lighting shall be provided at the door. 8. The door locking system units shall be <i>listed</i> in accordance with UL 294. Exceptions: - Items 1 through 4 shall not apply to doors to areas occupied by persons who, because of clinical needs, require restraint or containment as part of the function of a psychiatric or cognitive treatment area. - Items 1 through 4 shall not apply to doors to areas where a <i>listed</i> egress control system is utilized to reduce the risk of child abduction from nursery and obstetric areas of a Group I-2 <i>hospital</i>.		
	~~1010.1.9.10~~ ~~1010.1.9.11~~ 1010.2.15 Locking arrangements in buildings within correctional facilities. In ~~occupancies in Groups A-2, A-3, A-4, B-E, F, I-2, I-3, M and S~~ In buildings within correctional and detention facilities, doors in means of egress serving rooms or spaces occupied by persons whose movements are controlled for security reasons shall be permitted to be locked where equipped with egress control devices that shall unlock manually and by not less than one of the following means: - Activation of an automatic sprinkler system installed in accordance with Section 903.3.1.1. - Activation of an approved manual fire alarm box. - A signal from a constantly attended location.		Base code renumbering. Added clarification, no major change to code.
	~~1010.1.4~~ 1010.3 Special doors. Special doors and security grilles shall comply with the requirements of Sections ~~1010.1.4.1 through 1010.1.4.4~~ 1010.1.4.4 ~~1010.1.4.5~~ 1010.3.1 through 1010.3.4.		Base code renumbering.
	~~1010.1.4.1~~ 1010.3.1 Revolving doors. Revolving doors shall comply with the following: - Revolving doors shall comply with BHMA A156.27 and shall be installed in accordance with the manufacturer's instructions. - Each revolving door shall be capable of <i>breakout</i> in accordance with BHMA A156.27 and shall provide an aggregate width of not less than 36 inches (914 mm). - A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of <i>stairways</i> or escalators. A dispersal area shall be provided between the <i>stairways</i> or escalators and the revolving doors. - The revolutions per minute (rpm) for a revolving door shall not exceed the maximum rpm as specified in BHMA A156.27. Manual revolving doors shall comply with Table 1010.3.1(1). Automatic or <i>power-operated</i> revolving doors shall comply with Table 1010.3.1(2). - An emergency stop switch shall be provided near each entry point of power or automatic operated revolving doors within 48 inches (1219 mm) of the door and between ~~24~~ 34 inches (610 ~~864~~ mm) and 48 inches (1219 mm) above the floor. The activation area of the emergency stop switch button shall be not less than 1 inch (25 mm) in diameter and shall be red.		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	6. Each revolving door shall have a side-hinged swinging door that complies with Section 1010.1 in the same wall and within 10 feet (3048 mm) of the revolving door. 7. Revolving doors shall not be part of an <i>accessible route</i> required by Section 1009 and Chapter 11.		
	1010.1.4.1.2 1010.3.1.2 Other than egress component. A revolving door used as other than a component of a means of egress shall comply with Section ~~1010.1.4.4~~ 1010.3.1 . The breakout force of a revolving door not used as a component of a means of egress shall not be more than 180 pounds (801 N). Exception: A breakout force in excess of 180 pounds (801 N) is permitted if the ~~collapsing breakout~~ force is reduced to not more than 130 pounds (578 N) when not less than one of the following conditions is satisfied: 1. There is a power failure or power is removed to the device holding the door wings in position. 2. There is an actuation of the automatic sprinkler system where such system is provided. 3. There is an actuation of a smoke detection system that is installed in accordance with Section 907 to provide coverage in areas within the building that are within 75 feet (22 860 mm) of the revolving doors. 4. There is an actuation of a manual control switch, in an approved location and clearly identified, that reduces the breakout force to not more than 130 pounds (578 N).		Base code renumbering. Added clarification, no major change to code.
	1010.1.4.2 1010.3.2 Power-operated doors. Where means of egress doors are operated or assisted by power, the design shall be such that in the event of power failure, the door is capable of being opened manually to permit means of egress travel or closed where necessary to safeguard means of egress. The forces required to open these doors manually shall not exceed those specified in Section 1010.1.3, except that the force to set the door in motion shall not exceed 50 pounds (220 N). The door shall be capable of ~~swinging~~ opening from any position to the full width of the opening in which such door is installed when a force is applied to the door on the side from which egress is made. Power-operated swinging doors, power-operated sliding doors and power-operated folding doors shall comply with BHMA A156.10. Power-assisted swinging doors and low-energy power-operated swinging doors shall comply with BHMA A156.19. Low-energy power-operated sliding doors and low-energy power-operated folding doors shall comply with BHMA A156.38. Exceptions: 1. Occupancies in Group I-3. 2. Special purpose horizontal sliding, accordion or folding doors complying with Section 1010.1.4.3. 3. For a biparting door in the emergency breakout mode, a door leaf located within a multiple-leaf		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	opening shall be exempt from the minimum 32-inch (813 mm) single-leaf requirement of Section 1010.1.1, provided that a minimum 32-inch (813 mm) clear opening is provided when the two biparting leaves meeting in the center are broken out.		
	~~TABLE 1010.1.4.1(1)~~ TABLE 1010.3.1(1)		Base code renumbering.
	~~TABLE 1010.1.4.1(2)~~ TABLE 1010.3.1(2)		Base code renumbering.
	1010.3.3 Special purpose horizontal sliding, accordion or folding doors. In other than group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies permitted to be a component of a <i>means of egress</i> in accordance with Exception 6 to Section 1010.1.2 shall comply with all of the following criteria: 1. The doors shall be power operated and shall be capable of being operated manually in the even to of power failure. 2. The doors shall be openable by a simple method without special knowledge or effort from the egress side or sides. 3. The force required to operate the door shall not exceed 30 pounds (133 N) to set the door in motion and 15 pounds (67 N) to close the door or open it to the minimum required width. 4. The door shall be openable with a force not to exceed 15 pounds (67 N) when a force of 250 pounds (1100 N) is applied perpendicular to the door adjacent to the operating device. 5. The door assembly shall comply with the applicable <i>fire protection rating</i> and, where rated, shall be <i>self-closing</i> or automatic closing by smoke detection in accordance with Section 716.2.6.6, shall be installed in accordance with NFPA 80 and shall comply with Section 716. 6. The door assembly shall have an integrated standby power supply. 7. The door assembly power supply shall be electrically supervised. 8. The door shall open to the minimum required width within 10 seconds after activation of the operating device.		Base code renumbering. Added clarification, no major change to code.
	~~1010.1.4.1.1~~ 1010.3.1.1 Egress component. A revolving door used as a component of a means of egress shall comply with Section 1010.3.1 and the following three conditions: 1. Revolving doors shall not be given credit for more than 50 percent of the minimum width or required capacity.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. Each revolving door shall be credited with a capacity based on not more than a 50-person occupant load . 3. Each revolving door shall provide for egress in accordance with BHMA A156.27 with a breakout force of not more than 130 pounds (578 N).		
	~~1010.1.4.1.2~~ 1010.3.1.2 Other than egress component. A revolving door used as other than a component of a means of egress shall comply with Section 1010.3.1. The breakout force of a revolving door not used as a component of a means of egress shall not be more than 180 pounds (801 N). Exception: A breakout force in excess of 180 pounds (801 N) is permitted if the breakout force is reduced to not more than 130 pounds (578 N) when not less than one of the following conditions is satisfied: 1. There is a power failure or power is removed to the device holding the door wings in position. 2. There is an actuation of the automatic sprinkler system where such system is provided. 3. There is an actuation of a smoke detection system that is installed in accordance with Section 907 to provide coverage in areas within the building that are within 75 feet (22 860 mm) of the revolving doors. 4. There is an actuation of a manual control switch, in an approved location and clearly identified, that reduces the breakout force to not more than 130 pounds (578 N).		Base code renumbering.
	~~1010.1.4.2~~ 1010.3.2 Power-operated doors.		Base code renumbering.
	~~1010.1.4.3~~ 1010.3.3 Special purpose horizontal sliding, accordion or folding doors. In other than Group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies permitted to be a component of a means of egress in accordance with Exception 6 to Section 1010.1.2 shall comply with all of the following criteria: 1. The doors shall be power operated and shall be capable of being operated manually in the event of power failure. 2. The doors shall be openable by a simple method ~~from both sides~~ without special knowledge or effort from the egress side or sides. 3. The force required to operate the door shall not exceed 30 pounds (133 N) to set the door in motion and 15 pounds (67 N) to close the door or open it to the minimum required width. 4. The door shall be openable with a force not to exceed 15 pounds (67 N) when a force of 250 pounds (1100 N) is applied perpendicular to the door adjacent to the operating device.		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5. The door assembly shall comply with the applicable fire protection rating and, where rated, shall be self-closing or automatic closing by smoke detection in accordance with Section ~~716.5.9.3~~ 716.2.6.6 , shall be installed in accordance with NFPA 80 and shall comply with Section 716. 6. The door assembly shall have an integrated standby power supply. 7. The door assembly power supply shall be electrically supervised. 8. The door shall open to the minimum required width within 10 seconds after activation of the operating device.		
	~~1010.1.4.5~~ 1010.3.4 Security grilles. In Groups B, F, M and S, horizontal sliding or vertical security grilles are permitted at the main <i>exit</i> and shall be openable from the inside without the use of a key or special knowledge or effort during periods that the space is occupied. The grilles shall remain secured in the full-open position during the period of occupancy by the general public. Where two or more ~~means of egress~~ exits or access to exits are required, not more than one-half of the <i>exits</i> or <i>exit access doorways</i> shall be equipped with horizontal sliding or vertical security grilles.		Base code renumbering. Added clarification, no major change to code.
	~~1010.2~~ 1010.4 Gates.		Base code renumbering.
	~~1010.2.1~~ 1010.4.1 Stadiums.		Base code renumbering.
	~~1010.3~~ 1010.5 Turnstiles and similar devices. Turnstiles or similar devices that restrict travel to one direction shall not be placed so as to obstruct any required means of egress. Exception:		Base code renumbering. Added clarification, no major change to code.
	~~1010.3.4~~ 1010.5.1 Capacity Each turnstile or similar device shall be credited with a capacity based on not more than a 50-person occupant load where all of the following provisions are met: 1. Each device shall turn free in the direction of egress travel when primary power is lost and on the manual release by an employee in the area. 2. Such devices are not given credit for more than 50 percent of the required egress capacity or width. 3. Each device is not more than 39 inches (991 mm) high. 4. Each device has not less than 16 1/2 inches (419 mm) clear width at and below a height of 39 inches (991 mm) and not less than 22 inches (559 mm) clear width at heights above 39 inches (991 mm).		New capacity requirements for turnstiles.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1010.3.1.1~~ 1010.5.1.1 Clear width. Where located as part of an accessible route, turnstiles shall have not less than 36 inches (914 mm) clear at and below a height of 34 inches (864 mm), not less than 32 inches (813 mm) clear widthbetween 34 inches (864 mm) and 80 inches (2032 mm) and shall consist of a mechanism other than a revolving device.		Base code renumbering.
	~~1010.3.1~~ ~~1010.3.2~~ 1010.5.2 Security access turnstiles. Security access turnstiles that inhibit travel in the direction of egress utilizing a physical barrier shall be permitted to be considered as a component of the <i>means of egress</i> , provided that all of the following criteria are met: ~~Exception:~~ Each turnstile or similar device shall be credited with a capacity based on not more than a 50-person occupant load where all of the following provisions are met: 1. Each device shall turn free in the direction of egress travel when primary power is lost and on the manual release by an employee in the area. 2. Such devices are not given credit for more than 50 percent of the required egress capacity or width. 3. Each device is not more than 39 inches (991 mm) high. 4. Each device has not less than 16 1/2 inches (419 mm) clear width at and below a height of 39 inches (991 mm) and not less than 22 inches (559 mm) clear width at heights above 39 inches (991 mm). Where located as part of an accessible route, turnstiles shall have not less than 36 inches (914 mm) clear at and below a height of 34 inches (864 mm), not less than 32 inches (813 mm) clear width between 34 inches (864 mm) and 80 inches (2032 mm) and shall consist of a mechanism other than a revolving device. 1. The building is protected throughout by an approved supervised automatic sprinkler system in accordance with Section 903.3.1.1. 2. Each security access turnstile lane configuration has a minimum clear passage of 22 inches (559 mm). 3. Any security access turnstile lane configuration providing a clear passage width of less than 32 inches (810 mm) shall be credited with a maximum egress capacity of 50 persons. 4. Any security access turnstile lane configuration providing a clear passage width of 32 inches (810 mm) or more shall be credited with a maximum egress capacity as calculated in accordance with Section 1005. 5. Each secured physical barrier shall automatically retract or swing to an unobstructed open position in the direction of egress, under each of the following conditions: 5.1. Upon loss of power to the turnstile or any part of the access control system that secures the physical barrier.		Requirements for security access turnstiles have been updated.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5.2. Upon actuation of a clearly identified manual release device with ready access that results in direct interruption of power to each secured physical barrier, after which such barriers remain in the open position for not less than 30 seconds. The manual release device shall be positioned at one of the following locations: 5.2.1. On the egress side of each security access turnstile lane. 5.2.2. At an <i>approved</i> location where it can be actuated by an employee assigned to the area at all times that the building is occupied. 5.3. Upon actuation of the building <i>fire alarm system</i>, if provided, after which the physical barrier remains in the open position until the <i>fire alarm system</i> is manually reset. Exception: Actuation of a manual fire alarm box. 5.4. Upon actuation of the building automatic sprinkler system or fire detection system, after which the physical barrier remains in the open position until the <i>fire alarm system</i> is manually reset.		
	~~1010.3.1~~ ~~1010.3.3~~ 1010.5.3 High turnstile. Turnstiles more than 39 inches (991 mm) high shall meet the requirements for revolving doors. or the requirements of Section 1010.3.2 for security access turnstiles		Base code renumbering.
	~~1010.3.2~~ ~~1010.3.4~~ 1010.5.4 Additional door. Where serving an occupant load greater than 300, each turnstile that is not portable shall have a side-hinged swinging door that conforms to Section 1010.1 within 50 feet (15 240 mm). Exception: A side-hinged swinging door is not required at security access turnstiles that comply with Section 1010.3.2.		Base code renumbering. New exception provided for side-hinged swinging doors.
	SECTION 1011 STAIRWAYS		
	1011.5.2 Riser height and tread depth. <i>Stair</i> riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between the <i>nosings</i> of adjacent ~~treads~~ or between the stairway landing and the adjacent tread. Rectangular tread depths shall be 11 inches (279 mm) minimum measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's <i>nosing</i>. <i>Winder</i> treads shall have a minimum tread depth of 11 inches (279 mm) between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline and a minimum tread depth of 10 inches (254 mm) within the clear width of the stair. Exceptions: 1. <i>Spiral stairways</i> in accordance with Section 1011.10.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. <i>Stairways</i> connecting stepped <i>aisles</i> to cross <i>aisles</i> or concourses shall be permitted to use the riser/tread dimension in Section ~~1029.13.2~~ 1030.14.2. 3. In Group R-3 occupancies; within <i>dwelling units</i> in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual <i>dwelling units</i> in Group R-2 occupancies; the maximum riser height shall be 7¾ inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum <i>winder</i> tread depth at the walkline shall be 10 inches (254 mm); and the minimum <i>winder</i> tread depth shall be 6 inches (152 mm). A <i>nosing</i> projection not less than ¾ inch (19.1 mm) but not more than 1¼ inches (32 mm) shall be provided on <i>stairways</i> with solid risers where the tread depth is less than 11 inches (279 mm). 4. See Section ~~403.4–503.1~~ of the <i>International Existing Building Code</i> for the replacement of existing <i>stairways</i>. 5. In Group I-3 facilities, <i>stairways</i> providing access to guard towers, observation stations and control rooms, not more than 250 square feet (23 m²) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).		
	1011.5.4 Dimensional uniformity. Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed 3/8 inch (9.5 mm) in any flight of stairs. The greatest winder tread depth at the walkline within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Exceptions: 1. Stairways connecting stepped aisles to cross aisles or concourses shall be permitted to comply with the dimensional nonuniformity in Section ~~1029.13.2~~ 1029.134.2. 2. Consistently shaped winders, complying with Section 1011.5, differing from rectangular treads in the same flight of stairs. 3. Nonuniform riser dimension complying with Section 1011.5.4.1.		Base code renumbering.
	1011.5.5.3 Solid risers. Risers shall be solid. Exceptions: 1. Solid risers are not required for stairways that are not required to comply with Section 1009.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm). 2. Solid risers are not required for occupancies in Group I-3 or in Group F, H and S occupancies other than areas accessible to the public. There		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~are no restrictions on the size of the opening in the riser is not restricted.~~ 3. Solid risers are not required for spiral stairways constructed in accordance with Section 1011.10.		
	1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each <i>stairway</i> . The width of landings, measured perpendicularly to the direction of travel , shall be not less than the width of <i>stairways</i> served. Every landing shall have a minimum ~~width measured perpendicular to the direction of travel equal to the width of the stairway.~~ Where the stairway has a straight run the depth need not exceed 48 inches (1219 mm) depth, measured parallel to the direction of travel, equal to the width of the <i>stairway</i> or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into the required width of a landing. Where wheelchair spaces are required on the <i>stairway</i> landing in accordance with Section 1009.6.3, the <i>wheelchair space</i> shall not be located in the required width of the landing and doors shall not swing over the <i>wheelchair spaces</i> . Exceptions: 1. Where <i>stairways</i> connect stepped <i>aisles</i> to cross <i>aisles</i> or concourses, <i>stairway</i> landings are not required at the transition between <i>stairways</i> and stepped <i>aisles</i> constructed in accordance with Section 1030. 2. Where curved stairways of constant radius have intermediate landings , the landing depth shall be measured horizontally between the intersection of the walkline of the lower <i>flight</i> at the landing <i>nosing</i> and the intersection of the walkline of the upper <i>flight</i> at the <i>nosing</i> of the lowest tread of the upper <i>flight</i> . 3. Where a landing turns 90 degrees (1.57 rad) or more, the minimum landing depth in accordance with this section shall not be required where the landing provided is not less than that described by an arc with a radius equal to the width of the <i>flight</i> served.		Updated requirements for stairway landings.
	1011.7 Stairways construction. <i>Stairways</i> shall be built of materials consistent with the types permitted for the type of construction of the building . ~~except that wood handrails shall be permitted for all types of construction.~~ Exceptions: 1. Wood handrails shall be permitted in all types of construction. 2. Interior exit stairways in accordance with Section 510.2.		Added clarification, no major change to code.
	1011.7.1 Stairway walking surface. The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stairway treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached. Exceptions:		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1. Openings in stair walking surfaces shall be a size that does not permit the passage of 1/2-inch-diameter (12.7 mm) sphere. Elongated openings shall be placed so that the long dimension is perpendicular to the direction of travel. 2. In Group F, H and S occupancies, other than areas of parking structures accessible to the public, openings in treads and landings shall not be prohibited provided ~~that~~ a sphere with a diameter of 1 1/8 inches (29 mm) cannot pass through the opening.		
	1011.10 Spiral stairways. Spiral stairways are permitted to be used as a component in the means of egress only within dwelling units or from a space not more than 250 square feet (23 m²) in area and serving not more than five occupants, or from technical production areas in accordance with Section ~~410.6~~ 410.5. A spiral stairway shall have a ~~7 1/2~~ 6 3/4-inch (~~194~~ 171 mm) minimum clear tread depth at a point 12 inches (305 mm) from the narrow edge. The risers shall be sufficient to provide a headroom of 78 inches (1981 mm) minimum, but riser height shall not be more than 9 1/2 inches (241 mm). The minimum stairway clear width at and below the handrail shall be 26 inches (660 mm).		Base code renumbering.
	1011.11 Handrails. ~~Flights of stairways~~ shall have <i>handrails</i> on each side and shall comply with Section 1014. Where glass is used to provide the <i>handrail</i>, the <i>handrail</i> shall comply with Section 2407. Exceptions: 1. ~~Flights of stairways~~ within <i>dwelling units</i> and ~~flights of spiral stairways~~ are permitted to have a <i>handrail</i> on one side only. 2. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require <i>handrails</i>. 3. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require <i>handrails</i>. 4. Changes in room elevations of three or fewer risers within <i>dwelling units</i> and <i>sleeping units</i> in Groups R-2 and R-3 do not require handrails. 5. Where a platform lift is in a stationary position and the floor of the platform lift serves as the upper landing of a stairway, <i>handrails</i> shall not be required on the stairway, provided that all of the following criteria are met: 5.1. The stairway contains not more than two risers. 5.2. A handhold, positioned horizontally or vertically, is located on one side of the stairway adjacent to the top landing. 5.3. The handhold is located not less than 34 inches (864 mm) and not more than 42 inches (1067 mm) above the bottom landing of the stairway. 5.4. The handhold gripping surface complies with Section 1014.3, and is not less than 4.5 inches (114 mm) in length.		Added clarification, updates to handrail requirements for platform lifts.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1011.15 Ship's ladders. Ship's ladders are permitted to be used in Group I-3 as a component of a <i>means of egress</i> to and from control rooms or elevated facility observation stations not more than 250 square feet (23 m²) with not more than three occupants and for access to unoccupied roofs. The minimum clear width at and below the <i>handrails</i> shall be 20 inches (508 mm). Ship's ladders shall be designed for the live loads indicated in Section 1607.17.		Added clarification, no major change to code.
1011.16 Ladders. Permanent ladders shall not serve as a part of the <i>means of egress</i> from occupied spaces within a building. Permanent ladders shall be permitted to provide access to the following areas: { EDITORIAL NOTE: PORTIONS OF 1011.6 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IBC.} 6. Ladders shall be constructed in accordance with Section ~~306.5~~ 304.3.1.2 of the ~~International Mechanical Code~~ .	1011.16 Ladders. Permanent ladders shall not serve as a part of the <i>means of egress</i> from occupied spaces within a building. Permanent ladders shall be constructed in accordance with Section 306.5 of the International Mechanical Code and designed for the live loads indicated in Section 1607.17. Permanent ladders shall be permitted to provide access to the following areas: 1. Spaces frequented only be personnel for maintenance, repair or monitoring of equipment. 2. Nonoccupiable spaces accessed only by catwalks, crawl spaces, freight elevators or very narrow passageways. 3. Raised areas used primarily for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands. 4. Elevated levels in Group U not open to the general public. 5. Nonoccupied roofs that are not required to have <i>stairway</i> access in accordance with Section 1011.12.1. 6. ~~Ladders shall be constructed in accordance with Section 306.5 of the International Mechanical Code~~ Where permitted to access equipment and appliances in accordance with Section 306.5 of the International Mechanical Code.	[BE] 1011.16 Ladders. Permanent ladders shall not serve as a part of the <i>means of egress</i> from occupied spaces within a building. Permanent ladders shall be constructed in accordance with Section ~~306.5~~ 304.3.1.2 of the ~~International Mechanical Code~~ and designed for the live loads indicated in Section 1607.17 of the ~~International Building Code~~ . Permanent ladders shall be permitted to provide access to the following areas: 1. Spaces frequented only by personnel for maintenance, repair or monitoring of equipment. 2. Nonoccupiable spaces accessed only by catwalks, crawl spaces, freight elevators or very narrow passageways. 3. Raised areas used primarily for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands. 4. Elevated levels in Group U not open to the general public. 5. Nonoccupied roofs that are not required to have <i>stairway</i> access in accordance with Section 1011.12.1. 6. Where permitted to access equipment and appliances in accordance with Section ~~306.5~~ 304.3.1.2 of the ~~International Mechanical Code~~ .	Updates to base code ladder requirements. Updated Houston amendment to be in line with base code.
	SECTION 1012 RAMPS		
	1012.5.2 Headroom. The minimum headroom in all parts of the means of egress ramp shall be not less than 80 inches (2032 mm) above the finished floor of the ramp run and any intermediate landings. The minimum clearance shall be maintained for the full width of the ramp and landing.		Added clarification, no major change to code.
	SECTION 1013 EXIT SIGNS 1013.1 Where required. Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. The path of egress travel to exits and within exits shall be marked by readily visible exit signs to clearly indicate the direction of egress travel in cases where the exit or the path of egress travel is not immediately visible to the occupants. Intervening means of egress doors within exits shall be marked by exit signs. Exit sign placement shall be such that ~~no any point in an exit access corridor or exit passageway is more than within~~ 100 feet (30 480 mm) or the listed viewing distance ~~for of~~ the sign, whichever is less, from the nearest visible exit sign. Exceptions:		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1. Exit signs are not required in rooms or areas that require only one exit or exit access. 2. Main exterior exit doors or gates that are obviously and clearly identifiable as exits need not have exit signs where approved by the building official. 3. Exit signs are not required in occupancies in Group U and individual sleeping units or dwelling units in Group R-1, R-2 or R-3. 4. Exit signs are not required in dayrooms, sleeping rooms or dormitories in occupancies in Group I-3. 5. In occupancies in Groups A-4 and A-5, exit signs are not required on the seating side of vomitories or openings into seating areas where exit signs are provided in the concourse that are readily apparent from the vomitories. Egress lighting is provided to identify each vomitory or opening within the seating area in an emergency.		
	1013.2 Floor Low-level exit signs in Group R-1. Where exit signs are required in Group R-1 occupancies by Section 1013.1, additional low-level exit signs shall be provided in all areas serving guest rooms in Group R-1 occupancies and shall comply with Section 1013.5. The bottom of the sign shall be not less than 10 inches (254 mm) nor more than ~~42-18~~ inches (305-455 mm) above the floor level. The sign shall be flush mounted to the door or wall. Where mounted on the wall, the edge of the sign shall be within 4 inches (102 mm) of the door frame on the latch side.		Added clarification, no major change to code.
	1013.4 Raised character and braille exit signs. ~~A sign stating EXIT in visual characters, raised characters and braille and complying with ICC A117.1 shall be provided adjacent to each door to~~ Where exit signs are provided at an area of refuge providing direct access to a stairway, an exterior area for assisted rescue, an exit stairway or ramp, an exit passageway, a horizontal exit and the exit discharge, a sign stating "EXIT" in visual characters, raised characters and braille and complying with ICC A117.1 shall be provided.		Updates to braille exit sign requirements.
	1013.6.3 Power source. Exit signs shall be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Chapter 27. Group I-2, Condition 2 exit sign illumination shall not be provided by unit equipment batteries only Exceptions: 1- Approved exit sign illumination means that provide continuous illumination independent of external power sources for a duration of not less than 90 minutes, in case of primary power loss, are not required to be connected to an emergency electrical system.		Updates to healthcare facility exit sign illumination requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 1014 HANDRAILS 1014.1 Where required. Handrails serving flights of stairways, ramps, stepped aisles and ramped aisles shall be adequate in strength and attachment in accordance with Section 1607.8. Handrails required for flights of stairways by Section 1011.11 shall comply with Sections 1014.2 through 1014.9. Handrails required for ramps by Section 1012.8 shall comply with Sections 1014.2 through 1014.8. Handrails for stepped aisles and ramped aisles required by Section ~~1029.15-1029.16~~ shall comply with Sections 1014.2 through 1014.8.		Added clarification, no major change to code.
	1014.2 Height. Handrail height, measured above stair tread nosings, or finish surface of ramp slope, shall be uniform, not less than 34 inches (864 mm) and not more than 38 inches (965 mm). Handrail height of alternating tread devices and ships ladders, measured above tread nosings, shall be uniform, not less than 30 inches (762 mm) and not more than 34 inches (864 mm). Exceptions: - Where handrail fittings or bendings are used to provide continuous transition between flights, the fittings or bendings shall be permitted to exceed the maximum height. - In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are associated with a Group R-3 occupancy or associated with individual dwelling units in Group R-2 occupancies; where handrail fittings or bendings are used to provide continuous transition between flights, transition at winder treads, transition from handrail to guard, or where used at the start of a flight, the handrail height at the fittings or bendings shall be permitted to exceed the maximum height. - Handrails on top of a guard where permitted along stepped aisles and ramped aisles in accordance with Section ~~1029.15-1029.16~~.		Base code renumbering.
	1014.3.2 Type II. Handrails with a circular cross section perimeter greater than 6 1/4 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of not less than 5/16 inch (8 mm) within 7/8 inch (22 mm) below the widest portion of the profile. This required depth shall continue for not less than 3/8 inch (10 mm) to a level that is not less than 1 3/4 inches (45 mm) below the tallest portion of the profile. The width of the handrail above the recess shall be not less than 1 1/4 inches (32 mm) to not greater than 2 3/4 inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).		Added clarification, no major change to code.
	1014.4 Continuity. Handrail gripping surfaces shall be continuous, without interruption by newel posts or other obstructions. Exceptions: Handrails within dwelling units are permitted to be interrupted by a newel post at a turn or landing.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. Within a dwelling unit, the use of a volute, turnout, starting easing or startingnewel is allowed over the lowest tread. 3. Handrail brackets or balusters attached to the bottom surface of the handrail that do not project horizontally beyond the sides of the handrail within 1 ½ inches (38 mm) of the bottom of the handrail shall not be considered obstructions. For each ½ inch (12.7 mm) of additional handrail perimeter dimension above 4 inches (102 mm), the vertical clearance dimension of 1 ½ inches (38 mm) shall be permitted to be reduced by 1/8 inch (3.2 mm). 4. Where handrails are provided along walking surfaces with slopes not steeper than 1:20, the bottoms of the handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards. 5. Handrails serving stepped aisles or ramped aisles are permitted to be discontinuous in accordance with Section ~~1029.15.1~~ 1029.16.1.		
	SECTION 1015 GUARDS		
	1015.2 Where required. <i>Guards</i> shall be located along open-sided walking surfaces, including <i>mezzanines</i>, equipment platforms, <i>aisles</i>, <i>stairs</i>, <i>ramps</i> and landings that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. <i>Guards</i> shall be adequate in strength and attachment in accordance with Section 1607.9. Exceptions: <i>Guards</i> are not required for the following locations: 1. On the loading side of loading docks or piers. 2. On the audience side of <i>stages</i> and raised <i>platforms</i>, including <i>stairs</i> leading up to the <i>stage</i> and raised <i>platforms</i>. 3. On raised <i>stage</i> and <i>platform</i> floor areas, such as runways, <i>ramps</i> and side <i>stages</i> used for entertainment or presentations. 4. At vertical openings in the performance area of <i>stages</i> and <i>platforms</i>. 5. At elevated walking surfaces appurtenant to <i>stages</i> and <i>platforms</i> for access to and utilization of special lighting or equipment. 6. Along vehicle service pits not accessible to the public. 7. In assembly seating area at cross <i>aisles</i> in accordance with Section 1030.17.2. 8. On the loading side of station platforms on fixed guideway transit or passenger rail systems.		Updated requirement for guards on loading platforms.
	1015.3 Height. Required guards shall be not less than 42 inches (1067 mm) high, measured vertically as follows: 1. From the adjacent walking surfaces.		Added clarification, new guard requirements for Group F.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. On stairways and stepped aisles, from the line connecting the leading edges of the tread nosings. 3. On ramps and ramped aisles, from the ramp surface at the guard. Exceptions: 1. For occupancies in Group R-3 not more than three stories above grade in height and within individual dwelling units in occupancies in Group R-2 not more than three stories above grade in height with separate means of egress, required guards shall be not less than 36 inches (914 mm) in height measured vertically above the adjacent walking surfaces or ~~adjacent fixed seating~~. 2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads. 3. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the guard ~~also~~ serves as a handrail on the open sides of stairs, the top of the guard shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads. 4. The guard height in assembly seating areas shall comply with Section 1029.17 as applicable. ~~4- 5.~~ 5. Along alternating tread devices and ships ladders, guards where the top rail serves as a handrail shall have height not less than 30 inches (762 mm) and not more than 34 inches (864 mm), measured vertically from the leading edge of the device tread nosing. ~~5- 6.~~ 6. In Group F occupancies where exit access stairways serve fewer than three stories and such stairways are not open to the public, and where the top of the guard also serves as a handrail, the top of the guard shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads		
	1015.4 Opening limitations. Required guards shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter from the walking surface to the required guard height. Exceptions: 1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), guards shall not have openings that allow passage of a sphere 4 3/8 inches (111 mm) in diameter. 2. The triangular openings at the open sides of a stair, formed by the riser, tread and bottom rail shall not allow passage of a sphere 6 inches (152 mm) in diameter.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter. 4. In areas that are not open to the public within occupancies in Group I-3, F, H or S, and for alternating tread devices and ships ladders, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter. 5. In assembly seating areas, guards required at the end of aisles in accordance with Section 1029.16.4 1029.17.4 shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, guards shall not have openings that allow passage of a sphere 8 inches (203 mm) in diameter. 6. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, guards on the open sides of stairs shall not have openings that allow passage of a sphere 4 3/8 (111 mm) inches in diameter.		
	1015.6 Mechanical equipment, systems and devices. Guards shall be provided where various components that require service are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of such components. The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter. Exception: Guards are not required where permanent personal fall arrest/restraint anchorage connector devices that comply with ANSI/ASSE Z 359.1 are installed, affixed for use during the entire roof covering lifetime. The devices shall be reevaluated for possible replacement when the entire roof covering is replaced. The devices shall be placed not more than 10 feet (3048 mm) on center along hip and ridge lines and placed not less than 10 feet (3048 mm) from the roof edge or open side of the walking surface.		Added clarification, no major change to code.
	1015.7 Roof access. <i>Guards</i> shall be provided where the roof hatch opening is located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. <u>The guard shall extend not less than 30 inches (762 mm) beyond each end of the hatch parallel to the roof edge.</u> The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter. Exception: <i>Guards</i> are not required where permanent personal fall arrest/restraint anchorage connector devices that comply with ANSI/ASSE Z 359.1 are installed, affixed for use during the entire roof covering lifetime. The devices shall be reevaluated for possible replacement when the entire roof covering is replaced. The devices shall be placed not more than 10 feet (3048 mm) on center along hip and		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~ridge lines and placed not less than 10 feet (3048 mm) from the roof edge or open side of the walking surface.~~		
	1015.8 Window openings. Windows in Group R-2 and R-3 buildings including <i>dwelling units</i> , where the ~~top of the sill~~ bottom of the clear opening of an operable window opening is located less than 36 inches (914 mm) above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following: 1. Operable windows where the top of the sill of the opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with F2006—17. 2. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opening position. 3. Operable windows where the openings are provided with window fall prevention devices that comply with F2090—17. 4. Operable windows that are provided with window opening control devise that comply with Section 1015.8.1.		Added clarification, no major change to code.
	SECTION 1016 EXIT ACCESS		
	1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section. 1. <i>Exit access</i> through an enclosed elevator lobby is permitted. Where access to two or more exits or exit access doorways is required in Section 1006.2.1, access to not less than one of the required <i>exits</i> shall be provided without travel through the enclosed elevator lobbies required by Section 3006. Where the path of <i>exit access</i> travel passes through an enclosed elevator lobby, the level of protection required for the enclosed elevator lobby is not required to be extended to the <i>exit</i> unless direct access to an <i>exit</i> is required by other sections of this code. 2. Egress from a room or space shall not pass through adjoining or intervening rooms or areas, except where such adjoining rooms or areas and the area served are accessory to one or the other, are not a Group H occupancy and provide a discernible path of egress travel to an exit. Exception: <i>Means of egress</i> are not prohibited through adjoining or intervening rooms or spaces in a Group H, S or F occupancy where the adjoining or intervening rooms or spaces are the same or a lesser hazard occupancy group. 3. An <i>exit access</i> shall not pass through a room that can be locked to prevent egress. 4. <i>Means of egress</i> from <i>dwelling units</i> or sleeping areas shall not lead through other sleeping areas, toilet rooms or bathrooms.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5. Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes. Exceptions: 1. <i>Means of egress</i> are not prohibited through a kitchen area serving adjoining rooms constituting part of the same <i>dwelling unit</i> or <i>sleeping unit</i>. 2. <i>Means of egress</i> are not prohibited through stockrooms in Group M occupancies where all of the following are met: 2.1. The stock is of the same hazard classification as that found in the main retail area. 2.2. Not more than 50 percent of the <i>exit access</i> is through the stockroom. 2.3. The stockroom is not subject to locking from the egress side. 2.4. There is a demarcated, minimum 44-inch-wide (1118 mm) <i>aisle</i> defined by full- or partial-height fixed walls or similar construction that will maintain the required width and lead directly from the retail area to the exit without obstructions.		
	SECTION 1017 EXIT ACCESS TRAVEL DISTANCE		
	1017.2.1 Exterior egress balcony increase. Exit access travel distances specified in Table 1017.2 shall be increased up to an additional 100 feet (30 480 mm) provided that the last portion of the exit access leading to the exit occurs on an exterior egress balcony constructed in accordance with Section 1021. The length of such balcony shall be not less than the amount of the increase taken.		Added clarification, no major change to code.
	1017.2.2 Groups F-1 and S-1 increase.		Added clarification, no major change to code.
	1017.3 Measurement. Exit access travel distance shall be measured from the most remote point within a story of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an <i>exit</i>. Where more than one exit is required, exit access travel distance shall be measured to the nearest exit. Exceptions: 1. In <i>open parking garages</i>, exit access travel distance is permitted to be measured to the closest riser of an <i>exit access stairway</i> or the closest slope of an <i>exit access ramp</i>. 2. In smoke protected seating and open air assembly seating, exit access travel distance shall be measured in accordance with Section 1030.7.		New exit access requirements and exceptions.
	1017.3.2 Atriums. Exit access travel distance for areas open to an <i>atrium</i> shall comply with the requirements of Sections 1017.3.2.1 through 1017.3.2.3.		New exit access atrium requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1017.3.2.1 Egress not through the atrium. Where required access to the exits is not through the <i>atrium</i> , exit access travel distance shall comply with Section 1017.2.		New exit access atrium requirements.
	1017.3.2.2 Exit access travel distance at the level of exit discharge. Where the path of egress travel is through an <i>atrium</i> space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017.2.		New exit access atrium requirements.
	1017.3.2.3 Exit access travel distance at other than the level of exit discharge. Where the path of egress travel is not at the level of exit discharge from the <i>atrium</i> , that portion of the total permitted exit access travel distance that occurs within the <i>atrium</i> shall be not greater than 200 feet (60 960 mm).		New exit access atrium requirements.
	SECTION 1019 EXIT ACCESS STAIRWAYS AND RAMPS		No Houston amendment.
	1019.3 Occupancies other than Groups I-2 and I-3. In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or <i>ramps</i> that do not comply with one of the conditions listed in this section shall be enclosed with a shaft enclosure constructed in accordance with Section 713. Exceptions: 1. Exit access stairways and <i>ramps</i> that serve or atmospherically communicate between only two <i>adjacent</i> stories. Such interconnected stories shall not be open to other stories. 2. In Group R-1, R-2 or R-3 occupancies, exit access stairways and <i>ramps</i> connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit. 3. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed. 4. Exit access stairways and <i>ramps</i> in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or <i>ramp</i> and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories. 5. Exit access stairways and <i>ramps</i> within an <i>atrium</i> complying with the provisions of Section 404. 6. Exit access stairways and <i>ramps</i> in open parking garages that serve only the parking garage. 7. Exit access stairways and <i>ramps</i> serving smoke-protected or open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.		Added clarification, new exception provided for occupied roofs.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	8. ~~Exit access stairways and ramps serving between~~ the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, <i>places of religious worship</i> , auditoriums and sports facilities. 9. Exterior exit access stairways or ramps between occupied roofs.		
	SECTION 1020 CORRIDORS 1020.1 General. Corridors serving as an exit access component in a means of egress system shall comply with the requirements of Sections 1020.2 through 1020.7.		New requirements for corridors serving a means of egress.
	~~1020.1~~ 1020.2 Construction.		Base code renumbering.
	~~Table 1020.1~~ Table 1020.2		Base code renumbering.
	~~1020.1.1~~ 1020.2.1 Hoistway opening protection.		Base code renumbering.
	~~1020.2~~ 1020.3 Width and capacity.		Base code renumbering.
	~~Table 1020.2~~ Table 1020.3		Base code renumbering.
	~~1020.3~~ 1020.4 Obstruction.		Base code renumbering.
	~~1020.4~~ 1020.5 Dead ends. Where more than one <i>exit</i> or <i>exit access doorway</i> is required, the <i>exit access</i> shall be arranged such that ~~there are no dead-end corridors more than do not exceed~~ 20 feet (6096 mm) in length. Exceptions: 1. In ~~occupancies in~~ Group I-3 ~~of~~ , Condition 2, 3 or 4 ~~occupancies~~ , the dead end in a <i>corridor</i> shall not exceed 50 feet (15 240 mm). 2. In occupancies in Groups B, E, F, I-1, M, R-1, R-2, ~~R-4~~ , S and U, where the building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1, the length of the dead-end <i>corridors</i> shall not exceed 50 feet (15 240 mm). 3. A dead-end <i>corridor</i> shall not be limited in length where the length of the dead-end <i>corridor</i> is less than 2.5 times the least width of the dead-end <i>corridor</i> . 4. In Group I-2, Condition 2 occupancies, the length of dead-end corridors that do not serve patient rooms or patient treatment spaces shall not exceed 30 feet (9144 mm).		Base code renumbering, updates to dead end requirements in healthcare facilities.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1020.5~~ 1020.6 Air movement in corridors. <i>Corridors</i> shall not serve as supply, return, exhaust, relief or ventilation air ducts. Exceptions: 1. Use of a <i>corridor</i> as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such <i>corridor</i> is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor. 2. Where located within a <i>dwelling unit</i>, the use of <i>corridors</i> for conveying return air shall not be prohibited. 3. Where located within tenant spaces of 1,000 square feet (93 m²) or less in area, utilization of <i>corridors</i> for conveying return air is permitted. 4. Incidental air movement from pressurized rooms within health care facilities, provided that the corridor is not the primary source of supply or return to the room. Transfer air movement required to maintain the pressurization difference within health care facilities in accordance with ASHRAE 170.		Base code renumbering, new exception provided for healthcare facilities.
	~~1020.5.1~~ 1020.6.1 Corridor ceiling.		Base code renumbering.
	~~1020.6~~ 1020.7 Corridor continuity.		Base code renumbering.
	SECTION 1021 EGRESS BALCONIES		
	1021.3 Openness. The long side of an egress balcony shall be ~~at least not less than~~ 50 percent open, and the open area above the guards shall be so distributed as to minimize the accumulation of smoke or toxic gases.		Added clarification, no major change to code.
	SECTION 1023 INTERIOR EXIT STAIRWAYS AND RAMPS		No Houston amendment.
	1023.2 Construction. Enclosures for interior exit <i>stairways</i> and <i>ramps</i> shall be constructed as <i>fire barriers</i> in accordance with Section 707 or <i>horizontal assemblies</i> constructed in accordance with Section 711, or both. <i>Interior exit stairway</i> and <i>ramp</i> enclosures shall have a <i>fire-resistance rating</i> of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the interior exit <i>stairways</i> or <i>ramps</i> shall include any <i>basements</i>, but not any <i>mezzanines</i>. Enclosures for interior exit stairways and ramps shall have a <i>fire-resistance rating</i> not less than the floor assembly penetrated, but need not exceed 2 hours. Exceptions:		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1. <i>Interior exit stairways</i> and <i>ramps</i> in Group I-3 occupancies in accordance with the provisions of Section 408.3.8. 2. <i>Interior exit stairways</i> within an <i>atrium</i> enclosed in accordance with Section 404.6. 3. Interior exit stairways in accordance with Section 510.2.		
	1023.3.1 Extension. Where interior exit stairways and ramps are extended to an exit discharge or a public way by an exit passageway, the interior exit stairway and ramp shall be separated from the exit passageway by a fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both. The fire-resistance rating shall be not less than that required for the interior exit stairway and ramp. A fire door assembly complying with Section 716.5 shall be installed in the fire barrier to provide a means of egress from the interior exit stairway and ramp to the exit passageway. Openings in the fire barrier other than the fire door assembly are prohibited. Penetrations of the fire barrier are prohibited. Exceptions: 1. Penetrations of the fire barrier in accordance with Section 1023.5 shall be permitted. 2. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where there are no openings into the exit passageway extension. 3. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where the interior exit stairway and the exit passageway extension are pressurized in accordance with Section 909.20.5.		New exception added.
	1023.4 Openings. Interior exit stairway and ramp opening protectives shall be in accordance with the requirements of Section 716. Openings in interior exit stairways and ramps other than unprotected exterior openings shall be limited to those necessary required for exit access to the enclosure from normally occupied spaces and for egress from the enclosure. Elevators shall not open into interior exit stairways and ramps.		Added clarification, no major change to code.
	1023.5 Penetrations. Penetrations into or through interior exit stairways and ramps are prohibited except for the equipment and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication systems and electrical raceway serving the interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m ²). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communication openings, whether protected or not, between adjacent interior exit stairways and ramps following: 1. Equipment and ductwork necessary for independent ventilation or pressurization. 2. Fire protection systems.		New base code requirements for penetrations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Security systems. 4. Two-way communication systems. 5. Electrical raceway for fire department communication systems. 6. Electrical raceway serving the <i>interior exit stairway</i> and <i>ramp</i> and terminating at a steel box not exceeding 16 square inches (0.010 m²). 7. Structural elements supporting the <i>interior exit stairway</i> or <i>ramp</i> or enclosure, such as beams or joists. Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communication openings, whether protected or not, between adjacent interior exit stairways and ramps. Exception: <i>Membrane penetrations</i> shall be permitted on the outside of the <i>interior exit stairway</i> and <i>ramp</i>. Such penetrations shall be protected in accordance with Section ~~714.3.2~~ 714.4.2.		
	~~1023.8 Discharge identification~~ Barrier at level of exit discharge. An <i>interior exit stairway</i> and <i>ramp</i> shall not continue below its <i>level of exit discharge</i> unless an <i>approved</i> barrier is provided at the <i>level of exit discharge</i> to prevent persons from unintentionally continuing into levels below. Directional exit signs shall be provided as specified in Section 1013.		Added clarification, no major change to code.
1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an <i>interior exit stairway</i> and <i>ramp</i> connecting more than three stories designating the floor level, the terminus of the top and bottom of the <i>interior exit stairway</i> and <i>ramp</i>, and the identification of the <i>stairway</i> or <i>ramp</i>. The signage shall also state the store of, and the direction to, the <i>exit discharge</i> and the availability of roof access from the <i>interior exit stairway</i> and <i>ramp</i> for the fire department. The sign shall be located 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. In addition to the <i>stairway</i> identification sign, a floor-level sign in visual characters, raised characters, and braille complying with ICC A117.1 shall be located at each floor-level landing adjacent to the door leading from the <i>interior exit stairway</i> and <i>ramp</i> into the <i>corridor</i> to identify the floor level. See Appendix H of the <i>Fire Code</i> for sign installation requirements. Exception: Building with previously <i>approved</i> signs may retain those signs until the signs are replaced. The replacement signs shall be installed in accordance with Appendix H of the <i>Fire Code</i>.	1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an <i>interior exit stairway</i> and <i>ramp</i> connecting more than three stories designating the floor level, the terminus of the top and bottom of the <i>interior exit stairway</i> and <i>ramp</i> and the identification of the <i>stairway</i> or <i>ramp</i>. The signage shall ~~also~~ state the story of, and the direction to, the <i>exit discharge</i>, and the availability of roof access from the <i>interior exit stairway</i> and <i>ramp</i> for the fire department. The bottom of the sign shall be located not less than 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. ~~In addition to the stairway identification sign, a floor-level sign in visual characters, raised characters and braille complying with ICC A117.1 shall be located at each floor-level landing adjacent to the door leading from the interior exit stairway and ramp into the corridor to identify the floor level.~~	[BE] 1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an <i>interior exit stairway</i> and <i>ramp</i> connecting more than three stories designating the floor level, the terminus of the top and bottom of the <i>interior exit stairway</i> and <i>ramp</i> and the identification of the <i>stairway</i> or <i>ramp</i>. The signage shall state the story of, and the direction to, the <i>exit discharge</i> and the availability of roof access from the <i>interior exit stairway</i> and <i>ramp</i> for the fire department. The bottom of the sign shall be located not less than 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. <u>See Appendix H of this code for sign installation requirements.</u> Exception: Buildings with previously <i>approved</i> signs may retain those signs until the signs are replaced. The replacement signs shall be installed in accordance with Appendix H of this code.	Added clarification, no major change to code. No change to Houston amendment.
1023.9.2 Signs on occupancy side of stairway doors. <u>Approved</u> stairway identification signs having building official and fire code official approval shall be located at each floor level on the occupancy side of all interior vertical exit enclosures, regardless of height of the building. See Appendix H of the <i>Fire Code</i> for installation requirements. Exception: Building with previously <i>approved</i> signs having building code official and fire code official approval may retain those signs until the signs are replaced. The		1023.9.2 Signs on occupancy side of stairway doors. <u>Approved</u> stairway identification signs shall be located at each floor level on the occupancy side of all interior vertical exit enclosures, regardless of height of the building. See Appendix H for installation requirements. Exception: Buildings with previously <i>approved</i> signs may retain those signs until the signs are replaced. The replacement signs shall be installed in accordance with Appendix H.	No change to Houston amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
replacement signs shall be installed in accordance with Appendix H of the <i>Fire Code</i> .			
<u>1023.9.3 Reentry. Where stairway doors may be locked from the stairway side in accordance with this code, provisions for reentry shall be provided. In buildings not provided with an emergency control station or where the control station is not attended at all times while the building is occupied, alternate methods for releasing stairway door locks shall be provided as required by this code and/or the <i>fire code official, whichever is more restrictive.</i></u>			Removed Houston amendment to go with base code requirements.
	1023.11 Tactile floor-level signs. Where floor level signs are provided in <i>interior exit stairways and ramps</i> , a floor-level sign identifying the floor level in visual characters, raised characters and braille complying with ICC A117.1 shall be located at each floor-level landing adjacent to the door leading from the <i>interior exit stairway and ramp into the corridor</i> .		New requirements for floor-level signs.
	~~1023.11~~ 1023.12 Smokeproof enclosures. Where required by Section 403.5.4, 405.7.2 or ~~405.7.2~~ 412.2.2.1 , interior exit stairways and ramps shall be smokeproof enclosures in accordance with Section 909.20.		Base code renumbering.
	~~1023.11.4~~ 1023.12.1 Termination and extension. A smokeproof enclosure shall terminate at an exit discharge or a public way. The smokeproof enclosure shall be permitted to be extended by an exit passageway in accordance with Section 1023.3. The exit passageway shall be without openings other than the fire door assembly required by Section 1023.3.1 and those necessary for egress from the exit passageway. The exit passageway shall be separated from the remainder of the building by 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Exceptions: 1. Openings in the exit passageway serving a smokeproof enclosure are permitted where the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure, and openings are protected as required for access from other floors. 2. The fire barrier separating the smokeproof enclosure from the exit passageway is not required, provided that the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure. 3. A smokeproof enclosure shall be permitted to egress through areas on the level of exit discharge or vestibules as permitted by Section 1028.		Base code renumbering.
	~~1023.11.2~~ 1023.12.2 Enclosure access.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1023.12 1023.13 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.		Base code renumbering. Added clarification, no major change to code.
	SECTION 1024 EXIT PASSAGEWAYS 1024.1 Exit passageways General.		
	1024.2 Width and capacity.		
	1024.6 Penetrations. Penetrations into or through an <i>exit passageway</i> are prohibited except for equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication and electrical raceway serving the <i>exit passageway</i> and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communicating openings, whether protected or not, between adjacent exit passageways the following: 1. Equipment and ductwork necessary for independent ventilation or pressurization. 2. Fire protection systems. 3. Security systems. 4. Two-way communication systems. 5. Electrical raceway for fire department communication. 6. Electrical raceway serving the <i>exit passageway</i> and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communicating openings, whether protected or not, between adjacent exit passageways. Exception: <i>Membrane penetrations</i> shall be permitted on the outside of the <i>exit passageway</i>. Such penetrations shall be protected in accordance with Section ~~744.3.2~~ 714.4.2.		Updated requirements for penetrations.
	1024.8 Exit passageway exterior walls. <i>Exterior walls</i> of the <i>exit passageway</i> shall comply with Section 705. Where nonrated walls or unprotected openings enclose the exterior of he <i>exit passageway</i> and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), the building <i>exterior walls</i> within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening shall have a <i>fire-resistance rating</i> of not less than 1 hour. Openings within such <i>exterior walls</i> shall be protected by opening protectives having a <i>fire protection rating</i> of not less than ¾ hour. This construction shall extend vertically from the ground to a point 10 feet (3048 mm) above the floor of the <i>exit passageway</i> , or to the roof line, whichever is lower.		New requirements for exterior walls in exit passageways.
	1024.8 1024.9 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 1025 LUMINOUS EGRESS PATH MARKINGS 1025.1 General. Approved luminous egress path markings delineating the exit path shall be provided in high-rise buildings of Group A, B, E, I-1, M, ~~and~~ or R-1 occupancies in accordance with ~~this~~ Sections 1025.1 through 1025.5. Exception: Luminous egress path markings shall not be required on the level of exit discharge in lobbies that serve as part of the exit path in accordance with Section 1028.1, Exception 1.		Added clarification, no major change to code.
	1025.2.5 Obstacles. Obstacles at or below 6 feet 6 inches (1981 mm) in height and projecting more than 4 inches (102 mm) into the egress path shall be outlined with markings not less than 1 inch (25 mm) in width comprised of a pattern of alternating equal bands, of luminous material and black, with the alternating bands not more than 2 inches (51 mm) thick and angled at 45 degrees (0.79 rad). Obstacles shall include, but are not limited to, standpipes, hose cabinets, wall projections and restricted height areas. However, such markings shall not conceal any required information or indicators including but not limited to instructions to occupants for the use of standpipes. Exception: The minimum width of 1 inch (25 mm) shall not apply to markings listed in accordance with UL 1994.		New exception included.
	1025.2.6.2 Door hardware markings. Door hardware shall be marked with not less than 16 square inches (406 mm ²) of luminous material. This marking shall be located behind, immediately adjacent to, or on the door handle or escutcheon. Where a panic bar is installed, such material shall ~~not~~ be ~~not~~ less than 1 inch (25 mm) wide for the entire length of the actuating bar or touchpad.		Added clarification, no major change to code.
	SECTION 1026 HORIZONTAL EXITS 1026.1 ~~Exterior exit stairways and ramps~~ General.		Added clarification, no major change to code.
	1026.2 Separation. The separation between buildings or refuge areas connected by a horizontal exit shall be provided by a fire wall complying with Section 706; or by a fire barrier complying with Section 707 or a horizontal assembly complying with Section 711, or both. The minimum fire-resistance rating of the separation shall be 2 hours. Opening protectives in horizontal exits shall also comply with Section 716. Duct and air transfer openings in a fire wall or fire barrier that serves as a horizontal exit shall also comply with Section 717. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire-resistance rating of not less than 2 hours ~~with and do not have~~ unprotected openings. Exception: A fire-resistance rating is not required at horizontal exits between a building area and an above-grade pedestrian walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096 mm).		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	Horizontal exits constructed as fire barriers shall be continuous from exterior wall to exterior wall so as to divide completely the floor served by the horizontal exit.		
	1026.3 Opening protectives. Fire doors in horizontal exits shall be self-closing or automatic-closing when activated by a smoke detector in accordance with Section ~~716.5.9.3~~ 716.2.6.6 . Doors, where located in a cross-corridor condition, shall be automatic-closing by activation of a smoke detector installed in accordance with Section ~~716.5.9.3~~ 716.2.6.6 .		Base code renumbering.
	1026.4 Refuge area. The refuge area of a horizontal exit shall be a space occupied by the same tenant or a public area and each such refuge area shall be adequate to accommodate the original occupant load of the refuge area plus the occupant load anticipated from the adjoining compartment. The anticipated occupant load from the adjoining compartment shall be based on the capacity of the horizontal exit doors entering the refuge area or the total occupant load of the adjoining compartment, whichever is less.		Added clarification, no major change to code.
	1026.4.1 Capacity. The capacity of the refuge area shall be computed based on a net floor area allowance of 3 square feet (0.2787 m ²) for each occupant to be accommodated therein. ~~1. Six square feet (0.6 m²) per occupant for occupancies in Group I-3.~~ ~~2. Fifteen square feet (1.4 m²) per occupant for ambulatory occupancies in Group I-2.~~ ~~3. Thirty square feet (2.8 m²) per occupant for nonambulatory occupancies in Group I-2.~~		Updates to refuge area capacity requirements.
	1026.4.2 Number of exits. The refuge area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant load imposed by persons entering the refuge area through horizontal exits from other areas. Not less than one refuge area exit shall lead directly to the exterior or to an interior exit stairway or ramp. Exception: The adjoining compartment shall not be required to have a stairway or door leading directly outside, provided that the refuge area into which a horizontal exit leads has stairways or doors leading directly outside and are so arranged that egress shall not require the occupants to return through the compartment from which egress originates.		Added clarification, no major change to code.
	1026.5 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.		Added clarification, no major change to code.
	SECTION 1027 EXTERIOR EXIT STAIRWAYS AND RAMPS 1027.1 Exterior exit stairways and ramps General. Exterior exit stairways and ramps serving as an element of exit component in a required means of egress system shall comply with the requirements of this section.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1027.5 Location. Exterior exit stairways and ramps shall have a minimum fire separation distance of 10 feet (3048 mm) measured at right angles from the exterior edge of the stairway or ramps, including landings, to: 1. Adjacent lot lines. 2. Other portions of the building. 3. Other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 based on fire separation distance. For the purposes of this section, other portions of the building shall be treated as separate buildings. Exception: Exterior exit stairways and ramps serving individual dwelling units of Group R-3 shall have a minimum fire separation distance of 5 feet (1525 mm).		New exception for Group R-3 exterior exit stairways.
	1027.6 Exterior exit stairway and ramp protection. Exterior exit stairways and ramps shall be separated from the interior of the building as required in Section 1023.2. Openings shall be limited to those necessary for egress from normally occupied spaces. Where a vertical plane projecting from the edge of an exterior exit stairway or ramp and landings is exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), the exterior wall shall be rated in accordance with Section 1023.7. Exceptions: 1. Separation from the interior of the building is not required for occupancies, other than those in Group R-1 or R-2, in buildings that are not more than two stories above grade plane where a level of exit discharge serving such occupancies is the first story above grade plane. 2. Separation from the interior of the building is not required where the exterior exit stairway or ramp is served by an exterior exit ramp or balcony that connects two remote exterior exit stairways or other approved exits with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be not less than 50 percent of the height of the enclosing wall, with the top of the openings not less than 7 feet (2134 mm) above the top of the balcony. 3. Separation from the open-ended corridor of the building is not required for exterior exit stairways or ramps, provided that Items 3.1 through 3.5 are met: 3.1. The building, including open-ended corridors, and stairways and ramps, shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. 3.2. The open-ended corridors comply with Section 1020. 3.3. The open-ended corridors are connected on each end to an exterior exit stairway or ramp complying with Section 1027.		New exception for Group R-3 exterior exit stairways.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3.4. The exterior walls and openings adjacent to the exterior exit stairway or ramp comply with Section 1023.7. 3.5. At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3.3 m²) or an exterior stairway or ramp shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases. 4. In Group R-3 occupancies not more than four stories in height, exterior exit stairways and ramps serving individual dwelling units are not required to be separated from the interior of the building where the exterior exit stairway or ramp discharges directly to grade.		
	SECTION 1028 EXIT DISCHARGE 1028.1 General. The exit discharge shall comply with Section 1028 and 1029 and the applicable requirements of Sections 1003 through 1015.		Updates to base code exit discharge requirements.
	~~1028.1~~ 1028.2 General Exit discharge. Exits shall discharge directly to the exterior of the building. The <i>exit discharge</i> shall be at grade or shall provide a direct path of egress travel to grade. The <i>exit discharge</i> shall not reenter a building. The combined use of Exceptions 1 and 2 shall not exceed 50 percent of the number and minimum width or required capacity of the required <i>exits</i>. Exceptions: 1. Not more than 50 percent of the number and minimum width or required capacity of <i>interior exit stairways</i> and <i>ramps</i> is permitted to egress through area including atriums on the level of discharge provided that all of the following conditions are met: 1.1. Discharge of <i>interior exit stairways</i> and <i>ramps</i> shall be provided with a free unobstructed path of travel to an exterior <i>exit</i> door and such <i>exit</i> is readily visible and identifiable from the point of termination of the enclosure. 1.2. The entire area of the <i>level of exit discharge</i> is separated from areas below by construction conforming to the <i>fire-resistance rating</i> for the enclosure. 1.3. The egress path from the <i>interior exit stairway</i> and <i>ramp</i> on the <i>level of exit discharge</i> is protected throughout by an <i>approved automatic sprinkler system</i>. Portions of the <i>level of exit discharge</i> with access to the egress path shall be either equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1., or separated from the egress path in accordance with the requirements for the enclosure of <i>interior exit stairways</i> or <i>ramps</i>.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1.4. Where a required <i>interior exit stairway</i> or <i>ramp</i> and an <i>exit access stairway</i> or <i>ramp</i> serve the same floor level and terminate at the same <i>level of exit discharge</i>, the termination of the <i>exit access stairway</i> or <i>ramp</i> and the <i>exit discharge</i> door of the <i>interior exit stairway</i> or <i>ramp</i> shall be separated by a distance of not less than 30 feet (9144 mm) or not less than one-fourth the length of the maximum overall diagonal dimension of the building, whichever is less. The distance shall be measured in a straight line between the <i>exit discharge</i> door from the <i>interior exit stairway</i> or <i>ramp</i> and the last tread of the <i>exit access stairway</i> or termination of slope of the <i>exit access ramp</i>. 2. Not more than 50 percent of the number and minimum width or required capacity of the <i>interior exit stairways</i> and <i>ramps</i> is permitted to egress through a vestibule provided that all of the following are met: 2.1. The entire area of the vestibule is separated from areas below by construction conforming to the <i>fire-resistance rating</i> of the <i>interior exit stairway</i> or <i>ramp enclosure</i>. 2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm). 2.3. The area is separated from the remainder of the <i>level of exit discharge</i> by a <i>fire partition</i> constructed in accordance with Section 708. Exception: The maximum transmitted temperature rise is not required. 2.4. The area is used only for <i>means of egress</i> and <i>exits</i> directly to the outside. 3. <i>Horizontal exits</i> complying with Section 1026 shall not be required to discharge directly to the exterior of the building.		
	4028.2 1028.3 Exit discharge width or capacity.		Base code renumbering.
	4028.3 1028.4 Exit discharge components.		Base code renumbering.
	1028.4.1 Width or capacity. The required capacity of egress courts shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm), except as specified herein. Egress courts serving Group R-3 and U occupancies shall be not less than 36 inches (914 mm) in width. The required capacity and width of egress courts shall be unobstructed to a height of 7 feet (2134 mm). The width of the egress court shall be not less than the required capacity.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Exception: Encroachments complying with Section 1005.7. ~~Where an egress court exceeds the minimum required width and the width of such egress court is then reduced along the path of exit travel, the reduction in width shall be gradual. The transition in width shall be affected by a guard not less than 36 inches (914 mm) in height and shall not create an angle of more than 30 degrees (0.52 rad) with respect to the axis of the egress court along the path of egress travel. The width of the egress court shall not be less than the required capacity.~~		
	SECTION 1029 EGRESS COURTS ~~1028.4~~ 1029.1 Egress courts General. <u>Egress courts serving as a portion of the an exit discharge component in the means of egress system shall comply with the requirements of Sections 1028.4.1 and 1028.4.2 of this section.</u>		New egress court requirements.
	~~1028.4.1~~ 1029.2 Width or capacity. <u>The required capacity of egress courts shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm), except as specified herein. Egress courts serving Group R-3 and U occupancies shall be not less than 36 inches (914 mm) in width. The required capacity and width of egress courts shall be unobstructed to a height of 7 feet (2134 mm). The width of the egress court shall be not less than the required capacity.</u> Exception: <u>Encroachments complying with Section 1005.7.</u>		New egress court requirements.
	~~1028.4.2~~ 1029.3 Construction and openings. <u>Where an egress court serving a building or portion thereof is less than 10 feet (3048 mm) in width, the egress court walls shall have not less than 1-hour fire-resistance-rated construction for a distance of 10 feet (3048 mm) above the floor of the egress court. Openings within such walls shall be protected by opening protectives having a fire protection rating of not less than ¾ hour.</u> Exceptions: <u>1. Egress courts serving an occupant load of less than 10.</u> <u>2. Egress courts serving Group R-3.</u>		New egress court requirements.
[BE] 1029.9.6.1 Assembly aisle obstructions. There shall not be obstructions in the minimum width or required capacity of <i>aisles</i>. <u>Where required by the fire code official, approved methods of identification and maintenance of aisles shall be provided to prohibit their obstruction.</u> Exception: <i>Handrails</i> are permitted to project into the required width of stepped <i>aisles</i> and ramped <i>aisles</i> in accordance with Section 1014.8.			Previous Houston amendment relocated to Section 1030.9.6.1.
	~~1029.1~~ 1030.1 General.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~4029.1.4~~ 1030.1.1 Bleachers.		Base code renumbering.
	~~4029.1.1.4~~ 1030.1.1.1 Spaces under grandstands and bleachers. Where Spaces under grandstands or bleachers are used for purposes other than ticket booths less than 100 square feet (9.29 m²) and toilet rooms, such spaces shall be separated by fire barriers complying with Section 707 and horizontal assemblies complying with Section 711 with not less than 1-hour fire-resistance-rated construction. Exceptions: 1. Ticket booths less than 100 square feet (9.29 m2) in area. 2. Toilet rooms. 3. Other accessory use areas 1,000 square feet (92.9 m²) or less in area and equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.		Base code renumbering, new exceptions provided.
	~~4029.2~~ 1030.2 Assembly main exit.		Base code renumbering.
	~~4029.3~~ 1030.3 Assembly other exits.		Base code renumbering.
	~~4029.4~~ 1030.4 Foyers and lobbies. In Group A-1 occupancies, where persons are admitted to the building at times when seats are not available, such persons shall be allowed to wait in a lobby or similar space, provided that such lobby or similar space shall not encroach upon the minimum width or required capacity of the means of egress. Such foyer, if not directly connected to a public street by all the main entrances or exits, shall have a straight and unobstructed corridor or path of travel to every such main entrance or exit.		Base code renumbering. Added clarification, no major change to code.
	~~4029.5~~ 1030.5 Interior balcony and gallery means of egress.		Base code renumbering.
	~~4029.6~~ 1030.6 Capacity of aisle for assembly. The required capacity of aisles shall be not less than that determined in accordance with Section 1029.6.1 where smoke-protected assembly seating is not provided, Section 1029.6.2 where smoke-protected assembly seating is provided and with Section 1029.6.2 or 1029.6.3 where smoke-protected open-air assembly seating is provided.		Base code renumbering. Added clarification, no major change to code.
	~~4029.6.4~~ 1030.6.1 Without smoke protection. The required capacity in inches (mm) of the aisles for assembly seating without smoke protection shall be not less than the occupant load served by the egress element in accordance with all of the following, as applicable: 1. Not less than 0.3 inch (7.6 mm) of aisle capacity for each occupant served shall be provided on stepped aisles having		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	riser heights 7 inches (178 mm) or less and tread depths 11 inches (279 mm) or greater, measured horizontally between tread nosings. 2. Not less than 0.005 inch (0.127 mm) of additional aisle capacity for each occupant shall be provided for each 0.10 inch (2.5 mm) of riser height above 7 inches (178 mm). 3. Where egress requires stepped aisle descent, not less than 0.075 inch (1.9 mm) of additional aisle capacity for each occupant shall be provided on those portions of aisle capacity ~~that do not have a~~ having no handrail within a horizontal distance of 30 inches (762 mm). 4. Ramped aisles, where slopes are steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have not less than 0.22 inch (5.6 mm) of clear aisle capacity for each occupant served. Level or ramped aisles, where slopes are not steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have not less than 0.20 inch (5.1 mm) of clear aisle capacity for each occupant served.		
	~~1029.6.2~~ 1030.6.2 Smoke-protected assembly seating. The required capacity in inches (mm) of the aisle for smoke-protected assembly seating shall be not less than the occupant load served by the egress element multiplied by the appropriate factor in Table 1030.6.2. The total number of seats specified shall be those within the space exposed to the same smoke-protected environment. Interpolation is permitted between the specific values shown. A life safety evaluation, complying with NFPA 101, shall be done for a facility utilizing the reduced width requirements of Table 1030.6.2 for smoke-protected assembly seating. ~~Exception: For outdoor smoke-protected open air assembly seating with an occupant load not greater than 18,000, the required capacity in inches (mm) shall be determined using the factors in Section 1030.6.3.~~		Base code renumbering. Added clarification, no major change to code.
	~~TABLE 1029.6.2~~ TABLE 1030.6.2		Base code renumbering.
	~~1029.6.2.1~~ 1030.6.2.1 Smoke control.		Base code renumbering.
	~~1029.6.2.2~~ 1030.6.2.2 Roof height.		Base code renumbering.
	~~1029.6.2.3~~ 1030.6.2.3 Automatic sprinklers. Enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Exceptions: 1. The floor area used for contests, performances or entertainment provided that the roof construction is more than 50 feet (15		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	240 mm) above the floor level and the use is restricted to low fire hazard uses. 2. Press boxes and storage facilities less than 1,000 square feet (93 m2) in area. 3. ~~Outdoor seating facilities where seating and the means of egress in the seating area are essentially open to the outside.~~		
	~~1029.6.3~~ 1030.6.3 Outdoor smoke-protected Open-air assembly seating. ~~In open-air assembly seating,~~ the required capacity in inches (mm) of aisles shall be not less than the total occupant load served by the egress element multiplied by 0.08 (2.0 mm) where egress is by stepped aisle and multiplied by 0.06 (1.52 mm) where egress is by level aisles and ramped aisles. Exception: The required capacity in inches (mm) of aisles shall be permitted to comply with Section 1029.6.2 for the number of seats in the ~~outdoor open-air~~ assembly seating where Section 1029.6.2 permits less capacity.		Base code renumbering. Added clarification, no major change to code.
	1030.6.3.1 Automatic sprinklers. <u>Enclosed areas with walls and ceilings in buildings or structures containing open-air assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 903.3.1.1.</u> Exceptions: 1. <u>The floor area used for contests, performances or entertainment, provided that the roof construction is more than 50 feet (15 240 mm) above the floor level and the use is restricted to low fire hazard uses.</u> 2. <u>Press boxes and storage facilities less than 1,000 square feet (93 m²) in area.</u> 3. <u>Open-air assembly seating facilities where seating and the means of egress in the seating area are essentially open to the outside.</u>		New enclosed area requirements.
	~~1029.7~~ 1030.7 Travel distance. ~~Exits and aisles shall be so located that the travel distance to an exit door shall be not greater than 200 feet (60 960 mm) measured along the line of travel in nonsprinklered buildings. Travel distance shall be not more than 250 feet (76 200 mm) in sprinklered buildings. Where aisles are provided for seating, the distance shall be measured along the aisles and aisle accessways without travel over or on the seats. The exit access travel distance shall comply with Section 1017. Where aisles are provided for seating, the distance shall be measured along the aisles and aisle accessways without travel over or on the seats. Where aisles are provided for seating, the distance shall be measured along the aisles and aisle accessways without travel over or on the seats.~~ Exceptions: 1. ~~Smoke-protected assembly seating: The travel distance from each seat to the nearest entrance to a vomitory or concourse shall not exceed 200 feet (60 960 mm). The travel distance from the entrance to the vomitory or concourse to a stairway, ramp or walk on the exterior of the building shall not exceed 200 feet (60 960~~		Base code renumbering. Updates to travel distance requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	mm). In facilities with smoke-protected assembly seating, the total exit access travel distance shall be not greater than 400 feet (122 m). That portion of the total permitted exit access travel distance from each seat to the nearest entrance to a vomitory or concourse shall not exceed 200 feet (60 960 mm). The portion of the total permitted exit access travel distance from the entrance to the vomitory or concourse to one of the following shall not exceed 200 feet (60 960 mm): 1.1. The closest riser of an exit access stairway. 1.2. The closest slope of an exit access ramp. 1.3. An exit. 2. ~~Open-air seating: The travel distance from each seat to the building exterior shall not exceed 400 feet (122 m). The travel distance shall not be limited in facilities of Type I or II construction.~~ In facilities with open-air assembly seating of Type III, IV or V construction, the total exit access travel distance to one of the following shall not exceed 400 feet (122 m): 2.2. The closest slope of an exit access ramp. 2.3. An exit. 3. In facilities with open-air assembly seating of Type I or II construction, the total exit access travel distance shall not be limited.		
	~~1029.8~~ 1030.8 Common path of egress travel. The common path of egress travel shall not exceed 30 feet (9144 mm) from any seat to a point where an occupant has a choice of two paths of egress travel to two exits. Exceptions: 1. For areas serving less than 50 occupants, the common path of egress travel shall not exceed 75 feet (22 860 mm). 2. For smoke-protected or open-air assembly seating, the common path of egress travel shall not exceed 50 feet (15 240 mm).		Base code renumbering. Added clarification, no major change to code.
	~~1029.8.4~~ 1030.8.1 Path through adjacent row. Where one of the two paths of travel is across the aisle through a row of seats to another aisle, there shall be not more than 24 seats between the two aisles, and the minimum clear width between rows for the row between the two aisles shall be 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row between aisles. Exception: For smoke-protected or open-air assembly seating there shall be not more than 40 seats between the two aisles and the minimum clear width shall be 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat.		Base code renumbering. Added clarification, no major change to code.
	~~1029.9~~ 1030.9 Assembly aisles are required.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1029.9.1~~ 1030.9.1 Minimum aisle width. The minimum clear width for aisles shall comply with one of the following: - Forty-eight inches (1219 mm) for stepped aisles having seating on ~~each side~~ both sides. Exception: Thirty-six inches (914 mm) where the stepped aisles serve less than 50 seats. - Thirty-six inches (914 mm) for stepped aisles having seating on only one side. Exception: Twenty-three inches (584 mm) between a stepped aisle handrail and seating where a stepped aisle does not serve more than five rows on one side. - Twenty-three inches (584 mm) between a stepped aisle handrail or guard and seating where the stepped aisle is subdivided by a mid-aisle handrail. - Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides. Exceptions: - Thirty-six inches (914 mm) where the aisle serves less than 50 seats. - Thirty inches (762 mm) where the aisle ~~does not serve more than 14 seats~~ serves less than 15 seats and does not serve as part of an accessible route. - Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side. Exception: ~~For other than ramped aisles that serve as part of an accessible route, 30 inches (762 mm) where the ramped aisle does not serve more than 14 seats~~ Thirty inches (762 mm) where the aisle serves fewer than 15 seats and does not serve as part of an accessible route.		Base code renumbering. Added clarification, no major change to code.
	~~1029.9.2~~ 1030.9.2 Aisle catchment area.		Base code renumbering.
	~~1029.9.3~~ 1030.9.3 Converging aisles.		Base code renumbering.
	~~1029.9.4~~ 1030.9.4 Uniform width and capacity.		Base code renumbering.
	~~1029.9.5~~ 1030.9.5 Dead-end aisles. Each end of an aisle shall be continuous to a cross aisle, foyer, doorway, vomitory, concourse or stairway in accordance with Section 1029.9.7 having access to an exit. Exceptions: - Dead-end aisles shall be not greater than 20 feet (6096 mm) in length. - Dead-end aisles longer than 16 rows are permitted where seats beyond the 16th row dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	minimum clear width of 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row where seats have backrests or beyond 10 where seats are without backrests in the row. 3. For smoke-protected or open-air assembly seating, the dead-end aisle length of vertical aisles shall not exceed a distance of 21 rows. 4. For smoke-protected or open-air assembly seating, a longer dead-end aisle is permitted where seats beyond the 21-row dead-end aisle are not more than 40 seats from another aisle, measured along a row of seats having an aisle accessway with a minimum clear width of 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat above seven in the row where seats have backrests or beyond 10 where seats are without backrests in the row.		
	~~1029.9.6~~ 1030.9.6 Aisle measurement. The clear width for aisles shall be measured to walls, edges of seating and tread edges except for permitted projections. Exception: The clear width of aisles adjacent to seating at tables shall be permitted to be measured in accordance with Section ~~1029.4.2.4~~ 1029.123.1.		Base code renumbering. Added clarification, no major change to code.
	~~1029.9.6.1~~ 1030.9.6.1 Assembly aisle obstructions.	[BE] 1030.9.6.1 Assembly aisle obstructions. There shall not be obstructions in the minimum width or required capacity of <i>aisles</i>. <u>Where required by the fire code official, approved methods of identification and maintenance of aisles shall be provided to prohibit their obstruction.</u> Exception: <i>Handrails</i> are permitted to project into the required width of stepped <i>aisles</i> and ramped <i>aisles</i> in accordance with Section 1014.8.	Base code renumbering. No change to Houston amendment, relocated from Section 1029.9.6.1.
	~~1029.9.7~~ 1030.9.7 Stairways connecting to stepped aisles. A stairway that connects a stepped aisle to a cross aisle or concourse shall be permitted to comply with the assembly aisle walking surface requirements of Section ~~1029.13~~ 1029.14. Transitions between stairways and stepped aisles shall comply with Section 1029.10.		Base code renumbering.
	~~1029.9.8~~ 1030.9.8 Stairways connecting to vomitories. A stairway that connects a stepped aisle to a cross aisle or concourse shall be permitted to comply with the assembly aisle walking surface requirements of Section ~~1029.13~~ 1029.14. Transitions between stairways and stepped aisles shall comply with Section 1029.10.		Base code renumbering.
	~~1029.10~~ 1030.10 Transitions.		Base code renumbering.
	~~1029.10.4~~ 1030.10.1 Transitions and to stairways that maintain stepped aisle riser and tread dimensions. Stepped aisles, transitions and stairways that maintain the stepped aisle riser and tread dimensions shall comply with Section ~~1029.13~~ 1029.14 as one exit access component.		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1029.10.2~~ 1030.10.2 Transitions to stairways that do not maintain stepped aisle riser and tread dimensions. Transitions ~~to between~~ stairways ~~from and~~ stepped aisles ~~with having different~~ riser and tread dimensions that differ from the stairways shall comply with Sections 1029.10.2.1 through 1029.10.3.		Base code renumbering. Added clarification, no major change to code.
	~~1029.10.2.4~~ 1030.10.2.1 Stairways and stepped aisles in a straight run. ~~Transitions where the stairway is a straight run from the stepped aisle shall have a minimum depth of 22 inches (559 mm) where the treads on the descending side of the transition have greater depth and 30 inches (762 mm) where the treads on the descending side of the transition have lesser depth. Where stairways and stepped aisles are in a straight run, transitions shall have one of the following:~~ 1. A depth of not less than 22 inches (559 mm) where the treads on the descending side of the transition have greater depth. 2. A depth of not less than 30 inches (762 mm) where the treads on the descending side of the transition have lesser depth.		Base code renumbering. New requirements for stepped aisles and stairways.
	~~1029.10.2.2~~ 1030.10.2.2 Stairways and stepped aisles that change direction from stepped aisles.		Base code renumbering. Added clarification, no major change to code.
	~~1029.10.3~~ 1030.10.3 Transition marking.		Base code renumbering.
	~~1029.11~~ 1030.11 Stepped aisles at vomitories. Stepped aisles that change direction at vomitories shall comply with Section 1029.11.1 Transitions between a stepped aisle above a vomitory and a stepped aisle to the side of a vomitory shall comply with Section 1029.11.2.		Base code renumbering. New stepped aisle requirements.
	~~1029.11.4~~ 1030.11.1 Stepped aisles that change direction at vomitories. Stepped aisle treads where the stepped aisle changes direction at a vomitory shall have a depth of not less than 11 inches (280 mm) or the stepped aisle tread depth, whichever is greater. The height of a stepped aisle tread above a transition at a vomitory shall comply with Section 1029.14.2.2.		Base code renumbering. New stepped aisle requirements.
	~~1029.11.2~~ 1030.11.2 Stepped aisle transitions at the top of vomitories. Transitions between the stepped aisle above a vomitory and stepped aisles to the side of a vomitory shall have a depth of not less than 11 inches (280 mm) or the stepped aisle tread depth, whichever is greater.		Base code renumbering. New stepped aisle requirements.
	~~1029.12~~ 1030.12 Construction.		Base code renumbering.
	~~1029.12.4~~ 1030.12.1 Walking surface.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~4029.12.2~~ 1030.12.2 Outdoor conditions.		Base code renumbering.
	~~4029.13~~ 1030.13 Aisle accessways.		Base code renumbering.
	~~4029.13.1~~ 1030.13.1 Seating at tables.		Base code renumbering.
	~~4029.13.1.1~~ 1030.13.1.1 Aisle accessway capacity and width for seating at tables.		Base code renumbering.
	~~4029.13.1.2~~ 1030.13.1.2 Seating at table aisle accessway length.		Base code renumbering.
	~~4029.13.2~~ 1030.13.2 Clear width of aisle accessways serving seating in rows.		Base code renumbering.
	~~4029.13.2.1~~ 1030.13.2.1 Dual access. For rows of seating served by aisles or doorways at both ends, there shall be not more than 100 seats per row. The minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond 14 seats where seats have backrests or beyond 21 where seats are without backrests. The minimum clear width is not required to exceed 22 inches (559 mm). Exception: For smoke-protected ~~or open-air~~ assembly seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased, are in Table 1030.13.2.1.		Base code renumbering. Added clarification, no major change to code.
	~~4029.13.2.2~~ 1030.13.2.2 Single access. For rows of seating served by an aisle or doorway at only one end of the row, the minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.6 inch (15.2 mm) for every additional seat beyond seven seats where seats have backrests or beyond 10 where seats are without backrests. The minimum clear width is not required to exceed 22 inches (559 mm). Exception: For smoke-protected ~~or open-air~~ assembly seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased, are in Table 1030.13.2.1.		Base code renumbering. Added clarification, no major change to code.
	~~4029.14~~ 1030.14 Assembly aisle walking surfaces.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~4029.14.1~~ 1030.14.1 Ramped aisles.		Base code renumbering.
	TABLE 1030.13.2.1 SMOKE-PROTECTED OR OPEN-AIR ASSEMBLY AISLE ACCESSWAYS		Base code renumbering.
	~~4029.14.1~~ 1030.14.1 Ramped aisles.		Base code renumbering.
	~~4029.14.1.2~~ 1030.14.1.2 Landings.		Base code renumbering.
	~~4029.14.1.3~~ 1030.14.1.3 Edge protection.		Base code renumbering.
	~~4029.14.2~~ 1030.14.2 Stepped aisles.		Base code renumbering.
	~~4029.14.2.1~~ 1030.14.2.1 Treads.		Base code renumbering.
	~~4029.14.2.2~~ 1030.14.2.2 Risers.		Base code renumbering.
	~~4029.14.2.2.1~~ 1030.14.2.2.1 Construction tolerances.		Base code renumbering.
	~~4029.14.2.3~~ 1030.14.2.3 Tread contrasting marking stripe.		Base code renumbering.
	~~4029.14.2.4~~ 1030.14.2.4 Nosing and profile.		Base code renumbering.
	~~4029.15~~ 1030.15 Seat stability.		Base code renumbering.
	~~4029.16~~ 1030.16 Handrails. Ramped <i>aisles</i> having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and stepped <i>aisles</i> shall be provided with <i>handrails</i> in compliance with Section 1014 located either at one or both sides of the <i>aisle</i> or within the <i>aisle</i> width. <u>Where stepped <i>aisles</i> have seating on one side and the <i>aisle</i> width is 74 inches (1880 mm) or greater, two <i>handrails</i> are required. Where two <i>handrails</i> are required, one of the <i>handrails</i> shall be within 30 inches (762 mm) horizontally of the stepped <i>aisle</i>.</u> Exceptions:		Base code renumbering. New stepped aisle handrail requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1. <i>Handrails</i> are not required for ramped <i>aisles</i> with seating on both sides. 2. <i>Handrails</i> are not required where, at the side of the <i>aisle</i> , there is a <i>guard</i> with a top surface that complies with the graspability requirements of <i>handrails</i> in accordance with Section 1014.3. 3. <i>Handrail</i> extensions are not required at the top and bottom of stepped <i>aisles</i> and ramped <i>aisles</i> to permit crossovers within the <i>aisles</i> .		
	~~1029.16.1~~ 1030.16.1 Discontinuous mid-aisle handrails. Where there is seating on both sides of the <i>aisle</i> , the mid-aisle <i>handrails</i> shall be discontinuous. Where a stepped aisle is required to have two handrails, the mid-aisle handrails shall be discontinuous. Gaps or breaks shall be provided at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the <i>aisle</i> to the other. These gaps or breaks shall have a clear width of not less than 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the mid-aisle <i>handrail</i> shall have rounded terminations or bends.		Base code renumbering. Added clarification, no major change to code.
	~~1029.16.2~~ 1030.16.2 Handrail termination.		Base code renumbering.
	~~1029.16.3~~ 1030.16.3 Mid-aisle termination.		Base code renumbering.
	~~1029.16.4~~ 1030.16.4 Rails.		Base code renumbering.
	~~1029.17~~ 1030.17 Assembly guards.		Base code renumbering.
	~~1029.17.1~~ 1030.17.1 Perimeter guards.		Base code renumbering.
	~~1029.17.2~~ 1030.17.2 Cross aisles.		Base code renumbering.
	~~1029.17.3~~ 1030.17.3 Sightline-constrained guard heights.		Base code renumbering.
	~~1029.17.4~~ 1030.17.4 Guards at the end of aisles. A fascia or railing system complying with the guard requirements of Section 1015 shall be provided for the full width of the aisle where the foot of the aisle is more than 30 inches (762 mm) above the floor or grade below. The fascia or railing shall be a minimum of not less than 36 inches (914 mm) high and shall provide a minimum of not less 42 inches (1067 mm)		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	measured diagonally between the top of the rail and the nosing of the nearest tread.		
	SECTION 1030 ASSMEBLY		Base code renumbering.
	1030.1 General. In addition to the means of egress required by this chapter ~~provisions shall be made for emergency escape and rescue openings in Group R-2 occupancies in accordance with Tables 1006.3.2(1) and 1006.3.2(2) and Group R-3 occupancies. Basements and sleeping rooms below the fourth story above grade plane shall have at least one exterior emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, emergency escape and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a public way or to a yard or court that opens to a public way, emergency escape and rescue openings shall be provided in the following occupancies:~~ Exceptions: 1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings. 2. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior exit balcony that opens to a public way. 3. Basements without habitable spaces and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have emergency escape and rescue openings. 4. Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following: 4.1. One means of egress and one emergency escape and rescue opening. 4.2. Two means of egress.		Updates to emergency escape and rescue opening requirements.
	~~1030.1~~ 1031.2 General Where required. In addition to the <i>means of egress</i> required by this chapter, <i>emergency escape and rescue openings</i> shall be provided in the following occupancies: 1. Group R-2 occupancies located in stories with only one <i>exit</i> or <i>access</i> to only one <i>exit</i> as permitted by Tables 1006.3.4(1) and 1006.3.4(2).		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2. Group R-3 and R-4 occupancies. <i>Basements</i> and sleeping rooms below the fourth <i>story above grade plane</i> shall have not fewer than one exterior emergency escape and rescue opening in accordance with this section. Where <i>basements</i> contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room, but shall not be required in adjoining areas of the <i>basement</i>. Such openings shall open directly into a <i>public way</i> or to a <i>yard</i> or <i>court</i> that opens to a <i>public way</i>. Exceptions: 1. <i>Basements</i> with a ceiling height of less than 80 inches (2032 mm) shall not be required to have <i>emergency escape and rescue openings</i>. 2. <i>Emergency escape and rescue openings</i> are not required from <i>basements</i> or sleeping rooms that have an <i>exit door</i> or <i>exit access door</i> that opens directly into a <i>public way</i> or to a <i>yard</i>, <i>court</i> or exterior ~~exit~~ egress balcony that opens to a <i>public way</i>. 3. <i>Basements</i> without <i>habitable spaces</i> and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have <i>emergency escape and rescue openings</i>. 4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500. 45. Within individual <i>dwelling</i> and <i>sleeping units</i> in Groups R-2 and R-3, where the building is equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, <i>sleeping rooms</i> in <i>basements</i> shall not be required to have <i>emergency escape and rescue openings</i> provided that the basement has one of the following: 4-15.1. One <i>means of egress</i> and one <i>emergency escape and rescue opening</i>. 4-25.2. Two <i>means of egress</i>.		
	~~1030.1.4~~ 1031.2.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from inside the room without the use of keys or tools. Window-opening control devices complying with ASTM F2090 shall be permitted for use on windows serving as a required emergency escape and rescue opening.		Base code renumbering. Updates to operability of emergency escape and rescue openings.
	1031.3 Emergency escape and rescue openings. <i>Emergency escape and rescue openings</i> shall comply with Sections 1031.3.1 through 1031.3.3.		New requirements for emergency escape and rescue openings.
	1031.3.1 Minimum size. <i>Emergency escape and rescue openings</i> shall have a minimum net clear opening of 5.7 square feet (0.53 m²). Exception: The minimum net clear opening for grade-floor <i>emergency escape and rescue openings</i> shall be 5 square feet (0.46 m²).		New requirements for emergency escape and rescue openings.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1031.3.2 Minimum dimensions. The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.		New requirements for emergency escape and rescue openings.
	1031.3.3 Maximum height from floor. <i>Emergency escape and rescue openings</i> shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor.		New requirements for emergency escape and rescue openings.
	1031.4 Emergency escape and rescue doors. Where a door is provided as the required <i>emergency escape and rescue opening</i> , it shall be a swinging door or a sliding door.		New requirements for emergency escape and rescue openings.
	1030.3 Maximum height from floor. Emergency escape and rescue openings shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor. ~~1030.4 Operational constraints. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys or tools. Bars, grilles, grates or similar devices are permitted to be placed over emergency escape and rescue openings provided the minimum net clear opening size complies with Section 1030.2 and such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the emergency escape and rescue opening. Where such bars, grilles, grates or similar devices are installed in existing buildings, smoke alarms shall be installed in accordance with Section 907.2.11 regardless of the valuation of the alteration.~~ An emergency escape and rescue opening with a finished sill height below the adjacent ground level shall be provided with a window well in accordance with Sections 1030.4.1 and 1030.4.2.		Updates to emergency escape and rescue opening requirements.
	~~1030.4~~ 1031.5 Window Area wells. An <i>emergency escape and rescue opening</i> with a finished sill height <u>the bottom of the clear opening</u> below the adjacent <u>grade</u> ground level shall be provided with a window <u>an area</u> well in accordance with Sections 1031.5.1 through 1031.5.3.		Base code renumbering. Added clarification, no major change to code.
	1031.5.1 Minimum size. The minimum horizontal area of the <u>window area</u> well shall be 9 square feet (0.84 m²), with a minimum dimension of <u>horizontal project and width of not less than</u> 36 inches (914 mm). The area of the window well shall allow the <i>emergency escape and rescue opening</i> to be fully opened. <u>Exception: The ladder or steps required by Section 1031.5.2 shall be permitted to encroach not more than 6 inches (152 mm) into the required dimensions of the area well.</u>		Base code renumbering. Added clarification, no major change to code.
	~~1030.4.2~~ 1031.5.2 Ladders or steps. Window <u>Area</u> wells with a vertical depth of more than 44 inches (1118 mm) shall be equipped with an approved permanently affixed ladder or <u>steps</u> . Ladders or rungs shall have an inside width of not less than 12 inches (305 mm), shall project not less than 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center (o.c.) vertically for the full height		Base code renumbering. Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	of the window well. The ladder or steps shall not encroach into the required dimensions of the window well by more than 6 inches (152 mm). The ladder or steps shall not be obstructed by the emergency escape and rescue opening when the window or door is in the open position. Ladders or steps required by this section ~~are exempt from the stairway requirements of~~ shall not be required to comply with Section 1011.		
	1031.5.2.1 Ladders. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center (o.c.) vertically for the full height of the area well.		New ladder requirements to match Section 1011.
	1031.5.2.2 Steps. Steps shall have an inside width of not less than 12 inches (305 mm), shall have treads greater than 5 inches (127 mm) in depth and a riser height not greater than 18 inches (457 mm) for the full height of the area well.		New ladder requirements to match Section 1011.
	1031.5.3 Drainage. Area wells shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section 1805. Exception: A drainage system for area wells is not required where the foundation is on well-drained soil or sand-gravel mixture soils in accordance with the United Soil Classification System, Group I Soils, in accordance with Section 1803.5.1.		New area well drainage requirements.
	~~1030.5~~ 1031.6 Bars, grilles, covers and screens. ~~Bars~~ Where bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures or window area wells that serve such openings, provided that the minimum net clear opening size complies shall comply with Sections 1031.3 and 1031.5. ~~and such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the emergency escape and rescue opening. Where such bars, grilles, covers, screens or similar devices are installed in existing buildings, they shall not reduce the net clear opening of the emergency escape and rescue opening and smoke alarms shall be installed in accordance with Section 907.2.11 regardless of the valuation of the alteration.~~		Updates to bars, grilles and screen requirements.
	~~1029.14~~ 1030.14 Assembly aisle walking surfaces.		Base code renumbering.
	~~1029.14.1~~ 1030.14.1 Ramped aisles.		Base code renumbering.
	TABLE 1030.13.2.1 SMOKE-PROTECTED OR OPEN-AIR ASSEMBLY AISLE ACCESSWAYS		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~4029.14.1~~ 1030.14.1 Ramped aisles.		Base code renumbering.
	~~4029.14.1.2~~ 1030.14.1.2 Landings.		Base code renumbering.
	~~4029.14.1.3~~ 1030.14.1.3 Edge protection.		Base code renumbering.
	~~4029.14.2~~ 1030.14.2 Stepped aisles.		Base code renumbering.
	~~4029.14.2.1~~ 1030.14.2.1 Treads.		Base code renumbering.
	~~4029.14.2.2~~ 1030.14.2.2 Risers.		Base code renumbering.
	~~4029.14.2.2.1~~ 1030.14.2.2.1 Construction tolerances.		Base code renumbering.
	~~4029.14.2.3~~ 1030.14.2.3 Tread contrasting marking stripe.		Base code renumbering.
	~~4029.14.2.4~~ 1030.14.2.4 Nosing and profile.		Base code renumbering.
	~~4029.15~~ 1030.15 Seat stability.		Base code renumbering.
	~~4029.16~~ 1030.16 Handrails. Ramped <i>aisles</i> having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and stepped <i>aisles</i> shall be provided with <i>handrails</i> in compliance with Section 1014 located either at one or both sides of the <i>aisle</i> or within the <i>aisle</i> width. <u>Where stepped <i>aisles</i> have seating on one side and the <i>aisle</i> width is 74 inches (1880 mm) or greater, two <i>handrails</i> are required. Where two <i>handrails</i> are required, one of the <i>handrails</i> shall be within 30 inches (762 mm) horizontally of the stepped <i>aisle</i>.</u> Exceptions: 1. <i>Handrails</i> are not required for ramped <i>aisles</i> with seating on both sides. 2. <i>Handrails</i> are not required where, at the side of the <i>aisle</i> , there is a <i>guard</i> with a top surface that complies with the graspability requirements of <i>handrails</i> in accordance with Section 1014.3.		Base code renumbering, updates to handrail requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. <i>Handrail</i> extensions are not required at the top and bottom of stepped <i>aisles</i> and ramped <i>aisles</i> to permit crossovers within the <i>aisles</i> .		
	~~1029.16.1~~ 1030.16.1 Discontinuous mid-aisle handrails. Where there is seating on both sides of the <i>aisle</i> , the mid-aisle <i>handrails</i> shall be discontinuous. Where a stepped aisle is required to have two handrails, the mid-aisle handrails shall be discontinuous. Gaps or breaks shall be provided at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the <i>aisle</i> to the other. These gaps or breaks shall have a clear width of not less than 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the mid-aisle <i>handrail</i> shall have rounded terminations or bends.		Base code renumbering, updates to mid-aisle handrail requirements.
	~~1029.16.2~~ 1030.16.2 Handrail termination.		Base code renumbering.
	~~1029.16.3~~ 1030.16.3 Mid-aisle termination.		Base code renumbering.
	~~1029.16.4~~ 1030.16.4 Rails.		Base code renumbering.
	~~1029.17~~ 1030.17 Assembly guards.		Base code renumbering.
	~~1029.17.1~~ 1030.17.1 Perimeter guards.		Base code renumbering.
	~~1029.17.2~~ 1030.17.2 Cross aisles.		Base code renumbering.
	~~1029.17.3~~ 1030.17.3 Sightline-constrained guard heights.		Base code renumbering.
	~~1029.17.4~~ 1030.17.4 Guards at the end of aisles. A fascia or railing system complying with the guard requirements of Section 1015 shall be provided for the full width of the aisle where the foot of the aisle is more than 30 inches (762 mm) above the floor or grade below. The fascia or railing shall be a minimum of not less than 36 inches (914 mm) high and shall provide a minimum of not less 42 inches (1067 mm) measured diagonally between the top of the rail and the nosing of the nearest tread.		Base code renumbering. Added clarification, no major change to code.
	SECTION 1031 EMERGENCY ESCAPE AND RESCUE 1031.1 General. Emergency escape and rescue openings shall comply with the requirements of this section.		Base code renumbering, updates to emergency escape and rescue opening requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~1030.1~~ 1031.2 General Where required. In addition to the <i>means of egress</i> required by this chapter, <i>emergency escape and rescue openings</i> shall be provided in the following occupancies: 1. Group R-2 occupancies located in stories with only one <i>exit</i> or <i>access</i> to only one <i>exit</i> as permitted by Tables 1006.3.4(1) and 1006.3.4(2). 2. Group R-3 and R-4 occupancies. <i>Basements</i> and sleeping rooms below the fourth <i>story above grade plane</i> shall have not fewer than ~~one exterior~~ emergency escape and rescue opening in accordance with this section. Where <i>basements</i> contain one or more sleeping rooms, ~~an emergency escape and rescue openings~~ opening shall be required in each sleeping room, but shall not be required in adjoining areas of the <i>basement</i>. Such openings shall open directly into a <i>public way</i> or to a <i>yard</i> or <i>court</i> that opens to a <i>public way</i>. Exceptions: 1. <i>Basements</i> with a ceiling height of less than 80 inches (2032 mm) shall not be required to have <i>emergency escape and rescue openings</i>. 2. <i>Emergency escape and rescue openings</i> are not required from <i>basements</i> or sleeping rooms that have an <i>exit</i> door or <i>exit access</i> door that opens directly into a <i>public way</i> or to a <i>yard</i>, <i>court</i> or exterior ~~exit~~ egress balcony that opens to a <i>public way</i>. 3. <i>Basements</i> without <i>habitable spaces</i> and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have <i>emergency escape and rescue openings</i>. 4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500. 45. Within individual <i>dwelling</i> and <i>sleeping units</i> in Groups R-2 and R-3, where the building is equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, <i>sleeping rooms</i> in <i>basements</i> shall not be required to have <i>emergency escape and rescue openings</i> provided that the basement has one of the following: 4-15.1. One <i>means of egress</i> and one <i>emergency escape and rescue opening</i>. 4-25.2. Two <i>means of egress</i>.		Base code renumbering, updates to emergency escape and rescue opening requirements.
	~~1030.1.4~~ 1031.2.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from inside the room without the use of keys or tools. Window-opening control devices complying with ASTM F2090 shall be permitted for use on windows serving as a required emergency escape and rescue opening.		Base code renumbering, updates to emergency escape and rescue opening requirements.
	1031.3 Emergency escape and rescue openings. <i>Emergency escape and rescue openings</i> shall comply with Sections 1031.3.1 through 1031.3.3.		New requirements for emergency escape and rescue openings.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1031.3.1 Minimum size. <i>Emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.53 m²).</i> Exception: The minimum net clear opening for grade-floor <i>emergency escape and rescue openings</i> shall be 5 square feet (0.46 m²).		New requirements for emergency escape and rescue openings.
	1031.3.2 Minimum dimensions. The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.		New requirements for emergency escape and rescue openings.
	1031.3.3 Maximum height from floor. <i>Emergency escape and rescue openings</i> shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor.		New requirements for emergency escape and rescue openings.
	1031.4 Emergency escape and rescue doors. Where a door is provided as the required <i>emergency escape and rescue opening</i> , it shall be a swinging door or a sliding door.		New requirements for emergency escape and rescue openings.
	~~4030.4~~ 1031.5 Window Area wells. An <i>emergency escape and rescue opening</i> with a finished sill height the bottom of the clear opening below the adjacent grade ground level shall be provided with a window an area well in accordance with Sections 1031.5.1 through 1031.5.3.		Base code renumbering, updates to area wells for emergency escape and rescue opening requirements.
	1031.5.1 Minimum size. The minimum horizontal area of the ~~window~~ area well shall be 9 square feet (0.84 m²), with a minimum dimension of horizontal project and width of not less than 36 inches (914 mm). The area of the ~~window~~ well shall allow the <i>emergency escape and rescue opening</i> to be fully opened. Exception: The ladder or steps required by Section 1031.5.2 shall be permitted to encroach not more than 6 inches (152 mm) into the required dimensions of the area well.		Base code renumbering, updates to emergency escape and rescue opening requirements.
	~~4030.4.2~~ 1031.5.2 Ladders or steps. Window Area wells with a vertical depth of more than 44 inches (1118 mm) shall be equipped with an approved permanently affixed ladder or steps . Ladders or rungs shall have an inside width of not less than 12 inches (305 mm), shall project not less than 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center (o.c.) vertically for the full height of the window well. The ladder or steps shall not encroach into the required dimensions of the window well by more than 6 inches (152 mm). The ladder or steps shall not be obstructed by the emergency escape and rescue opening when the window or door is in the open position. Ladders or steps required by this section ~~are exempt from the stairway requirements of~~ shall not be required to comply with Section 1011.		Base code renumbering, updates to emergency escape and rescue opening requirements.
	1031.5.2.1 Ladders. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center (o.c.) vertically for the full height of the area well.		New requirements for ladders to match Section 1011.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1031.5.2.2 Steps. Steps shall have an inside width of not less than 12 inches (305 mm), shall have treads greater than 5 inches (127 mm) in depth and a riser height not greater than 18 inches (457 mm) for the full height of the area well.		New requirements for ladders to match Section 1011.
	1031.5.3 Drainage. Area wells shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section 1805. Exception: A drainage system for area wells is not required where the foundation is on well-drained soil or sand-gravel mixture soils in accordance with the United Soil Classification System, Group I Soils, in accordance with Section 1803.5.1.		New requirements for area well drainage.
	~~1030.5~~ 1031.6 Bars, grilles, covers and screens. Bars Where bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures or window area wells that serve such openings, provided that the minimum net clear opening size complies shall comply with Sections 1031.3 and 1031.5. and such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the emergency escape and rescue opening. ~~Where such bars, grilles, covers, screens or similar devices are installed in existing buildings, they shall not reduce the net clear opening of the emergency escape and rescue opening and smoke alarms shall be installed in accordance with Section 907.2.11 regardless of the valuation of the alteration.~~		Base code renumbering, updates to bars, grilles and screen requirements.
2015 Houston IFC – Chapter 11 Construction Requirements for Existing Buildings	2021 IFC – Chapter 11 – Construction Requirements for Existing Builidings	2021 Houston Amendments	Change Code Summary
	SECTION 1101 GENERAL		
	1101.4.3 Extension of time. The <i>fire code official</i> is authorized to grant necessary extensions of time when ~~where~~ 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 <i>fire code official</i> .		Added clarification, no major change to code.
	SECTION 1102 DEFINITIONS		
	SECTION 1103 FIRE SAFETY REQUIREMENTS FOR EXISTING BUILDINGS 1103.1 Required construction. Existing buildings shall comply with not less than the minimum provisions specified in Table 1103.1 and as further enumerated in Sections 1103.2 through 1103.10.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	The provisions of this chapter shall not be construed to allow the elimination of fire protection systems or a reduction in the level of fire safety provided in buildings constructed in accordance with previously adopted codes. Exceptions: 1. Where a change in fire-resistance rating has been approved in accordance with Section 501.2 or 8032.6 of the International Existing Building Code. 2. Group U occupancies.		
	Table 1103.1 OCCUPANCY AND USE REQUIREMENTS^a		Base code renumbering.
1103.2 Emergency responder radio coverage in existing buildings. Existing buildings that do not have approved radio coverage for emergency responders within the building, based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building, shall be equipped with such coverage according to one of the following: 1. Where an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1, <u>an ERRC system shall be installed to comply with this code.</u> 2. Where an existing building is found to be in violation of the provisions of Section 510, the owner shall be responsible for correcting those deficiencies in a timely manner. The owner shall submit appropriate plans to obtain building permit(s) for the installation of necessary equipment <u>within the a time from frame established by the fire code official adopting authority.</u> 3. In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the <i>fire code official</i> shall have the authority to accept an automatically activated emergency responder radio coverage system. Exception: Where the <i>fire code official</i> it is determined by the <i>fire code official</i> that the <u>an ERRC radio coverage system is not needed.</u>	1103.2 Emergency responder radio communication coverage in existing buildings. Existing buildings other than Group R-3 , that do not have <u>approved radio in-building, two-way emergency response communication</u> coverage for emergency responders within the building, based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building, shall be equipped with such coverage according to one of the following: 1. Where an existing wired communication system cannot be repaired or is being replaced, or where not <i>approved</i> in accordance with Section 510.1, Exception 1. 2. Within a time frame established by the adopting authority. Exception: Where it is determined by the <i>fire code official</i> that the <u>radio in-building, two-way emergency responder communication</u> coverage system is not needed..	1103.2 Emergency responder communication coverage in existing buildings. Existing buildings other than Group R-3, that do not have <i>approved</i> in-building, two-way emergency response communication coverage for emergency responders in the building based on existing coverage levels of the public safety communication systems, shall be equipped with such coverage according to one of the following: 1. Where an existing wired communication system cannot be repaired or is being replaced, or where not <i>approved</i> in accordance with Section 510.1, Exception 1, <u>an ERCC system shall be installed to comply with this code.</u> 2. Where an existing building is found to be in violation of the provisions of Section 510, the owner shall be responsible for correcting those deficiencies in a timely manner. The owner shall submit appropriate plans to obtain building permit(s) for the installation of necessary equipment <u>within the a time frame established by the fire code official adopting authority.</u> 3. In facilities where emergency responder communication coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the <i>fire code official</i> shall have the authority to accept an automatically activated emergency responder communication coverage system. Exception: Where it is determined by the <i>fire code official</i> that the in-building, two-way emergency responder communication coverage system is not needed.	Added clarification, no major change to code. No change to Houston amendment.
1103.2.1 Compliance verification. Alterations to existing buildings require compliance verification testing by a City of Houston registered ERRC third-party special inspector. A copy of the special inspection report shall be submitted to the <i>building official</i> for review and archiving to the project records prior to the project final or issuing of a <i>Certificate of Compliance or Certificate of Occupancy</i> . Exception: Buildings without basements and three stories or less in height with an aggregate total building area of 50,000 square feet or less. NOTE: ERRC special inspection reports shall be submitted by email directly to the Customer Assistance & Code Development Office of the Houston Permitting Center at: HPC-RA@houstontx.gov .		1103.2.1 Compliance verification. Alterations to existing buildings require compliance verification testing by a City of Houston registered ERCC third-party special inspector. A copy of the compliance verification special inspection report shall be submitted to the <i>building official</i> for review and archiving to the project records prior to the project final approval or issuance of a <i>Certificate of Compliance or Certificate of Occupancy</i> . Exception: Buildings without basements and three stories or less in height with an aggregate total building area of 50,000 square feet or less.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		<i>NOTE: ERCC special inspection reports shall be submitted by email directly to the Customer Assistance & Code Development Office of the Houston Permitting Center at: HPC-RA@houstontx.gov.</i>	
	1103.3 Existing Elevators. In other than Group R-3, existing elevators, escalators and moving walks shall comply with the requirements of Sections 1103.3.1 and 1103.3.2		Added clarification, no major change to code.
	1103.3.1 Elevators, Escalators, and Moving walks. Existing elevators, escalators and moving walks in Group I-2, Condition 2 occupancies and serving ambulatory care facilities shall comply with ASME A17.3.		Added clarification, no major change to code.
	1103.3.2 Elevator emergency 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. Exceptions: 1. Buildings without occupied floors located more than 55 feet (16 764 mm) above or 25 feet (7620 mm) below the lowest level of fire department vehicle access where protected at the elevator shaft openings with additional fire doors in accordance with Section 716.5 of the <i>International Building Code</i> and where all of the following conditions are met: 1.1. The doors shall be provided with vision panels of approved fire protection- rated glazing so located as to furnish clear vision of the approach to the elevator. Such glazing shall not exceed 100 square inches (0.065 m ²) in area. 1.2. The doors shall be held open but be automatic-closing by activation of a fire alarm initiating device installed in accordance with the requirements of NFPA 72 as for Phase I Emergency Recall Operation, and shall be located at each floor served by the elevator; in the associated elevator machine room, control space, or control room; and in the elevator hoistway where sprinklers are located in those hoistways. 1.3. The doors, when closed, shall have signs visible from the approach area stating: WHEN THESE DOORS ARE CLOSED OR IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRWAYS. 2. Buildings without occupied floors located more than 55 feet (16 764 mm) above or 25 feet (7620 mm) below the lowest level of fire department vehicle access where provided with automatic		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	sprinkler systems installed in accordance with Section 903.3.1.1 or 903.3.1.2. 3. Freight elevators in buildings provided with both automatic sprinkler systems installed in accordance with Section 903.3.1.1 or 903.3.1.2 and not less than one ASME 17.3-compliant elevator serving the same floors. Elimination of previously installed Phase I emergency recall or Phase II emergency in-car systems shall not be permitted.		
	1103.4.1 Group I-2 and I-3 occupancies. In Group I-2 and I-3 occupancies, interior vertical openings connecting two or more stories shall be protected with 1-hour fire-resistance-rated construction. Exceptions: 1. In Group I-2, unenclosed vertical openings not exceeding two connected stories and not concealed within the building construction shall be permitted as follows: 1.1. The unenclosed vertical openings shall be separated from other unenclosed vertical openings serving other floors by a smoke barrier. 1.2. The unenclosed vertical openings shall be separated from corridors by smoke partitions. 1.3. The unenclosed vertical openings shall be separated from other fire or smoke compartments on the same floors by a smoke barrier. 1.4. On other than the lowest level, the unenclosed vertical openings shall not 2. In Group I-2, atriums connecting three or more stories shall not require 1-hour fire-resistance-rated construction where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3, and all of the following conditions are met: 2.1. For other than existing approved atriums with a smoke control system, where the atrium was constructed and is maintained in accordance with the code in effect at the time the atrium was created, the atrium shall have a smoke control system that is in compliance with Section 909. 2.2. serve as a required means of egress. Glass walls forming a smoke partition or a glass-block wall assembly shall be permitted ~~when~~ where in compliance with Condition 2.2.1 or 2.2.2. 2.2.1. Glass walls forming a smoke partition shall be permitted where all of the following conditions are met: 2.2.1.1. Automatic sprinklers are provided along both sides of the separation wall and doors, or on the		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	room side only if there is not a walkway or occupied space on the atrium side. 2.2.1.2. The sprinklers shall be not more than 12 inches (305 mm) away from the face of the glass and at intervals along the glass of not greater than 72 inches (1829 mm). 2.2.1.3. Windows in the glass wall shall be non-operating type. 2.2.1.4. The glass wall and windows shall be installed in a gasketed frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates. 2.2.1.5. The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction. 2.2.2. A fire barrier is not required where a glass-block wall assembly complying with Section 2110 of the International Building Code and having a 3/4-hour fire protection rating is provided. 2.3. Where doors are provided in the glass wall, they shall be either self-closing or automatic-closing and shall be constructed to resist the passage of smoke. 3. In Group I-3 occupancies, exit stairways or ramps and exit access stairways or ramps constructed in accordance with Section 408 in the International Building Code.		
	1103.4.8 Occupancies other than Groups I-2 and I-3.		Added clarification, no major change to code.
	1103.4.9.2.2 Chute Intake Via a Chute Intake room Opening protective ~~s~~ for the chute enclosure shall be in accordance with Section 1103.4.9.1		Added clarification, no major change to code.
	1103.5.1 Group A-2. Where alcoholic beverages are consumed in a Group A-2 occupancy having an occupant load of 300 or more, the fire area containing the Group A-2 occupancy shall be equipped with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1.		New requirements for sprinklers in Group A-2 fire areas serving alcohol.
	1103.5.4~~2~~ Group I-2. In Group I-2, an <i>automatic sprinkler system</i> shall be provided in accordance with Section 1105.89.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1103.5.2~~3~~ Group I-2 Condition 2. In addition to the requirements of Section 1103.5.4 ~~2~~ , existing buildings of Group I-2 Condition 2 occupancy shall be equipped throughout with an <i>approved automatic sprinkler system</i> in accordance with Section 903.3.1.1. The <i>automatic sprinkler system</i> shall be installed as established by the adopting ordinance [DATE BY WHICH SPRINKLER SYSTEM MUST BE INSTALLED] .		Base code renumbering. Added clarification, no major change to code.
	1103.5.4 High-rise buildings. Where Appendix M has not been adopted, existing high-rise buildings that do not have a previously <i>approved</i> fire sprinkler system shall be equipped with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 where any of the following conditions apply: 1. The high-rise building has an occupied floor located more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access. 2. The high-rise building has occupied floors located more than 75 feet (22 860 mm) and not more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, and the building does not have at least two <i>interior exit stairways</i> complying with Section 1104.10 that are separated from the building interior by fire assemblies having a <i>fire-resistance rating</i> of not less than 2 hours with opening protection in accordance with Table 716.1(2) of the <i>International Building Code</i> . 3. The high-rise building has occupied floors located more than 75 feet (22 860 mm) and not more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, and the building does not have a fire alarm system that includes smoke detection in mechanical equipment, electrical, transformer, telephone equipment and similar rooms; <i>corridors</i> ; elevator lobbies; and at doors penetrating <i>interior exit stairway</i> enclosures. Building owners shall file a compliance schedule with the <i>fire code official</i> not later than 365 days after receipt of a written notice. The compliance schedule shall not exceed 12 years for completion of the <i>automatic sprinkler system</i> retrofit.		New section for retroactive high-rise building requirements.
	~~1103.5.3~~ ~~1103.5.4~~ 1103.5.5 Pyroxylin plastics.		Base code renumbering.
	1103.7 Fire alarm systems. An <i>approved</i> fire alarm system shall be installed in existing buildings and structures in accordance with Sections 1103.7.1 through 1103.7. ~~76~~ and provide occupant notification in accordance with Section 907.5 unless other requirements are provided by other sections of this code.	—	Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1103.7.3 Group I-2. In Group I-2, an automatic fire alarm system shall be installed in accordance with Section 1105. 910.		Base code renumbering.
	1103.7.5.1 Group R-1 hotel and motel manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 hotels and motels more than one story in height ~~three stories~~ or with more than 20 <i>sleeping units</i> . Exceptions: 1. A manual fire alarm system is not required in buildings less than two stories in height where all <i>sleeping units</i> , attics and crawl spaces are separated by 1-hour <i>fire-resistance-rated</i> construction and each <i>sleeping unit</i> has direct access to a <i>public way, egress court</i> or yard. 2. A manual fire alarm system is not required in buildings not more than three stories in height with not more than 20 <i>sleeping units</i> and equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2. 3. Manual fire alarm boxes are not required throughout the building where the following conditions are met: 3.1. The building is equipped throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2. 3.2. The notification appliances will activate upon sprinkler water flow. 3.3. Not less than one manual fire alarm box is installed at an <i>approved</i> location.		Updates to Group R-1 hotel/motel fire alarm requirements.
	1103.7.5.1.1 Group R-1 hotel and motel automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 hotels and motels throughout all interior <i>corridors</i> serving sleeping rooms not equipped with an <i>approved</i> , supervised automatic sprinkler system installed in accordance with Section 903.		Added clarification, no major change to code.
	1103.7.5.2.1 Group R-1 boarding and rooming houses automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-1 boarding and rooming houses throughout all interior corridors serving sleeping units not equipped		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	with an approved, supervised sprinkler system installed in accordance with Section 903. Exception: Buildings equipped with single-station smoke alarms meeting or exceeding the requirements of Section 907.2.140.1 and where the fire alarm system includes not less than one manual fire alarm box per floor arranged to initiate the alarm.	—	
1103.7.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 <i>dwelling</i> or <i>sleeping units</i>. Exceptions: - Where each living unit is separated from other contiguous living units by <i>fire barriers</i> having a <i>fire-resistance rating</i> of not less than ¾ hour, and where each living unit has either its own independent <i>exit</i> or its own independent stairway or ramp discharging at grade. - A separate fire alarm system is not required in buildings that are equipped throughout with an <i>approved supervised automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2 and ~~having~~ a local alarm to notify all occupants. - A fire alarm system is not required in buildings that do not have interior <i>corridors</i> serving <i>dwelling units</i> and are protected by an <i>approved automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that <i>dwelling units</i> either have a <i>means of egress</i> door opening directly to an exterior <i>exit access</i> that leads directly to the <i>exits</i> or are served by open-ended <i>corridors</i> designed in accordance with Section 1027.6, Exception 3. - A fire alarm system is not required in buildings that do not have interior <i>corridors</i> serving <i>dwelling units</i>, do not exceed three stories in height and comply with both of the following: - Each <i>dwelling unit</i> is separated from other contiguous <i>dwelling units</i> by <i>fire barriers</i> having a <i>fire-resistance rating</i> of not less than ¾ hour. - Each <i>dwelling unit</i> is provided with hardwired, interconnected smoke alarms as required for new construction in Section 907.2.11. <u>Condominiums, as defined by Chapter 82 of the Texas Property Code.</u> - A fire alarm system is not required in buildings that do not have interior <i>corridors</i> serving <i>dwelling units</i> (or in any dwellings that do not exit into an interior <i>corridor</i>) unless rehabilitation work is performed in the building with a cost that is equal to or exceeds twenty five percent (25%) of the market value of the building.	1103.7.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 dwelling or sleeping units. Exceptions: - Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 3/4 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade. - 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. - A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an <i>approved automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that <i>dwelling units</i> either have a <i>means of egress</i> door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended <i>corridors</i> designed in accordance with Section 1027.6, Exception 3. - A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units, do not exceed three stories in height and comply with both of the following: - Each dwelling unit is separated from other contiguous dwelling units by fire barriers having a fire-resistance rating of not less than 3/4 hour. - Each dwelling unit is provided with hardwired, interconnected smoke alarms as required for new construction in Section 907.2.140.	1103.7.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 <i>dwelling</i> or <i>sleeping units</i>. Exceptions: - Where each living unit is separated from other contiguous living units by <i>fire barriers</i> having a <i>fire-resistance rating</i> of not less than ¾ hour, and where each living unit has either its own independent <i>exit</i> or its own independent <i>stairway</i> or <i>ramp</i> discharging at grade. - A separate fire alarm system is not required in buildings that are equipped throughout with an <i>approved supervised automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2 and having a local alarm to notify all occupants. - A fire alarm system is not required in buildings that do not have interior <i>corridors</i> serving <i>dwelling units</i> and are protected by an <i>approved automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that <i>dwelling units</i> either have a <i>means of egress</i> door opening directly to an exterior <i>exit access</i> that leads directly to the <i>exits</i> or are served by open-ended <i>corridors</i> designed in accordance with Section 1027.6, Exception 3. - A fire alarm system is not required in buildings that do not have interior <i>corridors</i> serving <i>dwelling units</i>, do not exceed three stories in height and comply with both of the following: - Each <i>dwelling unit</i> is separated from other contiguous <i>dwelling units</i> by <i>fire barriers</i> having a <i>fire-resistance rating</i> of not less than ¾ hour. - Each <i>dwelling unit</i> is provided with smoke alarms complying with the requirements of Section 907.2.11. <u>Condominiums, as defined by Chapter 82 of the Texas Property Code.</u>	Base code renumbering. Removed exception from Houston amendment, no other changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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1103.7.6.1 Monitoring. The fire alarm system required by this section shall not be required to be monitored by a third party. This fire alarm system only requires pull stations that will produce a local audible alarm and activate in an on-site management office, if the property in which the building is located has an on-site management office.			Removed Houston amendment to go with base code.
	~~1103.7.7 Group R-4. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in existing Group R-4 residential care/assisted living facilities in accordance with Section 907.2.10.1.~~ Exceptions: ~~1. Where there are interconnected smoke alarms meeting the requirements of Section 907.2.11 and there is not less than one manual fire alarm box per floor arranged to continuously sound the smoke alarms.~~ ~~2. Other manually activated, continuously sounding alarms approved by the fire code official.~~		Base code section removed.
1103.8.1 Where required. Existing Group I-1 and R occupancies shall be provided with single-station smoke alarms in accordance with Section 907.2.11. Interconnection and power sources shall be in accordance with Section 1103.8.2 and 1103.8.3, respectively. <u>After January 1, 2017, as a battery-operated single-station alarm is replaced, that smoke alarm shall be replaced with a tamper-resistant battery-operated single-station smoke alarm. Provided, however, nothing in this section shall require an owner to replace an operational battery-operated single-station smoke alarm. For the purposes of this provision, a tamper-resistant battery-operated single-station smoke alarm shall mean a sealed, single-station smoke alarm with a long-life lithium or similar battery.</u> Exceptions: 1. Where the code that was in effect at the time of construction required smoke alarms and smoke alarms complying with those requirements are already provided. 2. Where smoke alarms have been installed in occupancies and dwellings that were not required to have them at the time of construction, additional smoke alarms shall not be required provided that the existing smoke alarms comply with requirements that were in effect at the time of installation. 3. Where smoke detectors connected to a fire alarm system have been installed as a substitute for smoke alarms.	1103.8.1 Where required. Existing Group I-1 and R occupancies shall be provided with single-station smoke alarms in accordance with Section 907.2.11. Interconnection and power sources shall be in accordance with Sections 1103.8.2 and 1103.8.3, respectively. Exceptions: 1. Where the code that was in effect at the time of construction required smoke alarms and smoke alarms complying with those requirements are already provided. 2. Where smoke alarms have been installed in occupancies and dwellings that were not required to have them at the time of construction, additional smoke alarms shall not be required provided that the existing smoke alarms comply with requirements that were in effect at the time of installation. 3. Where smoke detectors connected to a fire alarm system have been installed as a substitute for smoke alarms.	1103.8.1 Where required. Existing Group I-1 and R occupancies shall be provided with single-station smoke alarms in accordance with Section 907.2.11. Interconnection and power sources shall be in accordance with Section 1103.8.2 and 1103.8.3, respectively. <u>After January 1, 2017, as a battery-operated single-station alarm is replaced, that smoke alarm shall be replaced with a tamper-resistant battery-operated single-station smoke alarm. Provided, however, nothing in this section shall require an owner to replace an operational battery-operated single-station smoke alarm. For the purposes of this provision, a tamper-resistant battery-operated single-station smoke alarm shall mean a sealed, single-station smoke alarm with a long-life lithium or similar battery.</u> Exceptions: 1. Where the code that was in effect at the time of construction required smoke alarms and smoke alarms complying with those requirements are already provided. 2. Where smoke alarms have been installed in occupancies and dwellings that were not required to have them at the time of construction, additional smoke alarms shall not be required provided that the existing smoke alarms comply with requirements that were in effect at the time of installation. 3. Where smoke detectors connected to a fire alarm system have been installed as a substitute for smoke alarms.	Base code renumbering. No change to Houston amendment.
1103.8.1.1 Group R owner and tenant duties. The owner or manager of a residential building shall ensure that each smoke detector required by Section 1103.8.1 is installed and operational when the tenant first occupies the unit. After the tenant takes possession of the unit, it shall be the duty of the tenant to regularly test each smoke detector in the unit, and the tenant shall notify the owner immediately in writing of any problem, defect, malfunction or failure of			Removed Houston amendment to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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any detector in the unit. Upon notification by the tenant, or upon notification by an inspector of the jurisdiction, that a smoke detector in the residential unit is not in proper working order, the <i>owner</i> shall have the detector repaired or replaced. Exception: The provisions of this section do not apply to <i>dwelling units</i> governed by Subchapter F of Chapter 92 of the <i>Texas Property Code</i>.			
	1103.9 Carbon Monoxide Alarms Existing Group I-1, I-2, I-4 and R occupancies shall be equipped with carbon monoxide alarms in accordance with Section 915, except that the carbon monoxide alarms shall be allowed to be solely battery operated. Carbon monoxide alarms detection shall be installed in existing dwelling units and sleeping units Group I-1, I-2, I-4 and R occupancies and in classrooms in Group E occupancies where those units include any of the conditions identified in Section 915.1.2 through 915.1.6. The carbon monoxide alarms shall be installed in the locations specified in Section 915.2 and the installation shall be in accordance with Section 915.4. Exceptions: 1. Carbon monoxide alarms are permitted to be solely battery operated where the code that was in effect at the time of construction did not require carbon monoxide detectors to be provided. 2. Carbon monoxide alarms are permitted to be solely battery operated in <i>dwelling units</i> that are not served from a commercial power source. 3. A carbon monoxide detection system in accordance with Section 915.5 shall be an acceptable alternative to carbon monoxide alarms.		Updates to carbon monoxide alarm requirements.
	SECTION 1104 MEANS OF EGRESS FOR EXISTING BUILDINGS		No Houston amendment.
	1104.5 Illumination Emergency Power. Where means of egress illumination is provided, 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 a level of exit discharge serving the occupants or buildings with 1,000 or more total occupants. 3. Group E in interior exit access and exit stairways and ramps, corridors, windowless areas with student occupancy, shops and laboratories.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	4. Group F having more than 100 occupants. Exception: Buildings used only during daylight hours and that 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 m²) 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.~~		
	1104.5.1 Emergency power duration and installation. Emergency power for <i>means of egress</i> illumination shall be provided in accordance with Section ~~604-1203~~. In other than Group I-2, emergency power shall be provided for not less than 60 minutes for systems requiring emergency power. ~~In Group I-2, essential electrical systems shall comply with Sections 1105.5.1 and 1105.5.2.~~		Added clarification, no major change to code.
	1104.7 Size of Doors. The ~~minimum width required capacity~~ of each door opening shall be sufficient for the <i>occupant load</i> thereof and shall provide a minimum clear opening width of ~~not less than~~ 28 inches (711 mm). Where this section requires a minimum clear opening 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). ~~In ambulatory care facilities, doors serving as means of egress from patient treatment rooms or patient sleeping rooms shall provide a clear width of not less than 32 inches (813 mm). In Group I-2, means of egress doors where used for the movement of beds shall provide a clear width of not less than 41 ½ inches (1054 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. The minimum clear opening height of door openings shall be not 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 units that are not required to be an Accessible Type A unit or Type B unit. 2. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum width. 3. The width of door ~~leafs-leaves~~ in revolving doors that comply with Section 1010.1.1 shall not be limited. 4. Door openings within a dwelling unit shall be not less than 78 inches (1981 mm) in height.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~5. Exterior door openings in dwelling units, other than the required exit door, shall be not less than 76 inches (1930 mm) in height.~~ ~~6. Exit access doors serving a room not larger than 70 square feet (6.5 m²) shall be not less than 24 inches (610 mm) in door width.~~ ~~7. Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the floor.~~ ~~4. The maximum width of door leaves in power-operated doors that comply with Section 1010.1.4.2 shall not be limited.~~ ~~5. Door openings within a dwelling unit shall have a minimum clear opening height of 78 inches (1981 mm).~~ ~~6. In dwelling and sleeping units that are not required to be Accessible units, Type A units or Type B units, exterior door openings, other than the required exit door, shall have a minimum clear opening height of 76 inches (1930 mm).~~ ~~7. Exit access doors serving a room not larger than 70 square feet (6.5 m²) shall have a minimum door leaf width of 24 inches (610 mm).~~ ~~8. The minimum clear opening width shall not apply to doors for nonaccessible showers or sauna compartments.~~ ~~9. The minimum clear opening width shall not apply to the doors for nonaccessible toilet stalls.~~ ~~10. Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the floor.~~		
	1104.7.1 Group I-2. In Group I-2 occupancies, means of egress doors where used for the movement of beds shall provide a minimum clear opening width of 41 ½ inches (1054 mm). Doors serving as means of egress doors and not used for movement of beds shall provide a minimum clear opening width of 32 inches (813 mm).		New healthcare facility door requirements.
	1104.7.2 Ambulatory care. In ambulatory care facilities, doors serving as means of egress from patient treatment rooms shall provide a minimum clear opening width of 32 inches (813 mm).		New ambulatory care facility door requirements.
	1104.9 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 stairways or escalators. A dispersal area shall be provided between the stairways or escalators and the revolving doors. 2. The revolutions per minute for a revolving door shall not exceed those shown in Table 1104.9. 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		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	provided ~~that~~ 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).		
	1104.10.1 Dimensions for replacement stairways. The replacement of an existing <i>stairway</i> in a structure shall not be required to comply with the new <i>stairway</i> requirements of Section 1009.11 where the existing space and construction will not allow a reduction in pitch or slope.	-	Base code renumbering.
	1104.12 Curved stairways. Existing curved <i>stairways</i> shall be allowed to continue in use, provided ~~that~~ the minimum depth of tread is 10 inches (254 mm) and the smallest radius shall be not less than twice the width of the <i>stairway</i>.		Added clarification, no major change to code.
	1104.15 Width of ramps. Existing <i>ramps</i> 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. In Group I-2, <i>ramps</i> serving as a means of egress and used for the movement of patients in beds shall comply with Section 1105.56.43		Base code renumbering.
	1104.16.2 Protection of openings-Opening protective ~~Opening Doors and windows within 10 feet (3048 mm) of fire escape stairways shall be protected by opening protectives having a minimum with ¾ - hour fire opening protection ratings.~~ Exception: Opening protectives shall not be required in buildings equipped throughout with an <i>approved automatic sprinkler system</i>; ~~opening protection is not required.~~		Added clarification, no major change to code.
1104.16.7 Maintenance. Fire escape <i>stairways</i> shall be kept clear and unobstructed at all times and shall be maintained in good working order. <u>Inspections, testing, and maintenance shall be in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment."</u>		1104.16.7 Maintenance. Fire escape <i>stairways</i> shall be kept clear and unobstructed at all times and shall be maintained in good working order. <u>Inspections, testing, and maintenance shall be in accordance with Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment."</u>	No change to Houston amendment
	1104.17 Corridor construction. 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 kept closed or be self-closing. In Group I-2, corridors in areas housing patient sleeping or care rooms shall comply with Section 1105.45.		Base code renumbering.
	TABLE 1104.18 COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1104.18 Dead end corridors. Where more than one exit or exit access doorway is required, the <u>exit access</u> shall be arranged such that dead ends do not exceed the limits specified in Table 1104.18. ~~In Group I-2, in smoke compartments containing patient sleeping rooms and treatment rooms, dead end corridors shall be in accordance with Section 1105.5.6.~~ Exceptions: 1. 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. 2. In existing buildings, existing dead-end corridors shall be permitted to comply with lengths established in Section 805.6 of the International Existing Building Code. Any newly constructed dead-end corridors within an existing building shall be limited to the lengths allowed by the International Building Code.		Added clarification, new exception provided for dead end corridors.
	Table 1104.18 COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)		
	1104.23 Minimum aisle width. The minimum clear width of aisles shall ~~be~~ comply with the following: 1. Forty-two inches (1067 mm) for ~~aisle stairs~~ stepped aisles having seating on each side. Exception: Thirty-six inches (914 mm) where the stepped aisle serves ~~less~~ fewer than 50 seats. 2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side. Exceptions: 1. Thirty inches (760 mm) for catchment areas serving not more than 60 seats. 2. Twenty-three inches (584 mm) between a stepped aisle handrail and seating where an stepped aisle does not serve more than five rows on one side. 3. Twenty inches (508 mm) between a stepped aisle handrail or guard and seating where the aisle is subdivided by ~~the a~~ mid-aisle handrail. 4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides. Exceptions: 1. Thirty-six inches (914 mm) where the aisle serves ~~less~~ fewer than 50 seats. 2. Thirty inches (760 mm) where the aisle serves fewer than 15 seats and does not serve as part of an accessible route. 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 and not serving as part of an accessible route.		Added clarification, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	6. In Group I-2, where aisles are used for movement of patients in beds, aisles shall comply with Section 1105.56.87.		
	SECTION 1105 CONSTRUCTION REQUIREMENTS FOR EXISTING GROUP I-2		No Houston amendment.
	1105.2 Construction Applicability. The provisions of Sections 1105.3 through 1105.8, 1105.10 and 1105.11 shall apply to the existing Group I-2 fire area.		Added clarification, no major change to code.
	1105.3 Construction. Group I-2, Condition 2 shall not be located on a floor level higher than the floor level limitation in Table 1105.23 based on the type of construction.		Base code renumbering. Added clarification, no major change to code.
	Table 1105.23 FLOOR LEVEL LIMITATIONS FOR GROUP I-2, CONDITION 2		Base code renumbering.
	1105.34 Incidental uses in existing Group I-2. Incidental uses associated with and located within existing single-occupancy or mixed- occupancy Group I-2 buildings and that generally pose a greater level of risk to such occupancies shall comply with the provisions of Sections 1105.34.1 through 1105.34.3.2.1. Incidental uses in Group I-2 occupancies are limited to those listed in Table 1105.34.		Base code renumbering.
	Table 1103.34 INCIDENTAL USES IN EXISTING GROUP I-2 OCCUPANCIES		Base code renumbering.
	1105.34.1 Occupancy classification.		Base code renumbering.
	1105.34.2 Area limitations.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1105.34.3 Separation and protection. The incidental uses listed in Table 1105.34 shall be separated from the remainder of the building or equipped with an <i>automatic sprinkler system</i> , or both, in accordance with the provisions of that table.		Base code renumbering.
	1105.34.3.1 Separation. Where Table 1105.34 specifies a fire-resistance-rated separation, the incidental uses shall be separated from the remainder of the building in accordance with Section 509.4.1 of the <i>International Building Code</i> .		Base code renumbering.
	1105.34.3.2 Protection. Where Table 1105.34 permits an <i>automatic sprinkler system</i> without a fire-resistance-rated separation, the incidental uses shall be separated from the remainder of the building by construction capable of resisting the passage of smoke in accordance with Section 509.4.2 of the <i>International Building Code</i> .		Base code renumbering.
	1105.34.3.2.1 Protection limitation. Except as otherwise specified in Table 1105.24 for certain incidental uses, where an <i>automatic sprinkler system</i> is provided in accordance with Table 1105.34, only the space occupied by the incidental use need be equipped with such a system.		Base code renumbering.
	1105.4.5 Corridor construction. In Group I-2, in areas housing patient sleeping or care rooms, <i>corridor</i> walls and the opening protectives therein shall provide a barrier designed to resist the passage of smoke in accordance with Sections 1105.45.1 through 1105.45.7		Base code renumbering.
	1105.4.5.1 Materials.		Base code renumbering.
	1105.4.5.2 Fire-resistance rating. Unless required elsewhere in this code, corridor walls are not required to have a fire- resistance rating. Corridor walls that were installed as fire-resistance-rated assemblies in accordance with the applicable codes under which the building was constructed, remodeled or altered shall be maintained unless modified in accordance with the International Existing Building Code.		Base code renumbering, updated requirements for corridor wall fire-resistance rating.
	1105.45.3 Corridor wall continuity.		Base code renumbering.
	1105.45.4 Openings in corridor walls. Openings in <i>corridor</i> walls shall provide protection in accordance with Sections 1105.45.4.1 through 1105.45.4.3.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1105.45.4.1 Windows. Windows in <i>corridor</i> walls shall be sealed to limit the passage of smoke, or the window shall be automatic-closing upon detection of smoke, or the window opening shall be protected by an automatic closing device that closes upon detection of smoke. Exception: In smoke compartments not containing patient sleeping rooms, pass- through windows or similar openings shall be permitted in accordance with Section 1105.45.4.3.		Base code renumbering.
	1105.45.4.2 Doors. Doors in <i>corridor</i> walls shall comply with Sections 1105.45.4.2.1 through 1105.45.4.2.3.		Base code renumbering.
	1105.45.4.2.1 Louvers.		Base code renumbering.
	1105.45.4.2.2 Corridor doors. Doors in <i>corridor</i> walls shall limit the transfer of smoke by complying with the following: 1. Doors shall be constructed of not less than 1¾ inch-thick (44 mm) solid bonded-core wood or capable of resisting fire not less than 1/3 hour. Exception: <i>Corridor</i> doors in buildings equipped throughout with an <i>automatic sprinkler system</i> . 2. Frames for side-hinged swinging doors shall have stops on the sides and top to limit transfer or smoke. 3. Where provided, vision panels in doors shall be a fixed glass window assembly installed to limit the passage of smoke. Existing wired glass panels with steel frames shall be permitted to remain in place. 4. ~~Door undercuts.~~ The clearance between the bottom of the door and floor shall not exceed 1 inch (25 mm). 5. Doors shall be positive latching with devices that resist not less than 5 pounds (22.2 N). Roller latches are prohibited. 6. Mail slots or similar openings shall be permitted in accordance with Section 1105.45.4.3.		Base code renumbering, updates to corridor door clearance requirements.
	1105.45.4.2.3 Dutch doors. Where provided, dutch doors shall comply with Section 1105.5.4.2.2. In addition, dutch doors shall be equipped with latching devices on either the top or bottom leaf to allow leaves to latch together. The space between the leaves shall be protected with devices such as astragals to limit the passage of smoke.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1105.5.4.2.4 Self- or automatic-closing doors. Where self- or automatic-closing doors are required, closers shall be maintained in operational condition. <u>Hold-open devices on doors shall be capable of manual release.</u>		Base code renumbering, updates to hold-open device requirements.
	1105.4.2.5 Protective plates. Protective plates installed on corridor doors shall not be limited in size.		New requirements for protective plates on corridor doors.
	1105.45.4.3 Openings in corridor walls and doors.		Base code renumbering.
	1105.45.5 Penetrations.		Base code renumbering.
	1105.45.6 Joints.		Base code renumbering.
	1105.45.7 Ducts and air transfer openings.		Base code renumbering.
	1105.56 Means of egress. In addition to the means of egress requirements in Section 1104, Group I-2 facilities shall meet the means of egress requirements in Sections 1105.56.1 through 1105.56.8.		Base code renumbering.
	~~1105.5.1 Exit signs and emergency illumination. The power system for exit signs and emergency illumination for the means of egress shall provide power for not less than 90 minutes and consist of storage batteries, unit equipment or an on-site generator.~~		Base code section removed.
	~~1105.5.2 Emergency power for operational needs. The essential electrical system shall be capable of supplying services in accordance with NFPA 99.~~		Base code section removed.
	<u>1105.6.1 Two means of egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which the means of egress originated. Smoke compartments that do not contain an exit shall be</u>		New requirements for smoke compartment means of egress.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	provided with direct access to not less than two adjacent smoke compartments.		
	~~1105.5.3.6.1~~ 1105.6.2 Size of door.		Base code renumbering.
	~~1105.6.2~~ 1105.6.3 Group I-2 occupancies. In Group I-2, where a door serves as an opening protective in a fire barrier, smoke barrier or fire wall and where the door is equipped with a hold-open device, such door shall automatically close upon any of the following conditions: 1. Actuation of smoke detectors initiating the hold-open device. 2. Activation of the fire alarm system within the zone. 3. Activation of an automatic sprinkler system within the zone.		Base code renumbering, new provisions for healthcare facility automatic closing door requirements.
	~~1105.5.6.4~~ 1105.6.4 Ramps.		Base code renumbering.
	~~1105.5.6.5~~ 1105.6.5 Corridor width.		Base code renumbering.
	~~1105.6.6~~ 1105.6.6 Dead-end corridors.		Base code renumbering.
	~~1105.5.6.7~~ 1105.6.7 Separation of exit access doors..		Base code renumbering.
	~~1105.5.6.8~~ 1105.6.8 Aisles.		Base code renumbering.
	1105.6.7.3 Opening protectives. Openings in smoke barriers shall be protected in accordance with Section 716 of the International Building Code. Opening protectives shall have a minimum fire- protection- rating of 1/3 hour. Exceptions: Existing wired glass vision panels in doors shall be permitted to remain.		Base code renumbering, updates to opening protective exceptions.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1. Existing wired glass vision panels in doors shall be permitted to remain. 2. Existing nonlabeled protection plates shall be permitted to remain.		
	~~1105.8~~ 1105.9 Group I-2 automatic sprinkler system. An automatic sprinkler system installed in accordance with Section 903.3.1.1 shall be provided throughout the floor containing the Group I-2 fire area. The sprinkler system shall be provided throughout the floor where the Group I-2 occupancy is located, on all floors between the Group I-2 occupancy fire area and the level of exit discharge, the level of exit discharge, and all floors below the level of exit discharge.		Base code renumbering.
	~~1105.9~~ 1105.10 Group I-2 automatic fire alarm system. An automatic 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 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 907.5.2.1 are not exceeded that manual fire alarm boxes are visible, are provided with ready access, and travel distances required in Section 907.4.2.1 are not exceeded.		Base code renumbering, added clarification.
	~~1105.10~~ 1105.11 Where required. ~~In~~ Where required by NFPA 99, Group I-2, Condition 2 occupancies where life support is being provided with an essential electrical system shall be provided in accordance with NFPA 99.		Base code renumbering, added clarification.
	SECTION 1106 REQUIREMENTS FOR OUTDOOR OPERATIONS		
		SECTION 1107 ENERGY STORAGE SYSTEMS 1107.1 Lithium-ion technology energy storage systems. The owner of an energy storage system (ESS) utilizing lithium-ion battery technology having capacities exceeding the values in Table 1207.1.1 and that was installed prior to the jurisdiction's adoption of the 2018 or later edition of the International Fire Code shall provide the <i>fire code official</i> a failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis in accordance with Section 104.8.2 for review and approval. Exception: Detached one- and two-family dwellings and townhouses	New Houston amendment for ESS systems to comply with Chapter 12.
		1107.1.1 Early Detection. In addition to the requirements of Section 1207.1.4.1 and 1207.1.4.2, the analysis shall include an assessment of the ability of the installed protection systems to provide for early detection and notification of a thermal runaway	New Houston amendment for ESS systems to comply with Chapter 12.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
		event in relation to the ability of emergency responders to safely mitigate the size and impact of a thermal runaway event.	
		1107.1.2 Corrective action plan. Where hazards are identified by the analysis, a plan that includes a timetable for corrective action shall be submitted to the <i>fire code official</i> for review and approval. The plan shall include actions and system improvements necessary for eliminating or mitigating any identified hazards, including listed methods for early detection and notification of a thermal runaway event.	New Houston amendment for ESS systems to comply with Chapter 12.
2015 Houston IFC – Chapter 12 Energy Systems	2021 IFC – Chapter 12 – Energy Systems	2021 Houston Amendments	Code Change Summary
CHAPTER 12 RESERVED ENERGY SYSTEMS SECTION 1201 GENERAL 1201.1 Scope. The provisions of this chapter shall apply to the installation, operation and maintenance of energy systems used for generating or storing energy. It shall not apply to equipment associated with the generation, control, transformation, transmission, or distribution of energy installations that is under the exclusive control of an electric utility or lawfully designated agency.	SECTION 1201 GENERAL 1201.1 Scope. The provisions of this chapter shall apply to the installation, operation and maintenance, maintenance, repair, retrofitting, testing, commissioning and decommissioning of energy systems used for generating or storing energy. It shall not apply to equipment associated with the generation, control, transformation, transmission, or distribution of energy installations that is under the exclusive control of an electric utility or lawfully designated agency.		2015 Houston amendments to Chapter 12 were incorporated from the 2018 IFC requirements. The amendments for this chapter have been removed as they are no longer necessary. Energy Storage requirements shall be in accordance with Chapter 12.
1201.2 Electrical wiring equipment. Electrical wiring and equipment used in connection with energy systems shall be installed and maintained in accordance with Chapter 12 and NFPA 70.	1201.2 Electrical wiring and equipment. Electrical wiring and equipment used in connection with energy systems shall be installed and maintained in accordance with this chapter, Section 603 and NFPA 70.		Removed Houston amendment to go with base code requirements for Energy Storage.
1201.3 Mixed system installation. Where approved, the aggregate kWh energy in a fire area shall not exceed the maximum quantity specified for any of the energy systems in this chapter. Where required by the <i>fire code official</i>, a hazard mitigation analysis shall be provided and approved in accordance with Section 104.7.2 to evaluate any potential adverse interaction between the various energy systems and technologies.	1201.3 Mixed system installation. Where approved, the aggregate nameplate kWh energy of all energy storage systems in a fire area		Removed Houston amendment to go with base code requirements for Energy Storage.
SECTION 1202 DEFINITIONS 1202.1 Definitions. The following terms are defined in Chapter 2: BATTERY SYSTEM, STATIONARY STORAGE. BATTERY TYPES. Lead-acid battery. CAPACITOR ARRAY. CAPACITOR ENERGY STORAGE SYSTEM. CRITICAL CIRCUIT. EMERGENCY POWER SYSTEM. ENERGY MANAGEMENT SYSTEMS. FUEL CELL POWER SYSTEM, STATIONARY. STANDBY POWER SYSTEM. STATIONARY BATTERY ARRAY.	SECTION 1202 DEFINITIONS 1202.1 Definitions.The following terms are defined in Chapter 2: BATTERY SYSTEM, STATIONARY STORAGE . BATTERY TYPES . Lead-acid battery. CAPACITOR ARRAY. CAPACITOR ENERGY STORAGE SYSTEM . CRITICAL CIRCUIT . EMERGENCY POWER SYSTEM . ENERGY STORAGE MANAGEMENT SYSTEMS . ENERGY STORAGE SYSTEM (ESS) . ENERGY STORAGE SYSTEM, ELECTROCHEMICAL .		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~ENERGY STORAGE SYSTEM, MOBILE . ENERGY STORAGE SYSTEM, WALK-IN UNIT . ENERGY STORAGE SYSTEM CABINET . ENERGY STORAGE SYSTEM COMMISSIONING . ENERGY STORAGE SYSTEM DECOMMISSIONING . FUEL CELL POWER SYSTEM, STATIONARY . PORTABLE GENERATOR .~~ ~~STANDBY POWER SYSTEM .~~ ~~STATIONARY BATTERY ARRAY.~~		
SECTION 1203 EMERGENCY AND STANDBY POWER SYSTEMS 1203.1 General. <u>Emergency power systems and standby power systems required by this code or the <i>Building Code</i> shall comply with Sections 1203.1.1 through 1203.1.9.</u>	SECTION 1203 EMERGENCY AND STANDBY POWER SYSTEMS 1203.1 General. Emergency power systems and standby power systems required by this code or the International Building Code shall comply with Sections 1203.1.1 through 1203.1.9.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.1 Stationary generators. <u>Stationary emergency and standby power generators required by this code shall be listed in accordance with UL 2200-2012.</u>	1203.1.1 Stationary generators. Stationary emergency and standby power generators required by this code shall be ~~listed~~ in accordance with UL 2200.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.2 Fuel line piping protection. <u>Fuel lines supplying a generator set inside a high-rise building shall be separated from areas of the building other than the room the generator is located in by an approved method, or an assembly that has a fire-resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required fire-resistance rating shall be reduced to 1 hour.</u>	1203.1.2 Fuel line piping. Fuel lines supplying a generator set inside a high-rise building shall be separated from areas of the building other than the room the generator is located in ~~by an approved method, or an~~ one of the following methods: 1. A fire-resistant pipe-protection system that has been tested in accordance with UL 1489. The system shall be installed as tested and in accordance with the manufacturer's installation instructions, and shall have a rating of not less than 2 hours. Where the building is protected throughout with an <i>automatic sprinkler system</i> in stalled in accordance with Section 903.3.1.1, the required rating shall be reduced to 1 hour. 2. An assembly that has a <i>fire-resistance rating</i> of not less than 2 hours. Where the building is protected throughout with an <i>automatic sprinkler system</i> installed in accordance with Section 903.3.1.1, the required <i>fire-resistance rating</i> shall be reduced to 1 hour. 3. Other approved methods.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.3 Installation. <u>Emergency power systems and standby power systems shall be installed in accordance with the <i>Building Code</i>, NFPA 70, NFPA 110-2016 and NFPA 111-2013.</u>	1203.1.3 Installation. Emergency power systems and standby power systems shall be installed in accordance with the <i>International Building Code</i>, NFPA 70, NFPA 110 and NFPA 111.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.4. Load transfer. <u>Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code.</u>	1203.1.4. Load transfer. Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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1203.1.5 Load duration. Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 2 hours without being refueled or recharged, unless specified otherwise in this code.	1203.1.5 Load duration. Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 2 hours without being refueled or recharged, unless specified otherwise in this code.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.6 Uninterruptable power source. An uninterrupted source of power shall be provided for equipment where required by the manufacturer's instructions, the listing, this code or applicable referenced standards.	1203.1.6 Uninterruptable power source. An uninterrupted source of power shall be provided for equipment where required by the manufacturer's instructions, the listing, this code or applicable referenced standards.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.7 Interchangeability. Emergency power systems shall be an acceptable alternative for installations that require standby power systems.	1203.1.7 Interchangeability. Emergency power systems shall be an acceptable alternative for installations that require standby power systems.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.8 Group I-2 occupancies. In Group I-2 occupancies, where an essential electrical system is located in flood hazard areas established in Section 1612.3 of the <i>Building Code</i> and where new or replacement essential electrical system generators are installed, the system shall be located and installed in accordance with ASCE 24-14.	1203.1.8 Group I-2 occupancies. In Group I-2 occupancies, where an essential electrical system is located in flood hazard areas established in Section 1612.3 of the <i>International Building Code</i> and where new or replacement essential electrical system generators are installed, the system shall be located and installed in accordance with ASCE 24.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.1.9 Maintenance. Existing installations shall be maintained in accordance with the original approval and Section 1203.4.	1203.1.9 Maintenance. Existing installations shall be maintained in accordance with the original approval and Section 1203.4.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2 Where required. Emergency and standby power systems shall be provided where required by Sections 1203.2.1 through 1203.2.18.	1203.2 Where required. Emergency and standby power systems shall be provided where required by Sections 1203.2.1 through 1203.2.19.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.1 Ambulatory care facilities. Essential electrical systems for ambulatory care facilities shall be in accordance with Section 422.6 of the <i>Building Code</i> .	1203.2.1 Ambulatory care facilities. Essential electrical systems for ambulatory care facilities shall be in accordance with Section 422.6 of the <i>International Building Code</i> .		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.2 Elevators and platform lifts. Standby power shall be provided for elevators and platform lifts as required in Sections 607.2, 1009.4, and 1009.5.	1203.2.2 Elevators and platform lifts. Standby power shall be provided for elevators and platform lifts as required in Sections 604.3, 1009.4.1, and 1009.5.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.3 Emergency responder radio coverage systems. Standby power shall be provided for emergency responder radio coverage systems as required in Section 510.4.2.3. The standby power supply shall be capable of operating the emergency responder radio coverage system for a duration of not less than 24 hours.	1203.2.3 Emergency responder radio communication coverage systems. Standby power shall be provided for in-building, two-way emergency responder radio communication coverage systems as required in Section 510.4.2.3. The standby power supply shall be capable of operating the in-building, two-way emergency responder radio communication coverage system at 100-percent system operation capacity for a duration of not less than 12 hours.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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1203.2.4 Emergency voice/alarm communication systems. Emergency power shall be provided for emergency voice/alarm communication systems as required in Section 907.5.2.2.5. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72-2016.	1203.2.4 Emergency voice/alarm communication systems. Emergency Standby power shall be provided for emergency voice/alarm communication systems as required in accordance with Section 907.5.2.2.5. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.5 Exit signs. Emergency power shall be provided for exit signs as required in Section 1013.6.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.	1203.2.5 Exhaust ventilation. Standby power shall be provided for mechanical exhaust systems as required in Section 1207.6.1.2.1. The system shall be capable of powering the required load for a duration of not less than 2 hours.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.6 Gas detection systems. Emergency power shall be provided for gas detection systems where required by Sections 1203.2.9 and 1203.2.16. Standby power shall be provided for gas detection systems where required by Section 916.5.	~~1203.2.5~~ 1203.2.6 Exit signs. Emergency power shall be provided for exit signs as required in Section 1013.6.3. The system shall be capable of powering the required load for a duration of not less than 90 minutes.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.7 Group I-2 occupancies. Essential electrical systems for Group I-2 occupancies shall be in accordance with Section 407.10 of the <i>Building Code</i> .	~~1203.2.6~~ 1203.2.7 Gas detection systems. Emergency power shall be provided for gas detection systems where required by Sections 1203.2.10 and 1203.2.17. Standby power shall be provided for gas detection systems where required by Sections 916.5 and 1207.6.1.2.4.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.8 Group I-3 occupancies. Power-operated sliding doors or power-operated locks for swinging doors in Group I-3 occupancies shall be operable by a manual release mechanism at the door. Emergency power shall be provided for the doors and locks. Exceptions: 1. Emergency power is not required in facilities where provisions for remote locking and unlocking of occupied rooms in Occupancy Condition 4 are not required as set forth in the <i>Building Code</i> . 2. Emergency power is not required where remote mechanical operating releases are provided.	~~1203.2.7~~ 1203.2.8 Group I-2 occupancies. Essential electrical systems for Group I-2 occupancies shall be in accordance with Section 407.11 of the <i>International Building Code</i> .		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.9 Hazardous materials. Emergency and standby power shall be provided in occupancies with hazardous materials as required in the following sections: 1. Sections 5004.7 and 5005.1.5 for hazardous materials. 2. Sections 6004.2.2.8 and 6004.3.4.2 for highly toxic and toxic gases. 3. Section 6204.1.11 for organic peroxides.	~~1203.2.8~~ 1203.2.9 Group I-3 occupancies. Power-operated sliding doors or power-operated locks for swinging doors in Group I-3 occupancies shall be operable by a manual release mechanism at the door. Emergency power shall be provided for the doors and locks. Exceptions: 1. Emergency power is not required in facilities where provisions for remote locking and unlocking of occupied rooms in Occupancy Condition 4 are not required as set forth in the <i>International Building Code</i> . 2. Emergency power is not required where remote mechanical operating releases are provided.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.10 High-rise buildings. Standby power and emergency power shall be provided for high-rise buildings as required in Section 403 of the <i>Building Code</i> , and shall be in accordance with Section 1203.	~~1203.2.10~~ 1203.2.11 High-rise buildings. Standby power and emergency power shall be provided for high-rise buildings as required in Section 403 of the <i>Building Code</i> , and shall be in accordance with Section 1203.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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1203.2.11 Special purpose horizontal sliding doors. Standby power shall be provided for horizontal sliding doors as required in Section 1010.1.4.3. The standby power supply shall have a capacity to operate not fewer than 50 closing cycles of the door.	~~1203.2.11~~ 1203.2.12 Special purpose horizontal sliding doors. Standby power shall be provided for horizontal sliding doors as required in Section 1010.1.4.3. The standby power supply shall have a capacity to operate not fewer than 50 closing cycles of the door.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.12 Hydrogen fuel gas rooms. Standby power shall be provided for hydrogen fuel gas rooms as required by Section 5808.7.	~~1203.2.12~~ 1203.2.13 Hydrogen fuel gas rooms. Standby power shall be provided for hydrogen fuel gas rooms as required by Section 5808.7.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.13 Laboratory suites. Standby or emergency power shall be provided in accordance with Section 5004.7 where <i>laboratory suites</i> are located above the sixth story above grade plane or located in a story below grade plane.	~~1203.2.13~~ 1203.2.14 Laboratory suites. Standby or emergency power shall be provided in accordance with Section 5004.7 where <i>laboratory suites</i> are located above the sixth story above grade plane or located in a story below grade plane.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.14 Means of egress illumination. Emergency power shall be provided for <i>means of egress</i> illumination in accordance with Sections 1008.3 and 1104.5.1.	~~1203.2.14~~ 1203.2.15 Means of egress illumination. Emergency power shall be provided for <i>means of egress</i> illumination in accordance with Sections 1008.3 and 1104.5.1.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.15 Membrane structures. Standby power shall be provided for auxiliary inflation systems in permanent membrane structures in accordance with Section 2702 of the <i>Building Code</i> . Auxiliary inflation systems shall be provided in temporary air-supported and air-inflated membrane structures in accordance with Section 3103.10.4.	~~1203.2.15~~ 1203.2.16 Membrane structures. Standby power shall be provided for auxiliary inflation systems in permanent membrane structures in accordance with Section 2702 of the <i>Building Code</i> . Auxiliary inflation systems shall be provided in temporary air-supported and air-inflated membrane structures in accordance with Section 3103.10.4.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.16 Semiconductor fabrication facilities. Emergency power shall be provided for semiconductor fabrication facilities as required in Section 2703.15.	~~1203.2.16~~ 1203.2.17 Semiconductor fabrication facilities. Emergency power shall be provided for semiconductor fabrication facilities as required in Section 2703.15.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.17 Smoke control systems. Standby power shall be provided for smoke control systems as required in Section 909.11.	~~1203.2.17~~ 1203.2.18 Smoke control systems. Standby power shall be provided for smoke control systems as required in Section 909.11.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.2.18 Underground buildings. Emergency and standby power shall be provided in underground buildings as required in Section 405 of the <i>Building Code</i> and shall be in accordance with Section 1203.	~~1203.2.18~~ 1203.2.19 Underground buildings. Emergency and standby power shall be provided in underground buildings as required in Section 405 of the <i>Building Code</i> and shall be in accordance with Section 1203.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.3 Critical circuits. Required critical circuits shall be protected using one of the following methods: 1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196-2001 and shall have a <i>fire-resistance rating</i> of not less than 1 hour. 2. Electrical circuit protective systems shall have a <i>fire-resistance rating</i> of not less than 1 hour. Electrical circuit protective systems shall be installed in accordance with their listing requirements.	1203.3 Critical circuits. Required <i>critical circuits</i> shall be protected using one of the following methods: 1. Cables used for survivability of required <i>critical circuits</i> shall be <i>listed</i> in accordance with UL 2196 and shall have a <i>fire-resistance rating</i> of not less than 1 hour. 2. Electrical circuit protective systems shall have a <i>fire-resistance rating</i> of not less than 1 hour. Electrical circuit protective systems shall be installed in accordance with their listing requirements.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
3. Construction having a <i>fire-resistance rating</i> of not less than 1 hour.	3. Construction having a <i>fire-resistance rating</i> of not less than 1 hour.		
1203.4 Maintenance. Emergency and standby power systems shall be maintained in accordance with NFPA 110-2016 and NFPA 111-2013 such that the system is capable of supplying service within the time specified for the type and duration required.	1203.4 Maintenance. Emergency and standby power systems shall be maintained in accordance with NFPA 110-2016 and NFPA 111-2013 such that the system is capable of supplying service within the time specified for the type and duration required.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.4.1 Group I-2. In Group I-2 occupancies, emergency and standby power systems shall be maintained in accordance with NFPA 99-2018.	1203.4.1 Group I-2 and ambulatory care facilities. In Group I-2 occupancies and ambulatory care facilities, emergency and standby power systems shall be maintained in accordance with NFPA 99.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.4.2 Schedule. Inspection, testing and maintenance of emergency and standby power systems shall be in accordance with an approved schedule established upon completion and approval of the system installation.	1203.4.2 Schedule. Inspection, testing and maintenance of emergency and standby power systems shall be in accordance with an approved schedule established upon completion and approval of the system installation.	1203.4.2 Schedule. Inspection, testing and maintenance of emergency and standby power systems shall be in accordance with an approved schedule established upon completion and approval of the system installation and Houston Fire Department LSB Standard No. 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment."	No change to Houston amendment. Relocated from Section 604.4.1.
1203.4.3 Records. Records of the inspections, testing and maintenance of emergency and standby power systems shall include the date of service, name of the servicing technician, a summary of conditions noted and a detailed description of any conditions requiring correction and what corrective action was taken. Such records shall be maintained.	1203.4.3 Records. Records of the inspections, testing and maintenance of emergency and standby power systems shall include the date of service, name of the servicing technician, a summary of conditions noted and a detailed description of any conditions requiring correction and what corrective action was taken. Such records shall be maintained.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.4.4 Switch maintenance. Emergency and standby power system transfer switches shall be included in the inspection, testing and maintenance schedule required by Section 1203.4.2. Transfer switches shall be maintained free from accumulated dust and dirt. Inspection shall include examination of the transfer switch contacts for evidence of deterioration. When evidence of contact deterioration is detected, the contacts shall be replaced in accordance with the transfer switch manufacturer's instructions.	1203.4.4 Switch maintenance. Emergency and standby power system transfer switches shall be included in the inspection, testing and maintenance schedule required by Section 1203.4.2. Transfer switches shall be maintained free from accumulated dust and dirt. Inspection shall include examination of the transfer switch contacts for evidence of deterioration. When evidence of contact deterioration is detected, the contacts shall be replaced in accordance with the transfer switch manufacturer's instructions.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.5 Operational inspection and testing. Emergency power systems, including all appurtenant components, shall be inspected and tested under load in accordance with NFPA 110-2016 and NFPA 111-2013. Exception: Where the emergency power system is used for standby power or peak load shaving, such use shall be recorded and shall be allowed to be substituted for scheduled testing of the generator set, provided that appropriate records are maintained.	1203.5 Operational inspection and testing. Emergency power systems, including all appurtenant components, shall be inspected and tested under load in accordance with NFPA 110-2016 and NFPA 111-2013. Exception: Where the emergency power system is used for standby power or peak load shaving, such use shall be recorded and shall be allowed to be substituted for scheduled testing of the generator set, provided that appropriate records are maintained.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.5.1 Group I-2. In Group I-2 occupancies, emergency and standby power systems shall be inspected and tested under load in accordance with NFPA 99-2018.	1203.5.1 Group I-2 and ambulatory care facilities. In Group I-2 occupancies and ambulatory care facilities, emergency and standby power systems shall be inspected and tested under load in accordance with NFPA 99.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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1203.5.2 Transfer switch test. The test of the transfer switch shall consist of electrically operating the transfer switch from the normal position to the alternate position and then return to the normal position.	1203.5.2 Transfer switch test. The test of the transfer switch shall consist of electrically operating the transfer switch from the normal position to the alternate position and then return to the normal position.		Removed Houston amendment to go with base code requirements for Energy Storage.
1203.6 Supervision of maintenance and testing. Routine maintenance, inspection and operational testing shall be overseen by a properly instructed individual.	1203.6 Supervision of maintenance and testing. Routine maintenance, inspection and operational testing shall be overseen by a properly instructed individual.		Removed Houston amendment to go with base code requirements for Energy Storage.
SECTION 1204 (Moved to 1205) SOLAR PHOTOVOLTAIC POWER SYSTEMS 1204.1 General. Solar photovoltaic systems shall be installed in accordance with Sections 1204.2 through 1204.5, and the Building Code or Residential Code. The electrical portion of solar PV systems shall be installed in accordance with NFPA 70.	SECTION 1204 PORTABLE GENERATORS 1204.1 Portable generators. The use, operation and maintenance of portable generators shall comply with this section.		New requirements for portable generators added to Chapter 12. Removed Houston amendment to go with base code requirements for Energy Storage.
1204.2 Access and pathways. Roof access, pathways, and spacing requirements shall be provided in accordance with Sections 1204.2.1 through 1204.3.3. Pathways shall be over areas capable of supporting fire fighters accessing the roof. Pathways shall be located in areas with minimal obstructions, such as vent pipes, conduit or mechanical equipment. Exceptions: 1. Detached, nonhabitable Group U structures including, but not limited to, detached garages serving Group R-3 buildings, parking shade structures, carports, solar trellises and similar structures. 2. Roof access, pathways and spacing requirements need not be provided where the <i>fire code official</i> has determined that rooftop operations will not be employed.	1204.2 Listing. Portable generators manufactured after January 1, 2021, shall be listed and labeled in accordance with UL 2201.		New requirements for portable generators added to Chapter 12. Removed Houston amendment to go with base code requirements for Energy Storage.
1204.2.1 Solar photovoltaic systems for Group R-3 buildings. Solar photovoltaic systems for Group R-3 buildings shall comply with Sections 1204.2.1.1 through 1204.2.1.3. Exceptions: 1. These requirements shall not apply to structures designed and constructed in accordance with the <i>Residential Code</i> . 2. These requirements shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal or less.			Removed Houston amendment to go with base code requirements for Energy Storage.
1204.2.1.1 Pathways to ridge. Not fewer than two 36-inch-wide (914 mm) pathways on separate roof planes, from lowest roof edge to ridge, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, not fewer than one 36-inch-wide (914 mm) pathway from lowest roof edge to ridge shall be provided on the same roof plane as the photovoltaic array, on an adjacent roof plane or straddling the same and adjacent roof planes.			Removed Houston amendment to go with base code requirements for Energy Storage.
1204.2.1.2 Setbacks at ridge. For photovoltaic arrays occupying 33 percent or less of the plan view total roof area, a setback of not less than 18 inches (457 mm) wide is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, a setback of not less than			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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36 inches (914 mm) wide is required on both sides of a horizontal ridge.			
1204.2.1.3 Alternative setbacks at ridge. Where an automatic sprinkler system is installed within the dwelling in accordance with Section 903.3.1.3, setbacks at the ridge shall conform to one of the following: 1. For photovoltaic arrays occupying 66 percent or less of the plan view total roof area, a setback of not less than 18 inches (457 mm) wide is required on both sides of a horizontal ridge. 2. For photovoltaic arrays occupying more than 66 percent of the plan view total roof area, a setback of not less than 36 inches (914 mm) wide is required on both sides of a horizontal ridge.			Removed Houston amendment to go with base code requirements for Energy Storage.
1204.2.2 Emergency escape and rescue openings. Panels and modules installed on Group R-3 buildings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A pathway of not less than 36 inches (914 mm) wide shall be provided to the emergency escape and rescue openings.			Removed Houston amendment to go with base code requirements for Energy Storage.
1204.3 Other than Group R-3 buildings. Access to systems for buildings, other than those containing Group R-3 occupancies, shall be provided in accordance with Sections 1204.3.1 through 1204.3.3. Exception: Where it is determined by the <i>fire code official</i> that the roof configuration is similar to that of a Group R-3 occupancy, the residential access and ventilation requirements in Sections 1204.2.1.1 through 1204.2.1.3 are a suitable alternative.	1204.3 Operation and maintenance. Portable generators shall be operated and maintained in accordance with the manufacturer's instructions.		New requirements for portable generators added to Chapter 12. Removed Houston amendment to go with base code requirements for Energy Storage.
1204.3.1 Perimeter pathways. There shall be a minimum 6-foot-wide (1,829 mm) clear perimeter around the edges of the roof. Exception: Where either axis of the building is 250 feet (76,200 mm) or less, the clear perimeter around the edges of the roof shall be permitted to be reduced to a minimum width of 4 feet (1,219 mm).			Removed Houston amendment to go with base code requirements for Energy Storage.
1204.3.2 Interior pathways. Interior pathways shall be provided between array sections to meet the following requirements: 1. Pathways shall be provided at intervals not greater than 150 feet (45,720 mm) throughout the length and width of the roof. 2. A pathway not less than 4 feet (1,219 mm) wide in a straight line to roof standpipes or ventilation hatches. 3. A pathway not less than 4 feet (1,219 mm) wide around roof access hatches, with not fewer than one such pathway to a parapet or roof edge.			Removed Houston amendment to go with base code requirements for Energy Storage.
1204.3.3 Smoke ventilation. The solar installation shall be designed to meet the following requirements: 1. Where nongravity-operated smoke and heat vents occur, a pathway not less than 4 feet (1,219 mm) wide shall be provided bordering all sides. 2. Smoke ventilation options between array sections shall be one of the following:			Removed Houston amendment to go with base code requirements for Energy Storage.

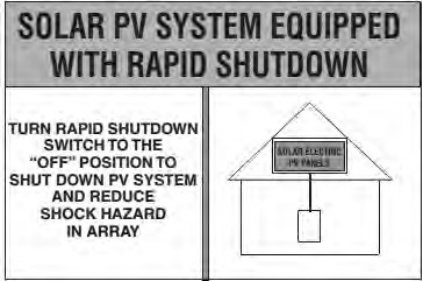
2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted = NEW or Modified Text by ICC in 2018 = NEW or Modified Text by ICC in 2021 ~~Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
2.1. A pathway not less than 8 feet (2,438 mm) wide. 2.2. ~~Where gravity-operated dropout smoke and heat vents occur, a pathway not less than 4 feet (1,219 mm) wide on not fewer than one side.~~ 2.3. A pathway not less than 4 feet (1,219 mm) wide bordering 4-foot by 8-foot (1,219 mm by 2,438 mm) venting cutouts every 20 feet (6,096 mm) on alternating sides of the pathway.			
1204.4 Ground-mounted photovoltaic panel systems. Ground-mounted photovoltaic panels systems shall comply with Section 1204.1 and this section. Setback requirements shall not apply to ground-mounted, free-standing photovoltaic arrays. A clear, brush-free area of 10 feet (3,048 mm) shall be required for ground-mounted photovoltaic arrays.	1204.4 Grounding. Portable generators shall be grounded in accordance with NFPA 70.		New requirements for portable generators added to Chapter 12. Removed Houston amendment to go with base code requirements for Energy Storage.
1204.5 Buildings with rapid shutdown. Buildings with rapid shutdown solar photovoltaic systems shall have permanent labels in accordance with Sections 1204.5.1 through 1204.5.3.	1204.5 Operating locations. Portable generators shall be operated only outdoors a minimum of 5 feet (1524 mm) from any building openings such as windows and doors or air intakes. Portable generators shall not be operated within buildings or enclosed areas. Additional separation shall be provided for tents, membrane structures and outdoor assembly events as specified in Chapter 31.		New requirements for portable generators added to Chapter 12. Removed Houston amendment to go with base code requirements for Energy Storage.
1204.5.1 Rapid shutdown type. The type of solar photovoltaic system rapid shutdown shall be labeled with one of the following: 1. For solar photovoltaic systems that shut down the array and the conductors leaving the array, a label shall be provided. The first two lines of the label shall be uppercase characters with a minimum height of 3/8 inch (10 mm) in black on a yellow background. The remaining characters shall be uppercase with a minimum height of 3/16 inch (5 mm) in black on a white background. The label shall be in accordance with Figure 1204.5.1(1) and state the following: SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN. TURN RAPID SHUTDOWN SWITCH TO THE “OFF” POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY. 2. For photovoltaic systems that only shut down conductors leaving the array, a label shall be provided. The first two lines of the label shall be uppercase characters with a minimum height of 3/8 inch (10 mm) in white on a red background and the remaining characters shall be capitalized with a minimum height of 3/16 inch (5 mm) in black on a white background. The label shall be in accordance with Figure 1204.5.1(2) and state the following: THIS SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN. TURN RAPID SHUTDOWN SWITCH TO THE “OFF” POSITION TO SHUT DOWN CONDDUC- TORS OUTSIDE THE ARRAY. CONDOC- TORS WITHIN ARRAY REMAIN ENERGIZED IN SUNLIGHT			Removed Houston amendment to go with base code requirements for Energy Storage.

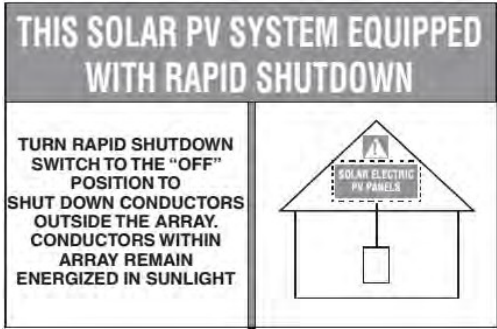
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1204.5.1.1 Diagram. The labels in Section 1204.5.1 shall include a simple diagram of a building with a roof. Diagram sections in red signify sections of the solar photovoltaic system that are not shut down when the rapid shutdown switch is turned off.			Removed Houston amendment to go with base code requirements for Energy Storage.
	1204.6 Cords and wiring. Extension cords and temporary wiring used to connect portable generators shall be in accordance with Section 604 and shall be provided with GFCI protection.		New requirements for portable generators added to Chapter 12.
	1204.7 Connections to premise wiring. Connections to a premise wiring system shall comply with all of the following: 1. Power shall not be provided in a manner that “back-feeds” receptacles or the premise wiring system. 2. Connection to a premise served by commercial power shall be made through a listed transfer switch installed, used and maintained in accordance with NFPA 70. 3. Connections to buildings not served by commercial power shall comply with NFPA 70.		New requirements for portable generators added to Chapter 12.
	1204.8 Refueling. Portable generators shall not be refueled while operating.		New requirements for portable generators added to Chapter 12.
	1204.9 Storage and repair. Storage and repair of fuel-fired portable generators shall comply with Section 313.		New requirements for portable generators added to Chapter 12.
	1204.10 Fire extinguisher. A listed portable fire extinguisher complying with Section 906 with a minimum rating of 2-A:20-B:C shall be provided not more than 50 feet (15 240 mm) from the portable generator.		New requirements for portable generators added to Chapter 12.
	1204.6 Cords and wiring. Extension cords and temporary wiring used to connect portable generators shall be in accordance with Section 604 and shall be provided with GFCI protection.		New requirements for portable generators added to Chapter 12.
	1204.7 Connections to premise wiring. Connections to a premise wiring system shall comply with all of the following: 1. Power shall not be provided in a manner that “back-feeds” receptacles or the premise wiring system. 2. Connection to a premise served by commercial power shall be made through a <i>listed</i> transfer switch installed, used and maintained in accordance with NFPA 70. 3. Connections to buildings not served by commercial power shall comply with NFPA 70.		New requirements for portable generators added to Chapter 12.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1204.8 Refueling. Portable generators shall not be refueled while operating.		New requirements for portable generators added to Chapter 12.
	1204.9 Storage and repair. Storage and repair of fuel-fired portable generators shall comply with Section 313.		New requirements for portable generators added to Chapter 12.
	1204.10 Fire extinguisher. A <i>listed</i> portable fire extinguisher complying with Section 906 with a minimum rating of 2-A:20-B:C shall be provided not more than 50 feet (15 240 mm) from the portable generator.		New requirements for portable generators added to Chapter 12.
SECTION 1205 (Moved to 1206) STATIONARY FUEL CELL POWER SYSTEMS 1205.1 General. <i>Stationary fuel cell power systems</i> in new and existing occupancies shall comply with this section.	SECTION 1204-1205 SOLAR PHOTOVOLTAIC POWER SYSTEMS ~~1204.1~~ 1205.1 General. Solar photovoltaic (PV) systems shall be installed in accordance with the <i>International Building Code</i> or <i>International Residential Code</i> . The electrical portion of solar PV systems shall be installed in accordance with NFPA 70. Rooftop-mounted solar photovoltaic systems shall be installed in accordance with Sections 1205.2 through 1205.4.3. Ground-mounted solar photovoltaic systems shall comply with Section 1205.5.		Removed Houston amendment to go with base code requirements for Energy Storage.
1205.2 Permits. Permits shall be obtained for <i>stationary fuel cell power systems</i> as set forth in Section 105.6.52.	~~1204.2~~ 1205.2 Access and pathways. Roof access, pathways and spacing requirements shall be provided in accordance with Sections 1205.2.1 through 1205.3.3. Pathways shall be over areas capable of supporting fire fighters access the roof. Pathways shall be located in areas with minimal obstructions, such as vent pipes, conduit or mechanical equipment. Exceptions: 1. Detached, nonhabitable Group U structures including, but not limited to, detached garages serving Group R-3 buildings, parking shade structures, carports, solar trellises and similar structures. 2. Roof access, pathways and spacing requirements need not be provided where the <i>fire code official</i> has determined that rooftop operations will not be employed. 3. Building-integrated photovoltaic (BIPV) systems where the BIPV systems are <i>approved</i> , integrated into the finished roof surface and are <i>listed</i> in accordance with a national test standard developed to address Section 690.12(B)(2) of NFPA 70. The removal or cutting away of portions of the BIPV system during fire-fighting operations shall not expose a fire fighter to electrical shock hazards.		Removed Houston amendment to go with base code requirements for Energy Storage.
	~~1204.2.1~~ 1205.2.1 Solar photovoltaic (PV) systems for Group R-3 buildings. Solar photovoltaic (PV) systems for Group R-3 buildings shall comply with Sections 1205.2.1.1 through 1205.2.3. Exceptions:		New requirements for solar PV systems added to Chapter 12.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1. These requirements shall not apply to structures designed and constructed in accordance with the <i>International Residential Code</i>. 2. These requirements shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal (16.7-percent slope) or less.		
	~~1204.2.1.1~~ 1205.2.1.1 Pathways to ridge. Not fewer than two 36-inch-wide (914 mm) pathways on separate roof planes, from lowest roof edge to ridge, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, not fewer than one 36-inch-wide (914 mm) pathway from lowest roof edge to ridge shall be provided on the same roof plane as the photovoltaic array, on an adjacent roof plane or straddling the same and adjacent roof planes.		New requirements for solar PV systems added to Chapter 12.
	~~1204.2.1.2~~ 1205.2.1.2 Setbacks at ridge. For photovoltaic arrays occupying 33 percent or less of the plan view total roof area, a setback of not less than 18 inches (457 mm) wide is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, a setback of not less than 36 inches (457 mm) wide is required on both sides of a horizontal ridge.		New requirements for solar PV systems added to Chapter 12.
	~~1204.2.1.3~~ 1205.2.1.3 Alternative setbacks at ridge. Where an <i>automatic sprinkler system</i> is installed within the <i>dwelling</i> in accordance with Section 903.3.1.3, setbacks at the ridge shall conform to one of the following:...		New requirements for solar PV systems added to Chapter 12.
	~~1204.2.2~~ 1205.2.2 Emergency escape and rescue openings. Panels and modules installed on Group R-3 buildings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A pathway of not less than 36 inches (914 mm) wide shall be provided to the emergency escape and rescue opening.		New requirements for solar PV systems added to Chapter 12.
	1205.2.3 Building-integrated photovoltaic (BIPV) systems. Where building-integrated photovoltaic (BIPV) systems are installed in a manner that creates areas with electrical hazards to be hidden from view, markings shall be provided to identify the hazardous areas to avoid. The markings shall be reflective and be visible from grade. Exception: BIPV systems <i>listed</i> in accordance with Section 690.12(B)(2) of NFPA 70, where the removal or cutting away of portions of the BIPV system during fire-fighting operations have been determined to not expose a fire fighter to electrical shock hazards.		New requirements for solar PV systems added to Chapter 12.
1205.3 Equipment. <i>Stationary fuel cell power systems</i> shall comply with the following: 1. <i>Prepackaged fuel cell power systems</i> shall be listed and labeled in accordance with CSA FC 1-2012. 2. The modules and components in a <i>preengineered fuel cell power system</i> shall be listed and labeled in accordance with CSA FC 1-2012 and interconnected to complete the assembly	~~1204.3~~ 1205.3 Other than Group R-3 buildings. Access to systems for buildings, other than those containing Group R-3 occupancies, shall be provided in accordance with Sections 1205.3.1 through 1205.3.3. Exception: Where it is determined by the <i>fire code official</i> that the roof configuration is similar to that of a Group R-3 occupancy.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
of the system at the job site in accordance with the manufacturer's instructions and the module and component listings. <u>3. Field-fabricated fuel cell power systems shall be approved based on a review of the technical report provided in accordance with Section 104.7.2. The report shall be prepared by and bear the stamp of a registered design professional and shall include:</u> <u>3.1. A fire risk evaluation.</u> <u>3.2. An evaluation demonstrating the modules and components in the fuel cell power system comply with applicable requirements in CSA FC 1-2012.</u> <u>3.3. Documentation of the fuel cell power system's compliance with applicable NFPA 2-2016 and NFPA 853-2015 construction requirements.</u>	the residential access and ventilation requirements in Sections 1205.2.1.1 through 1205.2.1.3 are a suitable alternative.		
	~~1204.3.1~~ 1205.3.1 Perimeter pathways. There shall be a minimum 6-foot-wide (1829 mm) clear perimeter around the edges of the roof. Exception: Where either axis of the building is 250 feet (76 200 mm) or less, the clear perimeter around the edges of the roof shall be permitted to be reduced to a minimum width of 4 feet (1219 mm).		New requirements for solar PV systems added to Chapter 12.
	~~1204.3.2~~ 1205.3.2 Interior pathways. Interior pathways shall be provided between array sections to meet the following requirements: 1. Pathways shall be provided at intervals not greater than 150 feet (45 720 mm) throughout the length and width of the roof. 2. A pathway not less than 4 feet (1219 mm) wide in a straight line to roof standpipes or ventilation hatches. 3. A pathway not less than 4 feet (1219 mm) wide around roof access hatches, with not fewer than one such pathway to a parapet or roof edge.		New requirements for solar PV systems added to Chapter 12.
	~~1204.3.3~~ 1205.3.3 Smoke ventilation. The solar installation shall be designed to meet the following requirements: 1. Where nongravity-operated smoke and heat vents occur, a pathway not less than 4 feet (1219 mm) wide shall be provided bordering all sides. 2. ~~Smoke ventilation options between array sections shall be one of the following:~~ 2.1 A pathway not less than 8 feet (2438 mm) wide. 2.2 Where gravity-operated dropout smoke and heat vents occur, a pathway not less than 4 feet (1219 mm) wide on not fewer than one side. 2.3. 3. Smoke ventilation options between array sections shall be one of the following: 3.1 A pathway not less than 8 feet (2438 mm) wide. 3.2 A pathway not less than 4 feet (1219 mm) wide bordering 4-foot by 8-foot (1219 mm by 2438 mm) venting cutouts every 20 feet (6096 mm) on alternating sides of the pathway.		New requirements for solar PV systems added to Chapter 12.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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1205.4 Installation. ~~Stationary fuel cell power systems shall be installed and maintained in accordance with NFPA 70 and NFPA 853-2015, the manufacturer's installation instructions, and the listing. Stationary fuel cell power systems fueled by hydrogen shall be installed and maintained in accordance with NFPA 2-2016 and NFPA 70, the manufacturer's installation instructions and the listing.~~	~~1204.5~~ 1205.4 Buildings with rapid shutdown. Buildings with rapid shutdown solar photovoltaic systems shall have permanent labels in accordance with Sections 1205.4.1 through 1205.4.3.		Removed Houston amendment to go with base code requirements for Energy Storage. New requirements for solar PV systems added to Chapter 12.
	~~1204.5.1~~ 1205.4.1 Rapid shutdown type. The type of solar photovoltaic system rapid shutdown shall be labeled with one of the following: 1. For solar photovoltaic systems that shut down the array and the conductors leaving the array, a label shall be provided. The first two lines of the label shall be uppercase characters with a minimum height of 3/8 inch (10 mm) in black on a yellow background. The remaining characters shall be uppercase with a minimum height of 3/16 inch (5 mm) in black on a white background. The label shall be in accordance with Figure 1205.4.1(1) and state the following: SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN. TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY. 2. For photovoltaic systems that only shut down conductors leaving the array, a label shall be provided. The first two lines of the label shall be uppercase characters with a minimum height of 3/8 inch (10 mm) in white on a red background and the remaining characters shall be capitalized with a minimum height of 3/16 inch (5 mm) in black on a white background. The label shall be in accordance with Figure 1205.4.1(2) and state the following: THIS SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN. TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN CONDUCTORS OUTSIDE THE ARRAY. CONDUCTORS WITHIN ARRAY REMAIN ENERGIZED IN SUNLIGHT. 		New requirements for solar PV systems added to Chapter 12.
	~~FIGURE 1204.5.1~~ FIGURE 1205.4.1(1)		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	LABEL FOR SOLAR PV SYSTEMS THAT REDUCE SHOCK HAZARD WITHIN ARRAY AND SHUT DOWN CONDUCTORS LEAVING ARRAY  FIGURE 1204.5.1_2 FIGURE 1205.4.1(2) LABEL FOR SOLAR PV SYSTEMS THAT ONLY SHUT DOWN CONDUCTORS LEAVING THE ARRAY		
	~~1204.5.1.1~~ 1205.4.1.1 Diagram. The labels in Section 1205.4.1 shall include a simple diagram of a building with a roof. Diagram sections in red signify sections of the solar photovoltaic system that are not shut down when the rapid shutdown switch is turned off.		New requirements for solar PV systems added to Chapter 12.
	~~1204.5.1.2~~ 1205.4.1.2 Location. The rapid shutdown label in Section 1205.4.1 shall be located not greater than 3 feet (914 mm) from the service disconnecting means to which the photovoltaic systems are connected, and shall indicate the location of all identified rapid shutdown switches if not at the same location.		New requirements for solar PV systems added to Chapter 12.
	~~1204.5.2~~ 1205.4.2 Buildings with more than one rapid shutdown type. Solar photovoltaic systems that contain rapid shutdown in accordance with both Items 1 and 2 of Section 1205.4.1 or solar photovoltaic systems where only portions of the systems on the building contain rapid shutdown, shall provide a detailed plan view diagram of the roof showing each different photovoltaic system and a dotted line around areas that remain energized after the rapid shutdown switch is operated.		New requirements for solar PV systems added to Chapter 12.
	~~1204.5.3~~ 1205.4.3 Rapid shutdown switch. A rapid shutdown switch shall have a label located not greater than 3 feet (914 mm) from the switch that states the following: RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM		New requirements for solar PV systems added to Chapter 12.
1205.5 Residential use. <i>Stationary fuel cell power systems shall not be installed in Group R-3 and R-4 buildings, or dwelling units associated with Group R-2 buildings unless they are specifically listed for residential use.</i>	~~1204.4~~ 1205.5 Ground-mounted photovoltaic panel systems. Ground-mounted photovoltaic panel systems shall <u>be installed in accordance with this section</u>. ~~comply with Section 1205.1 and this section.~~ Setback requirements shall not apply to ground-mounted, free-standing photovoltaic arrays. A clear, brush-free area of 10 feet (3048 mm) shall be required for ground-mounted photovoltaic arrays.		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1205.5.1 Vegetation control. A clear, brush-free area of 10 feet (3048 mm) shall be required around the perimeter of the ground-mounted photovoltaic arrays. A noncombustible base of gravel or a maintained vegetative surface or a noncombustible base, <i>approved</i> by the <i>fire code official</i> , shall be installed and maintained under the photovoltaic arrays and associated electrical equipment installations.		New requirements for solar PV systems added to Chapter 12.
1205.6 Indoor installations. <i>Stationary fuel cell power systems</i> installed in indoor locations shall comply with Sections 1205.6 through 1205.6.2. For purposes of this section, an indoor location includes a roof and 50 percent or greater enclosing walls.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.6.1 Listed. <i>Stationary fuel cell power systems</i> installed indoors shall be specifically listed and labeled for indoor use.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.6.2 Separation. Rooms containing <i>stationary fuel cell power systems</i> shall be separated from the following occupancies by fire barriers or horizontal assemblies, or both, constructed in accordance with the <i>Building Code</i> . 1. Group B, F, M, S and U occupancies by 1-hour fire-resistance-rated construction. 2. Group A, E, I and R occupancies by 2-hour fire-resistance-rated construction. Exception: <i>Stationary fuel cell power systems</i> with an aggregate rating less than 50 kW shall not be required to be separated from other occupancies provided that the systems comply with Section 903 of NFPA 853-2015.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.7 Vehicle impact protection. Where <i>stationary fuel cell power systems</i> are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with Section 312.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.8 Outdoor installation. <i>Stationary fuel cell power systems</i> located outdoors shall be separated by not less than 5 feet (1,524 mm) from the following: 1. Lot lines. 2. Public ways. 3. Buildings. 4. Stored combustible materials. 5. Hazardous materials. 6. High-piled stock. 7. Any portion of a designated means of egress system. 8. Other exposure hazards.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.9 Fuel supply. The design, location and installation of the fuel supply for <i>stationary fuel cell power systems</i> shall comply with Chapter 53, Chapter 58 and the <i>International Fuel Gas Code</i> , based on the particular fuel being supplied to the system.			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
1205.10 Manual shutoff. Access to a manual shutoff valve shall be provided for the fuel piping within 6 feet (1,829 mm) of any fuel storage tank serving the fuel cell and within 6 feet (1,829 mm) of the power system. If the fuel tank and the <i>stationary fuel cell power system</i> are less than 12 feet (3,658 mm) apart, a single shutoff valve shall be permitted. If the <i>stationary fuel cell power system</i> is located indoors, the shutoff valve shall be located outside of the room in which the system is installed, unless otherwise approved by the <i>fire code official</i> .			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.11 Ventilation and exhaust. Ventilation and exhaust for stationary fuel cell power systems shall be provided in accordance NFPA 853-2015.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.12 Fire suppression. Fire suppression for stationary fuel cell power system installations shall be provided in accordance with NFPA 853-2015.			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.13 Gas detection systems. Stationary fuel cell power systems shall be provided with a gas detection system. Detection shall be provided in approved locations in the fuel cell power system enclosure, the exhaust system or the room that encloses the fuel cell power system. The system shall be designed to activate at a flammable gas concentration of not more than 25 percent of the lower flammable limit (LFL).			Removed Houston amendment to go with base code requirements for Energy Storage.
1205.13.1 System activation. The activation of the gas detection system shall automatically: 1. Close valves between the gas supply and the fuel cell power system. 2. Shut down the fuel cell power system. 3. Initiate local audible and visible alarms in approved locations.			Removed Houston amendment to go with base code requirements for Energy Storage.
SECTION 1206 ELECTRICAL ENERGY STORAGE SYSTEMS 1206.1 Scope. The provisions in this section are applicable to energy storage systems designed to provide electrical power to a building or facility. These systems are used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.	~~1206.1 Scope. The provisions in this section are applicable to energy storage systems designed to provide electrical power to a building or facility. These systems are used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.~~ SECTION 1206 STATIONARY FUEL CELL POWER SYSTEMS ~~1205.1~~ 1206.1 General. Stationary fuel cell power systems in new and existing occupancies shall comply with this section. Exception: The temporary use of a fuel cell-powered electric vehicle to power a Group R-3 or R-4 building while parked shall comply with Section 1206.14.		Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2 Stationary storage battery systems. Stationary storage battery systems having capacities exceeding the values shown in Table 1206.2 shall comply with Section 1206.2.1 through 1206.2.12.6, as applicable.	~~1206.2 Stationary storage battery systems. Stationary storage battery systems having capacities exceeding the values shown in Table 1206.2 shall comply with Sections 1206.2.1 through 1206.2.12.6, as applicable.~~ ~~1205.2~~ 1206.2 Permits. Permits shall be obtained for stationary fuel cell power systems as set forth in Section 105.6.9.		Removed Houston amendment to go with base code requirements for Energy Storage.

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TABLE 1206.2 BATTERY STORAGE SYSTEM THRESHOLD QUANTITIES <table><tr><th>BATTERY TECHNOLOGY</th><th>CAPACITY^a</th></tr><tr><td>Flow batteries^b</td><td>20 kWh</td></tr><tr><td>Lead acid, all types</td><td>70 kWh</td></tr><tr><td>Lithium, all types</td><td>20 kWh</td></tr><tr><td>Nickel cadmium (Ni-Cd)</td><td>70 kWh</td></tr><tr><td>Sodium, all types</td><td>20 kWh^c</td></tr><tr><td>Other battery technologies</td><td>10 kWh</td></tr></table> For SI: 1 kilowatt hour = 3.6 megajoules a. For batteries rated in amp-hours, kWh shall equal rated voltage times amp-hour rating divided by 1000. b. Shall include vanadium, zinc-bromine, polysulfide-bromide, and other flowing electrolyte-type technologies. c. 70 kWh for sodium-ion technologies.				BATTERY TECHNOLOGY	CAPACITY ^a	Flow batteries ^b	20 kWh	Lead acid, all types	70 kWh	Lithium, all types	20 kWh	Nickel cadmium (Ni-Cd)	70 kWh	Sodium, all types	20 kWh ^c	Other battery technologies	10 kWh			Removed Houston amendment to go with base code requirements for Energy Storage.
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Sodium, all types	20 kWh ^c																			
Other battery technologies	10 kWh																			
1206.2.1 Permits. Permits shall be obtained for the installation and operation of stationary storage battery systems in accordance with Section 105.6.50.			Removed Houston amendment to go with base code requirements for Energy Storage.																	
1206.2.2 Construction documents. The following information shall be provided with the permit application: 1. Location and layout diagram of the room in which the stationary storage battery system is to be installed. 2. Details on hourly fire-resistance-rated assemblies provided. 3. Quantities and types of storage batteries and battery systems. 4. Manufacturer's specifications, ratings and listings of storage batteries and battery systems. 5. Details on energy management systems. 6. Location and content of signage. 7. Details on fire-extinguishing, smoke detection and ventilation systems. 8. Rack storage arrangement, including seismic support criteria.			Removed Houston amendment to go with base code requirements for Energy Storage.																	
1206.2.3 Hazard mitigation analysis. A failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis shall be provided in accordance with Section 104.7.2 under any of the following conditions: 1. Battery technologies not specifically identified in Table 1206.2 are provided. 2. More than one stationary storage battery technology is provided in a room or indoor area where there is a potential for adverse interaction between technologies. 3. Where allowed as a basis for increasing maximum allowable quantities in accordance with Section 1206.2.9.			Removed Houston amendment to go with base code requirements for Energy Storage.																	

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1206.2.3.1 Fault condition. The hazard mitigation analysis shall evaluate the consequences of the following failure modes, and others deemed necessary by the <i>fire code official</i>. Only single-failure modes shall be considered. 1. Thermal runaway condition in a single-battery storage rack, module or array. 2. Failure of any energy management system. 3. Failure of any required ventilation system. 4. Voltage surges on the primary electric supply. 5. Short circuits on the load side of the stationary battery storage system. 6. Failure of the smoke detection, fire-extinguishing or gas detection system. 7. Spill neutralization not being provided or failure of the secondary containment system.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.3.2 Analysis approval. The <i>fire code official</i> is authorized to approve the hazardous mitigation analysis provided that the hazard mitigation analysis demonstrates all of the following: 1. Fire or explosions will be contained within unoccupied battery storage rooms for the minimum duration of the fire-resistance-rated walls identified in Table 509 of the <i>Building Code</i>. 2. Fire and explosions in battery cabinets in occupied work centers will be detected in time to allow occupants within the room to evacuate safely. 3. Toxic and highly toxic gases released during fires and other fault conditions shall not reach concentrations in excess of Immediately Dangerous to Life or Health (IDLH) levels in the building or adjacent means of egress routes during the time deemed necessary to evacuate from that area. 4. Flammable gases released from batteries during charging, discharging and normal operation shall not exceed 25 percent of their lower flammability limit (LFL). 5. Flammable gases released from batteries during fire, overcharging and other abnormal conditions shall not create an explosion hazard that will injure occupants or emergency responders.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.3.3 Additional protection measures. Construction, equipment and systems that are required for the stationary storage battery system to comply with the hazardous mitigation analysis, including but not limited to those specifically described in Section 1206.2, shall be installed, maintained and tested in accordance with nationally recognized standards and specified design parameters.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.4 Seismic and structural design. Stationary storage battery systems shall comply with the seismic design requirements in Chapter 16 of the <i>Building Code</i>, and shall not exceed the floor-loading limitation of the building.			Removed Houston amendment to go with base code requirements for Energy Storage.

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1206.2.5 Vehicle impact protection. Where stationary storage battery systems are subject to impact by a motor vehicle, including forklifts, vehicle impact protection shall be provided in accordance with Section 312.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.6 Combustible storage. Combustible materials not related to the stationary storage battery system shall not be stored in battery rooms, cabinets or enclosures. Combustible materials in occupied work centers covered by Section 1206.2.8.5 shall not be stored less than 3 feet (915 mm) from battery cabinets.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.7 Testing, maintenance and repair. Storage batteries and associated equipment and systems shall be tested and maintained in accordance with the manufacturer's instructions. Any storage batteries or system components used to replace existing units shall be compatible with the battery charger, energy management systems, other storage batteries and other safety systems. Introducing other types of storage batteries into the stationary storage battery system or other types of electrolytes into flow battery systems shall be treated as a new installation and require approval by the <i>fire code official</i> before the replacements are introduced into service.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8 Location and construction. Rooms and areas containing stationary storage battery systems shall be designed, located and constructed in accordance with Sections 1206.2.8.1 through 1206.2.8.7.4.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.1 Location. Stationary storage battery systems shall not be located in areas where the floor is located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access, or where the floor level is more than 30 feet (9,144 mm) below the finished floor of the lowest level of exit discharge. Exceptions: 1. Lead acid and nickel cadmium stationary storage battery systems. 2. Installations on noncombustible rooftops of buildings exceeding 75 feet (22,860 mm) in height that do not obstruct fire department rooftop operations, where approved by the fire code official.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.2 Separation. Rooms containing stationary storage battery systems shall be separated from other areas of the building in accordance with Section 509.1 of the <i>Building Code</i> . Battery systems shall be allowed to be in the same room with the equipment they support.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.3 Stationary battery arrays. Storage batteries, prepackaged stationary storage battery systems and preengineered stationary storage battery systems shall be segregated into stationary battery arrays not exceeding 50 kWh (180 megajoules) each. Each stationary battery array shall be spaced not less than 3 feet (914 mm) from other			Removed Houston amendment to go with base code requirements for Energy Storage.

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stationary battery arrays and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10. Exceptions: 1. Lead acid and nickel cadmium storage battery arrays. 2. Listed preengineered stationary storage battery systems and prepackaged stationary storage battery systems shall not exceed 250 kWh (900 megajoules) each. 3. The <i>fire code official</i> is authorized to approve listed, preengineered and prepackaged battery arrays with larger capacities or smaller battery array spacing if large-scale fire and fault condition testing conducted or witnessed and reported by an approved testing laboratory is provided showing that a fire involving one array will not propagate to an adjacent array, and be contained within the room for the duration equal to the fire-resistance rating of the room separation specified in Table 509 of the <i>Building Code</i> .			
1206.2.8.4 Separate rooms. Where stationary batteries are installed in a separate equipment room that can be accessed only by authorized personnel, they shall be permitted to be installed on an open rack for ease of maintenance.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.5 Occupied work centers. Where stationary storage batteries are located in an occupied work center, they shall be housed in a noncombustible cabinet or other enclosure to prevent access by unauthorized personnel.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.5.1 Cabinets. Where stationary batteries are contained in cabinets in occupied work centers, the cabinet enclosures shall be located within 10 feet (3,048 mm) of the equipment that they support.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.6 Signage. Approved signs shall be provided on doors or in locations near entrances to stationary storage battery system rooms and shall include the following or equivalent: 1. The room contains energized battery systems. 2. The room contains energized electrical circuits. 3. The additional markings required in Section 1206.2.12 for the types of storage batteries contained within the room. Exception: Existing stationary storage battery systems shall install signage required at the time it was installed where the installation was completed and inspected with approved permits obtained from the <i>Authority Having Jurisdiction</i> . In any case where existing installation was completed without a permit, then a permit shall be obtained and compliance with current code provisions is required.			Removed Houston amendment to go with base code requirements for Energy Storage.

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1206.2.8.6.1 Electrical disconnects. Where the stationary storage battery system disconnecting means is not within sight of the main service disconnecting means, placards or directories shall be installed at the location of the main service disconnecting means indicating the location of stationary storage battery system disconnecting means in accordance with NFPA 70.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.6.2 Cabinet signage. Battery storage cabinets provided in occupied work centers in accordance with Section 1206.2.8.5 shall have exterior labels that identify the manufacturer and model number of the system and electrical rating (voltage and current) of the contained battery system. There shall be signs within the cabinet that indicate the relevant electrical and chemical hazards, as required by Section 1206.2.12.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.7 Outdoor installations. Stationary storage battery systems located outdoors shall comply with Sections 1206.2.8.7 through 1206.2.8.7.4, in addition to all applicable requirements of Section 1206.2. Installations in outdoor enclosures or containers that can be occupied for servicing, testing, maintenance and other functions shall be treated as battery storage rooms. Exception: Stationary battery arrays in noncombustible containers shall not be required to be spaced 3 feet (914 mm) from the container walls.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.7.1 Separation. Stationary storage battery systems located outdoors shall be separated by a minimum 5 feet (1,524 mm) from the following: 1. Lot lines. 2. Public ways. 3. Buildings. 4. Stored combustible materials. 5. Hazardous materials. 6. High-piled stock. 7. Other exposure hazards. Exception: The <i>fire code official</i> is authorized to approve smaller separation distances if large-scale fire and fault condition testing conducted or witnessed and reported by an approved testing laboratory is provided showing that a fire involving the system will not adversely impact occupant egress from adjacent buildings, or adversely impact adjacent stored materials or structures.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.8.7.2 Means of egress. Stationary storage battery systems located outdoors shall be separated from any <i>means of egress</i> as required by the <i>fire code official</i> to ensure safe egress under fire conditions, but not less than 10 feet (3,048 mm). Exception: The <i>fire code official</i> is authorized to approve lesser separation distances if large-scale fire and fault condition testing conducted or witnessed and reported by an <i>approved</i> testing laboratory is provided showing that a fire involving the system will not adversely impact occupant egress.			Removed Houston amendment to go with base code requirements for Energy Storage.

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<u>1206.2.8.7.3 Security of outdoor areas.</u> Outdoor areas in which stationary storage battery systems are located shall be <u>secured against unauthorized entry and safeguarded in an approved manner.</u>			Removed Houston amendment to go with base code requirements for Energy Storage.																					
<u>1206.2.8.7.4 Walk-in units.</u> Where a stationary storage battery system includes an outer enclosure, the unit shall only be entered <u>for inspection, maintenance and repair of batteries and electronics, and shall not be occupied for other purposes.</u>			Removed Houston amendment to go with base code requirements for Energy Storage.																					
<u>1206.2.9 Maximum allowable quantities.</u> <i>Fire areas</i> within buildings containing stationary storage battery systems exceeding the maximum allowable quantities in Table 1206.2.9 shall comply with all applicable Group H occupancy requirements in this code and the <i>Building Code</i> . <u>Exception:</u> Where approved by the <i>fire code official</i> , areas containing stationary storage battery that exceed the amounts in Table 1206.2.9 shall be treated as incidental use areas and not Group H occupancies based on a hazardous mitigation analysis in accordance with Section 1206.2.3 and large-scale fire and fault condition testing conducted or witnessed and reported by an approved testing laboratory.			Removed Houston amendment to go with base code requirements for Energy Storage.																					
<u>TABLE 1206.2.9</u> <u>MAXIMUM ALLOWABLE BATTERY QUANTITIES</u><table><tr><th><u>BATTERY TECHNOLOGY</u></th><th><u>MAXIMUM ALLOWABLE QUANTITIES^a</u></th><th><u>GROUP H OCCUPANCY</u></th></tr><tr><td><u>Flow batteries^b</u></td><td><u>600 kWh</u></td><td><u>Group H-2</u></td></tr><tr><td><u>Lead acid, all types</u></td><td><u>Unlimited</u></td><td><u>Not Applicable</u></td></tr><tr><td><u>Lithium, all types</u></td><td><u>600 kWh</u></td><td><u>Group H-2</u></td></tr><tr><td><u>Nickel cadmium (Ni-Cd)</u></td><td><u>Unlimited</u></td><td><u>Not Applicable</u></td></tr><tr><td><u>Sodium, all types</u></td><td><u>600 kWh</u></td><td><u>Group H-2</u></td></tr><tr><td><u>Other battery technologies</u></td><td><u>200 kWh</u></td><td><u>Group H-2^c</u></td></tr></table> For SI: 1 kilowatt hour = 3.6 megajoules a. <u>For batteries rated in amp-hours, kilowatt-hours (kWh) shall equal rated voltage times the amp-hour rating divided by 1,000.</u> b. <u>Shall include vanadium, zinc-bromine, polysulfide-bromide, and other flowing electrolyte-type technologies.</u> c. <u>Shall be a Group H-4 occupancy if the <i>fire code official</i> determines that a fire or thermal runaway involving the battery technology does not represent a significant fire hazard.</u>	<u>BATTERY TECHNOLOGY</u>	<u>MAXIMUM ALLOWABLE QUANTITIES^a</u>	<u>GROUP H OCCUPANCY</u>	<u>Flow batteries^b</u>	<u>600 kWh</u>	<u>Group H-2</u>	<u>Lead acid, all types</u>	<u>Unlimited</u>	<u>Not Applicable</u>	<u>Lithium, all types</u>	<u>600 kWh</u>	<u>Group H-2</u>	<u>Nickel cadmium (Ni-Cd)</u>	<u>Unlimited</u>	<u>Not Applicable</u>	<u>Sodium, all types</u>	<u>600 kWh</u>	<u>Group H-2</u>	<u>Other battery technologies</u>	<u>200 kWh</u>	<u>Group H-2^c</u>			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>BATTERY TECHNOLOGY</u>	<u>MAXIMUM ALLOWABLE QUANTITIES^a</u>	<u>GROUP H OCCUPANCY</u>																						
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1206.2.9.1 Mixed battery systems. Where areas within buildings contain different types of storage battery technologies, the total aggregate quantities of batteries shall be determined based on the sum of percentages of each battery type quantity divided by the maximum allowable quantity of each battery type. If the sum of the percentages exceeds 100 percent, the area shall be treated as a Group H occupancy in accordance with Table 1206.2.9.	N/A		Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10 Storage batteries and equipment. The design and installation of storage batteries and related equipment shall comply with Sections 1206.2.10.1 through 1206.2.10.8.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.1 Listings. Storage batteries and battery storage systems shall comply with the following: 1. Storage batteries shall be listed in accordance with UL 1973-2013. 2. Prepackaged and preengineered stationary storage battery systems shall be listed in accordance with UL 9540-2014. Exception: Lead-acid batteries are not required to be listed.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.2 Prepackaged and preengineered systems. Prepackaged and preengineered stationary storage battery systems shall be installed in accordance with their listing and the manufacturer's instructions.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.3 Energy management system. An approved energy management system shall be provided for battery technologies other than lead-acid and nickel cadmium for monitoring and balancing cell voltages, currents and temperatures within the manufacturer's specifications. The system shall transmit an alarm signal to an approved location if potentially hazardous temperatures or other conditions such as short circuits, other voltage or under voltage are detected.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.4 Battery chargers. Battery chargers shall be compatible with the battery chemistry and the manufacturer's electrical ratings and charging specifications. Battery chargers shall be listed and labeled in accordance with UL 1564-2015 or provided as part of a listed preengineered or prepackaged stationary storage battery system.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.5 Inverters. Inverters shall be listed and labeled in accordance with UL 1741-2015. Only inverters listed and labeled for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.6 Safety caps. Vented batteries shall be provided with flame-arresting safety caps.			Removed Houston amendment to go with base code requirements for Energy Storage.

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1206.2.10.7 Thermal runaway. Where required by Section 1206.2.12, storage batteries shall be provided with a listed device or other approved method to prevent, detect and control thermal runaway.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.10.8 Toxic and highly toxic gas. Stationary storage battery systems that have the potential to release toxic and highly toxic gas during charging, discharging and normal use conditions shall comply with Chapter 60.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11 Fire-extinguishing and detection systems. Fire-extinguishing and detections systems shall be provided in accordance with Sections 1206.2.11.1 through 1206.2.11.5.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.1 Fire-extinguishing systems. Rooms containing stationary storage battery systems shall be equipped with an <i>automatic sprinkler system</i> installed in accordance with Section `903.3.1.1. Commodity classifications for specific technologies of storage batteries shall be in accordance with Chapter 5 of NFPA 13-2016. If the storage battery types are not addressed in Chapter 5 of NFPA 13-2016, the <i>fire code official</i> is authorized to approve the fire-extinguishing system based on full-scale fire and fault condition testing conducted or witnessed and reported by an <i>approved</i> laboratory. Exception: Spaces or areas containing stationary storage battery systems used exclusively for telecommunications equipment in accordance with Section 903.2.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.1.1 Alternative fire-extinguishing systems. Battery systems that utilize water-reactive materials shall be protected by an approved alternative automatic fire-extinguishing system in accordance with Section 904. The system shall be listed for protecting the type, arrangement and `quantities of storage batteries in the room. The <i>fire code official</i> shall be permitted to approve the alternative fire extinguishing system based on full-scale fire and fault condition testing conducted or witnessed and reported by an <i>approved</i> laboratory.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.2 Smoke detection system. An <i>approved automatic smoke detection system</i> shall be installed in rooms containing <i>stationary storage battery systems</i> in accordance with Section 907.2.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.3 Ventilation. Where required by Section 1206.2.3 or 1206.2.12, ventilation of rooms containing stationary storage battery systems shall be provided in accordance with the <i>Mechanical Code</i> and one of the following: 1. The ventilation system shall be designed to limit the maximum concentration of flammable gas to 25			Removed Houston amendment to go with base code requirements for Energy Storage.

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percent of the lower flammability limit, or for hydrogen, 1.0 percent of the total volume of the room. 2. Continuous ventilation shall be provided at a rate of not less than 1 cubic foot per minute (cfm) per square foot [0.00508 m³/(s • m²)] of floor area, but not less than 150 cfm (4 m³/min). The exhaust system shall be designed to provide air movement across all parts of the floor for gases having a vapor density greater than air and across all parts of the vault ceiling for gases having a vapor density less than air.			
1206.2.11.3.1 Cabinet ventilation. Where cabinets located in occupied spaces contain storage batteries that are required by Section 1206.2.3 or 1206.2.12 to be provided with ventilation, the cabinet shall be provided with ventilation in accordance with Section 1206.2.11.3.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.3.2 Supervision. Required mechanical ventilation systems for rooms and cabinets containing storage batteries shall be supervised by an <i>approved</i> central station, proprietary or remote station service or shall initiate an audible and visual signal at an <i>approved</i> constantly attended on-site location.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.4 Gas detection system. Where required by Section 1206.2.3 or 1206.2.12, rooms containing stationary storage battery systems shall be protected by a gas detection system complying with Section 916. The gas detection system shall be designed to activate where the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL), or where the level of toxic or highly toxic gas exceeds one-half of the IDLH, or where gas indicative of venting from a lithium-ion cell is detected.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.4.1 System activation. Activation of the gas detection system shall result in all of the following: 1. Initiation of distinct audible and visible alarms in the battery storage room. 2. Transmission of an alarm to an approved location. 3. De-energizing of the battery charger. 4. Activation of the mechanical ventilation system, where the system is interlocked with the gas detection system. Exception: Lead-acid and nickel-cadmium stationary storage battery systems shall not be required to comply with Items 1, 2 and 3.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.11.5 Spill control and neutralization. Where required by Section 1206.2.12, approved methods and materials shall be provided for the control and neutralization of spills of electrolyte or other hazardous materials in areas containing stationary storage batteries as follows: 1. For batteries with free-flowing electrolyte, the method and materials shall be capable of neutralizing a spill of the total capacity from the largest cell or block to a pH between 5.0 and 9.0. 2. For batteries with immobilized electrolyte, the method and material shall be capable of neutralizing a spill of 3.0 percent of the			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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capacity of the largest cell or block in the room to a pH between 5.0 and 9.0.			
1206.2.12 Specific battery-type requirements. This section includes requirements applicable to specific types of storage batteries. Stationary storage battery systems with more than one type of storage battery shall comply with requirements applicable to each battery type.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.12.1 Lead-acid storage batteries. Stationary storage battery systems utilizing lead-acid storage batteries shall comply with the following: <u>1. Ventilation shall be provided in accordance with Section 1206.2.11.3.</u> <u>2. Spill control and neutralization shall be in accordance with Section 1206.2.11.5.</u> <u>3. Thermal runaway protection shall be provided for valve-regulated lead-acid (VRLA) storage batteries in accordance with Section 1206.2.10.7.</u> The signage in Section 1206.2.8.6 shall indicate the room contains lead-acid batteries.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.12.2 Nickel-cadmium (Ni-Cd) storage batteries. Stationary storage battery systems utilizing nickel-cadmium (Ni-Cd) storage batteries shall comply with the following: <u>1. Ventilation shall be provided in accordance with Section 1206.2.11.3.</u> <u>2. Spill control and neutralization shall be in accordance with Section 1206.2.11.5.</u> <u>3. Thermal runaway protection shall be provided for valve-regulated sealed nickel-cadmium storage batteries in accordance with Section 1206.2.10.7.</u> The signage in Section 1206.2.8.6 shall indicate the room contains nickel-cadmium batteries.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.12.3 Lithium-ion storage batteries. The signage in Section 1206.2.8.6 shall indicate the type of lithium batteries contained in the room.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.12.4 Sodium-beta storage batteries. Stationary storage battery systems utilizing sodium-beta storage batteries shall comply with the following: <u>1. Ventilation shall be provided in accordance with Section 1206.2.11.3.</u> 2. The signage in Section 1206.2.8.6 shall indicate the type of sodium batteries in the room and include the instructions, “APPLY NO WATER.”			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.2.12.5 Flow storage batteries. Stationary storage battery systems utilizing flow storage batteries shall comply with the following: <u>1. Ventilation shall be provided in accordance with Section 1206.2.11.3.</u>			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2. Spill control and neutralization shall be in accordance with Section 1206.2.11.5. 3. The signage required in Section 1206.2.8.6 shall indicate the type of flow batteries in the room.			
1206.2.12.6 Other battery technologies. <i>Stationary storage battery systems</i> utilizing battery technologies other than those described in Sections 1206.2.12.1 through 1206.2.12.5 shall comply with the following: 1. Gas detection systems complying with Section 916 shall be provided in accordance with Section 1206.2.11.4 where the batteries have the potential to produce toxic or highly toxic gas in the storage room or cabinet in excess of the permissible exposure limits (PEL) during charging, discharging and normal system operation. 2. Mechanical ventilation shall be provided in accordance with Section 1206.2.11.3. 3. Spill control and neutralization shall be in accordance with Section 1206.2.11.5. 4. In addition to the signage required in Section 1206.2.8.6, the marking shall identify the type of batteries present, describe the potential hazards associated with the battery type, and indicate that the room contains energized electrical circuits.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3 Capacitor energy storage systems. Capacitor energy storage systems having capacities exceeding 3 kWh (10.8 megajoules) shall comply with Sections 1206.3 through 1206.3.2.6.1. Exception: Capacitors regulated by NFPA 70, Chapter 460, and capacitors included as a component part of other listed electrical equipment are not required to comply with this section. 1206.3 Equipment. <i>Stationary fuel cell power systems</i> shall comply with the following: 1. <i>Prepackaged fuel cell power systems</i> shall be listed and labeled in accordance with CSA FC 1. 2. The modules and components in a <i>preengineered fuel cell power system</i> shall be listed and labeled in accordance with CSA FC 1 and interconnected to complete the assembly of the system at the job site in accordance with the manufacturer's instructions and the module and component listings. 3. <i>Field-fabricated fuel cell power systems</i> shall be approved based on a review of the technical report provided in accordance with Section 104.8.2. The report shall be prepared by and bear the stamp of a <i>registered design professional</i> and shall include: 3.1 A fire risk evaluation. 3.2 An evaluation demonstrating that modules and components in the fuel cell power system comply with applicable requirements in CSA FC 1.	~~1206.3 Capacitor energy storage systems. Capacitor energy storage systems having capacities exceeding 3 kWh (10.8 megajoules) shall comply with Sections 1206.3 through 1206.3.2.6.1. Exception: Capacitors regulated by NFPA 70, Chapter 460, and capacitors included as a component part of other listed electrical equipment are not required to comply with this section. 1206.3 Equipment. <i>Stationary fuel cell power systems</i> shall comply with the following: 1. <i>Prepackaged fuel cell power systems</i> shall be listed and labeled in accordance with CSA FC 1. 2. The modules and components in a <i>preengineered fuel cell power system</i> shall be listed and labeled in accordance with CSA FC 1 and interconnected to complete the assembly of the system at the job site in accordance with the manufacturer's instructions and the module and component listings. 3. <i>Field-fabricated fuel cell power systems</i> shall be approved based on a review of the technical report provided in accordance with Section 104.8.2. The report shall be prepared by and bear the stamp of a <i>registered design professional</i> and shall include: 3.1 A fire risk evaluation. 3.2 An evaluation demonstrating that modules and components in the fuel cell power system comply with applicable requirements in CSA FC 1.~~		Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3.3 Documentation of the fuel cell power system's compliance with applicable NFPA 2 and NFPA 853 construction requirements.		
<u>1206.3.1 Permits.</u> Permits shall be obtained for the installation of capacitor energy storage systems in accordance with Section 105.6.51.			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>1206.3.2 Location and construction.</u> Rooms and areas containing capacitor energy storage systems shall be designed, located and constructed in accordance with Sections 1206.3.2 through 1206.3.2.5.			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>1206.3.2.1 Location.</u> Capacitor energy storage systems shall not be located in areas where the floor is located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access, or where the floor level is more than 30 feet (9,144 mm) below the finished floor of the lowest level of exit discharge.			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>1206.3.2.2 Separation.</u> Rooms containing capacitor energy storage systems shall be separated from the following occupancies by fire barriers or horizontal assemblies, or both, constructed in accordance with the <i>Building Code</i> . 1. Group B, F, M, S and U occupancies by 1-hour fire-resistance-rated construction. 2. Group A, E, I and R occupancies by 2-hour fire-resistance-rated construction.			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>1206.3.2.3 Capacitor arrays.</u> Capacitor energy storage systems shall be segregated into capacitor arrays not exceeding 50 kWh (180 megajoules) each. Each array shall be spaced not less than 3 feet (914 mm) from other arrays and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10. Exception: Capacitor energy storage systems in noncombustible containers located outdoors shall not be required to be spaced 3 feet (914 mm) from the container walls.			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>1206.3.2.4 Signage.</u> Approved signs shall be provided on doors or in locations adjacent to the entrances to capacitor energy storage system rooms and shall include the following or equivalent verbiage and information: 1. "CAPACITOR ENERGY STORAGE ROOM." 2. "THIS ROOM CONTAINS ENERGIZED ELECTRICAL CIRCUITS." 3. An identification of the type of capacitors present and the potential hazards associated with the capacitor type.			Removed Houston amendment to go with base code requirements for Energy Storage.
<u>1206.3.2.5 Electrical disconnects.</u> Where the capacitor energy storage system disconnecting means is not within sight of the main service disconnecting means, placards or directories shall be installed at the location of the main service disconnecting means identifying the location of the			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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capacitor energy storage system disconnecting means in accordance with NFPA 70.			
1206.3.2.6 Outdoor installation. Capacitor energy systems located outdoors shall comply with Sections 1206.3.2.6 through 1206.3.2.6.4 in addition to all applicable requirements of Section 1206.3. Installations in outdoor enclosures or containers that can be occupied for servicing, testing, maintenance and other functions shall be treated as capacitor storage rooms. Exception: Capacitor arrays in noncombustible containers shall not be required to be spaced 3 feet (914 mm) from the container walls.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.2.6.1 Separation. Capacitor energy systems located outdoors shall be not less than 5 feet (1,524 mm) from the following: 1. Lot lines. 2. Public ways. 3. Buildings. 4. Stored combustible materials. 5. Hazardous materials. 6. High-piled stock. 7. Other exposure hazards. Exception: The <i>fire code official</i> is authorized to approve lesser separation distances if large-scale fire and fault condition testing conducted or witness and reported by an approved testing laboratory is provided showing that a fire involving the system will not adversely impact occupant egress from adjacent buildings, or adversely impact adjacent stored materials or structures.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.2.6.2 Means of egress. Capacitor energy storage systems located outdoors shall be separated from any means of egress as required by the fire code official to ensure safe egress under fire conditions, but not less than 10 feet (3,048 mm). Exception: The <i>fire code official</i> is authorized to approve lesser separation distances if large-scale fire and fault condition testing conducted or witness and reported by an approved testing laboratory is provided showing that a fire involving the system will not adversely impact occupant egress.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.2.6.3 Security of outdoor areas. Outdoor areas in which capacitor energy storage systems are located shall be secured against unauthorized entry and safeguarded in an approved manner.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.2.6.4 Walk-in units. Where a capacitor energy storage system includes an outer enclosure, the unit shall only be entered for inspection, maintenance and repair of batteries and electronics, and shall not be occupied for other purposes.			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
1206.3.3 Maximum allowable quantities. Fire areas within buildings containing <u>capacitor energy storage systems</u> that exceed 6000 kWh of energy capacity shall comply with all applicable Group H occupancy requirements in this code and the <i>Building Code</i> .			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.4 Capacitors and equipment. The design and installation of <u>capacitor energy storage systems</u> and related equipment shall comply with Sections 1206.3.4.1 through 1206.3.4.5.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.4.1 Listing. Capacitors and <u>capacitor energy storage systems</u> shall comply with the following: 1. Capacitors shall be listed in accordance with UL 1973-2013. 2. Prepackaged and preengineered stationary capacitor energy storage systems shall be listed in accordance with UL 9540-2014.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.4.2 Prepackaged and preengineered systems. In addition to other applicable requirements of this code, <u>prepackaged and preengineered capacitor energy storage systems</u> shall be installed in accordance with their listing and the manufacturer's instructions.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.4.3 Energy management system. An approved energy management system shall be provided for monitoring and balancing capacitor voltages, currents and temperatures within the manufacturer's specifications. The system shall transmit an alarm signal to an approved location if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.4.4 Capacitor chargers. Capacitor chargers shall be compatible with the capacitor manufacturer's electrical ratings and charging specifications. Capacitor chargers shall be listed and labeled in accordance with UL 1564-2015 or provided as part of a listed preengineered or prepackaged <u>capacitor energy storage system</u> .			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.4.5 Toxic and highly toxic gas. <u>Capacitor energy storage systems</u> that have the potential to release toxic and highly toxic materials during charging, discharging and normal use conditions shall comply with Chapter 60.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.5 Fire-extinguishing and detection systems. Fire-extinguishing and smoke detection systems shall be provided in <u>capacitor energy storage system</u> rooms in accordance with Sections 1206.3.5.1 through 1206.3.5.2.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.5.1 Fire-extinguishing systems. Rooms containing <u>capacitor energy storage systems</u> shall be equipped with an <u>automatic sprinkler system</u> installed in accordance with Section 903.3.1.1. Commodity classifications for specific capacitor technologies shall be in accordance with Chapter 5 of NFPA 13-2016. If the capacitor types are not addressed in Chapter 5 of NFPA 13-2016, the <i>fire code official</i> is authorized to approve			Removed Houston amendment to go with base code requirements for Energy Storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
the <i>automatic sprinkler system</i> based on full-scale fire and fault condition testing conducted by an <i>approved</i> laboratory.			
1206.3.5.1.1 Alternative fire-extinguishing systems. <i>Capacitor energy storage systems</i> that utilize water-reactive materials shall be protected by an approved alternative <i>automatic fire-extinguishing system</i> in accordance with Section 904. The system shall be listed for protecting the type, arrangement and quantities for capacitors in the room. The <i>fire code official</i> shall be permitted to approve the system based on full-scale fire and fault condition testing conducted by an <i>approved</i> laboratory.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.5.2 Smoke detection system. An approved <i>automatic smoke detection system</i> shall be installed in rooms containing <i>capacitor energy storage systems</i> in accordance with Section 907.2.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.5.3 Ventilation. Where capacitors release flammable gases during normal operating conditions, ventilation of rooms containing capacitor energy storage systems shall be provided in accordance with the <i>Mechanical Code</i> and one of the following: 1. The ventilation system shall be designed to limit the maximum concentration of flammable gas to 25 percent of the lower flammability limit. 2. Continuous ventilation shall be provided at a rate of not less than 1 cubic foot per minute (cfm) per square foot [0.00508 m ³ /(s • m ²)] of floor area, but not less than 150 cfm (4 m ³ /min). The exhaust system shall be designed to provide air movement across all parts of the floor for gases having a vapor density greater than air and across all parts of the ceiling for gases having a vapor density less than air.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.5.3.1 Supervision. Require mechanical ventilation systems for rooms containing <i>capacitor energy storage system</i> shall be supervised by an <i>approved</i> central station, proprietary or remote station service, or shall initiate an audible and visible signal at an <i>approved</i> , constantly attended on-site location.			Removed Houston amendment to go with base code requirements for Energy Storage.
1206.3.5.4 Spill control and neutralization. Where capacitors contain liquid electrolyte, <i>approved</i> methods and materials shall be provided for the control and neutralization of spills of electrolyte or other hazardous materials in areas containing capacitors as follows: 1. For capacitors with free-flowing electrolyte, the method and materials shall be capable of neutralizing a spill of the total capacity from the largest cell or block to a pH between 5.0 and 9.0.			Removed Houston amendment to go with base code requirements for Energy Storage.

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2. For capacitors with immobilized electrolyte, the method and material shall be capable of neutralizing a spill of 3.0 percent of the capacity of the largest cell or block in the room to a pH between 5.0 and 9.0.			
1206.3.6 Testing, maintenance and repair. Capacitors and associated equipment and systems shall be tested and maintained in accordance with the manufacturer's instructions. Any capacitors or system components used to replace existing units shall be compatible with the capacitor charger, energy management system, other capacitors, and other safety systems. Introducing different capacitor technologies into the capacitor energy storage system shall be treated as a new installation and require approval by the <i>fire code official</i> before the replacements are introduced into service.			Removed Houston amendment to go with base code requirements for Energy Storage.
	~~1205.4~~ 1206.4 Installation. Stationary fuel cell power systems shall be installed and maintained in accordance with NFPA 70 and NFPA 853, the manufacturer's installation instructions, and the listing. Stationary fuel cell power systems fueled by hydrogen shall be installed and maintained in accordance with NFPA 2 and NFPA 70, the manufacturer's installation instructions and the listing.		Base code renumbering.
	~~1205.5~~ 1206.5 Residential use. Stationary fuel cell power systems shall not be installed in Group R-3 and R-4 buildings, or dwelling units associated with Group R-2 buildings unless they are specifically listed for residential use. Exception: The temporary use of a fuel cell-powered electric vehicle to power a Group R-3 or R-4 building while parked shall comply with Section 1206.14.		Base code renumbering.
	~~1205.6~~ 1206.6 Indoor installations. Stationary fuel cell power systems installed in indoor locations shall comply with Sections 1206.6 through 1206.6.2. For purposes of this section, an indoor location includes a roof and 50 percent or greater enclosing walls.		Base code renumbering.
	~~1205.6.1~~ 1206.6.1 Listed. Stationary fuel cell power systems installed indoors shall be specifically listed and labeled for indoor use.		Base code renumbering.
	~~1205.6.2~~ 1206.6.2 Separation. Rooms containing stationary fuel cell power systems shall be separated from the following occupancies by fire barriers or horizontal assemblies , or both, constructed in accordance with the International Building Code. 1. Group B, F, M, S and U occupancies by 1-hour fire-resistance-rated construction. 2. Group A, E, I and R occupancies by 2-hour fire-resistance-rated construction. Exception: Stationary fuel cell power systems with an aggregate rating less than 50 kW shall not be required to		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	be separated from other occupancies provided that the systems comply with Section 9.3 of NFPA 853.		
	~~1205.7~~ 1206.7 Vehicle impact protection. Where <i>stationary fuel cell power systems</i> are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with Section 312.		Base code renumbering.
	~~1205.8~~ 1206.8 Outdoor installation. <i>Stationary fuel cell power systems</i> located outdoors shall be separated by not less than 5 feet (1524 mm) from the following: 1. Lot lines. 2. Public ways. 3. Buildings. 4. Stored combustible materials. 5. Hazardous materials. 6. High-piled stock. 7. Any portion of a designated <i>means of egress</i> system. 8. Other exposure hazards.		Base code renumbering.
	~~1205.9~~ 1206.9 Fuel supply. The design, location and installation of the fuel supply for <i>stationary fuel cell power systems</i> shall comply with Chapter 53, Chapter 58 and the <i>International Fuel Gas Code</i> , based on the particular fuel being supplied to the system.		Base code renumbering.
	~~1205.10~~ 1206.10 Manual shutoff. Access to a manual shutoff valve shall be provided for the fuel piping within 6 feet (1829 mm) of any fuel storage tank serving the fuel cell and within 6 feet (1829 mm) of the power system. If the fuel tank and the <i>stationary fuel cell power system</i> are less than 12 feet (3658 mm) apart, a single shutoff valve shall be permitted. If the <i>stationary fuel cell power system</i> is located indoors, the shutoff valve shall be located outside of the room in which the system is installed, unless otherwise <i>approved by the fire code official</i> .		Base code renumbering.
	~~1205.11~~ 1206.11 Ventilation and exhaust. Ventilation and exhaust for stationary fuel cell power systems shall be provided in accordance with NFPA 853.		Base code renumbering.
	~~1205.12~~ 1206.12 Fire protection suppression. Fire suppression <u>protection systems</u> for stationary fuel cell power system installations shall be provided in accordance with NFPA 853.		Base code renumbering.
	~~1205.13~~ 1206.13 Gas detection systems. <i>Stationary fuel cell power systems</i> shall be provided with a gas detection system. Detection shall be provided in <i>approved</i> locations in the fuel cell power system enclosure, the exhaust system or the room that encloses the fuel cell power system. The system shall be designed to activate at a flammable gas concentration of not more than 25 percent of the lower flammable limit (LFL).		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary																		
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	1206.14 Group R-3 and R-4 fuel cell vehicle energy storage system use. The temporary use of the dwelling unit owner or occupant's fuel cell-powered electric vehicle to power a Group R-3 or R-4 dwelling while parked in an attached or detached garage or outside shall comply with the vehicle manufacturer's instructions and NFPA 70.		New requirements for Group R-3 and R-4 vehicle energy storage.																		
	SECTION 1206-1207 ELECTRICAL ENERGY STORAGE SYSTEMS (ESS) 1207.1 General. The provisions in this section are applicable to stationary and mobile electrical energy storage systems (ESS). Exception: ESS in Group R-3 and R-4 occupancies shall comply with Section 1207.11.		New requirements for electrical energy storage systems.																		
	1207.1.1 Scope. ESS having capacities exceeding the values shown in Table 1207.1.1 shall comply with this section.		New requirements for electrical energy storage systems.																		
	TABLE 1207.1.1 ENERGY STORAGE SYSTEM (ESS) THRESHOLD QUANTITIES <table><tr><th>TECHNOLOGY</th><th>ENERGY CAPACITY^a</th></tr><tr><td>Capacitor ESS</td><td>3 kWh</td></tr><tr><td>Flow batteries^b</td><td>20 kWh</td></tr><tr><td>Lead-acid batteries, all types</td><td>70 kWh^c</td></tr><tr><td>Lithium-ion batteries</td><td>20 kWh</td></tr><tr><td>Nickel metal hydride (Ni-MH)</td><td>70 kWh</td></tr><tr><td>Nickel-cadmium batteries (Ni-Cd)</td><td>70 kWh</td></tr><tr><td>Other battery technologies</td><td>10 kWh</td></tr><tr><td>Other electrochemical ESS technologies</td><td>3 kWh</td></tr></table> For SI: 1 kilowatt hour = 3.6 megajoules. a. Energy capacity is the total energy capable of being stored (nameplate rating), not the usable energy rating. For units rated in amp-hours, kWh shall equal rated voltage times amp-hour rating divided by 1,000. b. Shall include vanadium, zinc-bromine, polysulfide-bromide and other flowing electrolyte-type technologies. c. Fifty gallons of lead-acid battery electrolyte shall be considered equivalent to 70 kWh.	TECHNOLOGY	ENERGY CAPACITY ^a	Capacitor ESS	3 kWh	Flow batteries ^b	20 kWh	Lead-acid batteries, all types	70 kWh ^c	Lithium-ion batteries	20 kWh	Nickel metal hydride (Ni-MH)	70 kWh	Nickel-cadmium batteries (Ni-Cd)	70 kWh	Other battery technologies	10 kWh	Other electrochemical ESS technologies	3 kWh		New requirements for electrical energy storage systems.
TECHNOLOGY	ENERGY CAPACITY ^a																				
Capacitor ESS	3 kWh																				
Flow batteries ^b	20 kWh																				
Lead-acid batteries, all types	70 kWh ^c																				
Lithium-ion batteries	20 kWh																				
Nickel metal hydride (Ni-MH)	70 kWh																				
Nickel-cadmium batteries (Ni-Cd)	70 kWh																				
Other battery technologies	10 kWh																				
Other electrochemical ESS technologies	3 kWh																				
	1207.1.2 Permits. Permits shall be obtained for ESS as follows: 1. Construction permits shall be obtained for stationary ESS installations and for mobile ESS charging and storage installations covered by Section 1207.10.1. Permits shall be obtained in accordance with Section 105.6.5. 2. Operational permits shall be obtained for stationary ESS installations and for mobile ESS deployment operations covered by Section 1207.10.3. Permits shall be obtained in accordance with Section 105.5.14.		New requirements for electrical energy storage systems.																		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1207.1.2.1 Communication utilities. Operational permits shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 voltage alternating current (VAC) and 60 voltage direct current (VDC).		New requirements for electrical energy storage systems.
	1207.1.3 Construction documents. The following information shall be provided with the permit application: 1. Location and layout diagram of the room or area in which the ESS is to be installed. 2. Details on the hourly <i>fire-resistance ratings</i> of assemblies enclosing the ESS. 3. The quantities and types of ESS to be installed. 4. Manufacturer's specifications, ratings and listings of each ESS. 5. Description of energy (battery) management systems and their operation. 6. Location and content of required signage. 7. Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and <i>deflagration</i> venting systems, if provided. 8. Support arrangement associated with the installation, including any required seismic restraint. 9. A commissioning plan complying with Section 1207.2.1. 10. A decommissioning plan complying with Section 1207.2.3.		New requirements for electrical energy storage systems.
	1207.1.4 Hazard mitigation analysis. A failure modes and effects analysis (FMEA) or other <i>approved</i> hazard mitigation analysis shall be provided in accordance with Section 104.8.2 under any of the following conditions: 1. Where ESS technologies not specifically identified in Table 1207.1.1 are provided. 2. More than one ESS technology is provided in a room or enclosed area where there is a potential for adverse interaction between technologies. 3. Where allowed as a basis for increasing maximum allowable quantities. See Section 1207.5.2.		New requirements for electrical energy storage systems.
	1207.1.4.1 Fault condition. The hazard mitigation analysis shall evaluate the consequences of the following failure modes. Only single failure modes shall be considered. 1. A thermal runaway condition in a single ESS rack, module or unit. 2. Failure of any batter (energy) management system. 3. Failure of any required ventilation or exhaust system. 4. Voltage surges on the primary electric supply. 5. Short circuits on the load side of the ESS. 6. Failure of the smoke detection, fire detection, fire suppression or gas detection system.		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	<u>7. Required spill neutralization not being provided or failure of a required secondary containment system.</u>		
	<u>1207.1.4.2 Analysis approval. The <i>fire code official</i> is authorized to approve the hazardous mitigation analysis provided that the consequences of the hazard mitigation analysis demonstrate:</u> <u>1. Fires will be contained within unoccupied ESS rooms or areas for the minimum duration of the fire-resistance-rated separations identified in Section 1207.7.4.</u> <u>2. Fires in occupied work centers will be detected in time to allow occupants within the room or area to safely evacuate.</u>		New requirements for electrical energy storage systems.
	<u>1207.1.4.3 Additional protection measures. Construction, equipment and systems that are required for the ESS to comply with the hazardous mitigation analysis, including but not limited to those specifically described in Section 1207, shall be installed, maintained and tested in accordance with nationally recognized standards and specified design parameters.</u>		New requirements for electrical energy storage systems.
	<u>1207.1.5 Large-scale fire test. Where required elsewhere in Section 1206, large-scale fire testing shall be conducted on a representative ESS in accordance with UL 9540A. The testing shall be conducted or witnessed and reported by an <i>approved</i> testing laboratory and show that a fire involving one ESS will not propagate to an adjacent ESS, and where installed within buildings, enclosed areas and walk-in units will be contained within the room, enclosed area or walk-in unit for a duration equal to the <i>fire-resistance rating</i> of the room separation specified in Section 1207.7.4. The test report shall be provided to the <i>fire code official</i> for review and approval in accordance with Section 104.8.2.</u>		New requirements for electrical energy storage systems.
	<u>1207.1.6 Fire remediation. Where a fire or other event has damaged the ESS and ignition or re-ignition of the ESS is possible, the system <i>owner</i>, agent or lessee shall take the following actions, at their expense, to mitigate the hazard or remove damaged equipment from the premises to a safe location.</u>		New requirements for electrical energy storage systems.
	<u>1207.1.6.1 Fire mitigation personnel. Where, in the opinion of the <i>fire code official</i>, it is essential for public safety that trained personnel be on-site to respond to possible ignition or re-ignition of a damaged ESS, the system owner, agent or lessee shall immediately dispatch one or more fire mitigation personnel to the premise, as required and <i>approved</i>, at their expense. These personnel shall remain on duty continuously after the fire department leaves the premise until the damaged energy storage equipment is removed from the premises, or earlier if the <i>fire code official</i> indicates the public safety hazard has been abated.</u>		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.1.6.2 Duties. On-duty fire mitigation personnel shall have the following responsibilities: 1. Keep a diligent watch for fires, obstructions to means of egress and other hazards. 2. Immediately contact the fire department if their assistance is needed to mitigate any hazards or extinguish fires. 3. Take prompt measures for remediation of hazards in accordance with the decommissioning plan per Section 1207.2.3. 4. Take prompt measures to assist in the evacuation of the public from the structures.		New requirements for electrical energy storage systems.
	1207.2 Commissioning, decommissioning, operation and maintenance. Commissioning, decommissioning, operation and maintenance shall be conducted in accordance with this section.		New requirements for electrical energy storage systems.
	1207.2.1 Commissioning. Commissioning of newly installed ESS and existing ESS that have been retrofitted, replaced or previously decommissioned and are returning to service shall be conducted prior to the ESS being placed in service in accordance with a commissioning plan that has been approved prior to initiating commissioning. The commissioning plan shall include the following: 1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities. 2. A listing of the specific ESS and associated components, controls and safety-related devices to be tested, a description of the tests to be performed and the functions to be tested. 3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system. 4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the ESS. 5. Verification that required equipment and systems are installed in accordance with the approved plans and specifications. 6. Integrated testing for all fire and safety systems. 7. Testing for any required thermal management, ventilation or exhaust systems associated with the ESS installation. 8. Preparation and delivery of operation and maintenance documentation. 9. Training of facility operating and maintenance staff. 10. Identification and documentation of the requirements for maintain system performance to meet the original design intent during the operation phase. 11. Identification and documentation of personnel who are qualified to service, maintain and decommission the		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	ESS, and respond to incidents involving the ESS, including documentation that such service has been contracted for. 12. A decommissioning plan for removing the ESS from service, and from the facility in which it is located. The plan shall include details on providing a safe, orderly shutdown of energy storage and safety systems with notification to the code officials prior to the actual decommissioning of the system. The decommissioning plan shall include contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event. Exception: Commissioning shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC. A decommissioning plan shall be provided and maintained where required by the <i>fire code official</i>.		
	1207.2.1.1 Initial acceptance testing. During the commissioning process an ESS shall be evaluated for proper operating in accordance with the manufacturer's instructions and the commissioning plan prior to final approval.		New requirements for electrical energy storage systems.
	1207.2.1.2 Commissioning report. A report describing the results of the system commissioning, including the results of the initial acceptance testing required in Section 1207.2.1.1, shall be provided to the <i>fire code official</i> prior to final inspection and approval and maintained at an <i>approved</i> on-site location.		New requirements for electrical energy storage systems.
	1207.2.2 Operation and maintenance. An operation and maintenance manual shall be provided to both the ESS owner or their authorized agent and the ESS operator before the ESS is put into operation and shall include the following: 1. Manufacturer's operation manuals and maintenance manuals for the entire ESS, or for each component of the system requiring maintenance, that clearly identify the required routine maintenance actions. 2. Name, address and phone number of a service agency that has been contracted to service the ESS and its associated safety systems. 3. Maintenance and calibration information, including wiring diagrams, control drawings, schematics, system programming instructions and control sequence descriptions, for all energy storage control systems. 4. Desired or field-determined control set points that are permanently recorded on control drawings at control devices or, for digital control system, in system programming instructions. 5. A schedule for inspecting and recalibrating all ESS controls. 6. A service record log form that lists the schedule for all required servicing and maintenance actions and space		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	<u>for logging such actions that are completed over time and retained on-site.</u> <u>The ESS shall be operated and maintained in accordance with the manual and a copy of the manual shall be retained at an approved on-site location.</u>		
	1207.2.2.1 Ongoing inspection and testing. <u>Systems that monitor and protect the ESS installation shall be inspected and tested in accordance with the manufacturer's instructions and the operation and maintenance manual. Inspection and testing records shall be maintained in the operation and maintenance manual.</u>		New requirements for electrical energy storage systems.
	1207.2.3 Decommissioning. <u>The code official shall be notified prior to the decommissioning of an ESS. Decommissioning shall be performed in accordance with the decommissioning plan that includes the following:</u> <u>1. A narrative description of the activities to be accomplished for removing the ESS from service, and from the facility in which it is located.</u> <u>2. A listing of any contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.</u>		New requirements for electrical energy storage systems.
	1207.3 Equipment. <u>ESS equipment shall be in accordance with Sections 1207.3.1 through 1207.3.9.</u>		New requirements for electrical energy storage systems.
	1207.3.1 Energy storage system listings. <u>ESS shall be listed in accordance with UL 9540.</u> Exception: <u>Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities, and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76, are not required to be listed.</u>		New requirements for electrical energy storage systems.
	1207.3.2 Equipment listing. <u>Chargers, inverters and energy storage management systems shall be covered as part of the UL 9540 listing or shall be listed separately.</u>		New requirements for electrical energy storage systems.
	1207.3.3 Utility interactive systems. <u>Inverters shall be listed and labeled in accordance with UL 1741. Only inverters listed and labeled for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads.</u>		New requirements for electrical energy storage systems.
	1207.3.4 Energy storage management system. <u>Where required by the ESS listing, an approved energy storage management system that monitors and balances cell voltages, currents and temperatures within the manufacturer's specifications shall be provided. The system shall disconnect electrical connections to the ESS or otherwise place it in a safe condition if potentially hazardous</u>		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	temperatures or other conditions such as short circuits, over voltage or under voltage are detected.		
	1207.3.5 Enclosures. Enclosures of ESS shall be of noncombustible construction.		New requirements for electrical energy storage systems.
	1207.3.6 Repairs. Repairs of ESS shall only be done by qualified personnel. Repairs with other than identical parts shall be considered retrofitting and comply with Section 1207.3.7. Repairs shall be documented in the service records log.		New requirements for electrical energy storage systems.
	1207.3.7 Retrofits. Retrofitting of an existing ESS shall comply with the following: 1. A construction permit shall be obtained in accordance with Section 105.6.5. 2. New batteries, battery modules, capacitors and similar ESS components shall be <i>listed</i> . 3. Battery management and other monitoring systems shall be connected and installed in accordance with the manufacturer's instructions. 4. The overall installation shall continue to comply with UL 9540 listing requirements, where applicable. 5. Systems that have been retrofitted shall be commissioned in accordance with Section 1207.2.1. 6. Retrofits shall be documented in the service records log.		New requirements for electrical energy storage systems.
	1207.3.7.1 Retrofitting lead acid and nickel cadmium. Section 1207.3.7 shall not apply to retrofitting of lead-acid and nickel-cadmium batteries with other lead-acid and nickel-cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.		New requirements for electrical energy storage systems.
	1207.3.8 Replacements. Replacements of ESS shall be considered new ESS installations and shall comply with the provisions of Section 1207 as applicable to new ESS. The ESS being replaced shall be decommissioned in accordance with Section 1207.2.3.		New requirements for electrical energy storage systems.
	1207.3.9 Reused and repurposed equipment. Equipment and materials shall only be reused or reinstalled as permitted in Section 104.8.1. Storage batteries previously used in other applications, such as electric vehicle propulsion, shall not be reused in applications regulated by Chapter 12 unless approved by the fire code official and unless the equipment is refurbished by a battery refurbishing company approved in accordance with UL 1974.		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.4 General installations requirements. Stationary and mobile ESS shall comply with the requirements of Sections 1207.4.1 through 1207.4.12.		New requirements for electrical energy storage systems.
	1207.4.1 Electrical disconnects. Where the ESS disconnecting means is not within sight of the main electrical service disconnecting means, placards or directories shall be installed at the location of the main electrical service disconnecting means indicating the location of stationary storage battery system disconnecting means in accordance with NFPA 70. Exception: Electrical disconnects for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC shall be permitted to have electrical disconnects signage in accordance with NFPA 76.		New requirements for electrical energy storage systems.
	1207.4.2 Working clearances. Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment in accordance with NFPA 70 and the manufacturer's instructions.		New requirements for electrical energy storage systems.
	1207.4.3 Fire-resistance-rated separations. Rooms and other indoor areas containing ESS shall be separated from other areas of the building in accordance with Section 1207.7.4. ESS shall be permitted to be in the same room with the equipment they support.		New requirements for electrical energy storage systems.
	1207.4.4 Seismic and structural design. Stationary ESS shall comply with the seismic design requirements in Chapter 16 of the <i>International Building Code</i> , and shall not exceed the floor loading limitation of the building.		New requirements for electrical energy storage systems.
	1207.4.5 Vehicle impact protection. Where ESS are subject to impact by a motor vehicle, including fork lifts, vehicle impact protection shall be provided in accordance with Section 312.		New requirements for electrical energy storage systems.
	1207.4.6 Combustible storage. Combustible materials shall not be stored in ESS rooms, areas or walk-in units. Combustible materials in occupied work centers covered by Section 1207.4.10 shall be stored at least 3 feet (914 mm) from ESS cabinets.		New requirements for electrical energy storage systems.
	1207.4.7 Toxic and highly toxic gases. ESS that have the potential to release toxic and highly toxic gas during charging, discharging and normal use conditions shall be provided with a hazardous exhaust system in accordance with Section 502.8 of the <i>International Mechanical Code</i> .		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.4.8 Signage. <u>Approved signs shall be provided on or adjacent to all entry doors for ESS rooms or areas and on enclosures of ESS cabinets and walk-in units located outdoors, on rooftops or in open parking garages. Signs designed to meet both the requirements of this section and NFPA 70 shall be permitted. The signage shall include the following or equivalent:</u> <u>1. “ENERGY STORAGE SYSTEM,” “BATTERY STORAGE SYSTEM,” “CAPACITOR ENERGY STORAGE SYSTEM” or the equivalent.</u> <u>2. The identification of the electrochemical ESS technology present.</u> <u>3. “ENERGIZED ELECTRICAL CIRCUITS.”</u> <u>4. Where water-reactive electrochemical ESS are present, the signage shall include “APPLY NO WATER.”</u> <u>5. Current contact information, including phone number, for personnel authorized to service the equipment and for fire mitigation personnel required by Section 1207.1.6.1.</u> <u>Exception: Existing electrochemical ESS shall be permitted to include the signage required at the time they were installed.</u>		New requirements for electrical energy storage systems.
	1207.4.9 Security of installations. <u>Rooms, areas and walk-in units in which electrochemical ESS are located shall be secured against unauthorized entry and safeguarded in an approved manner. Security barriers, fences, landscaping and other enclosures shall not inhibit the required air flow to or exhaust from the electrochemical ESS and its components.</u>		New requirements for electrical energy storage systems.
	1207.4.10 Occupied work centers. <u>Electrochemical ESS located in rooms or areas occupied by personnel not directly involved with maintenance, service and testing of the systems shall comply with the following:</u> <u>1. Electrochemical ESS located in occupied work centers shall be housed in locked noncombustible cabinets or other enclosures to prevent access by unauthorized personnel.</u> <u>2. Where electrochemical ESS are contained in cabinets in occupied work centers, the cabinets shall be located within 10 feet (3048 mm) of the equipment that they support.</u> <u>3. Cabinets shall include signage complying with Section 1207.4.8.</u>		New requirements for electrical energy storage systems.
	1207.4.11 Open rack installations. <u>Where electrochemical ESS are installed in a separate equipment room and only authorized personnel have access to the room, they shall be permitted to be installed on an open rack for ease of maintenance.</u>		New requirements for electrical energy storage systems.
	1207.4.12 Walk-in units. <u>Walk-in units shall be entered only for inspection, maintenance and repair of ESS units and ancillary equipment, and shall not be occupied for other purposes.</u>		New requirements for electrical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.5 Electrochemical ESS protection. The protection of electrochemical ESS shall be in accordance with Sections 1207.5.1 through 1207.5.8 where required by Sections 1207.7 through 1207.10.		New requirements for electrical energy storage systems.
	TABLE 1207.5 MAXIMUM ALLOWABLE QUANTITIES OF ELECTROCHEMICAL ESS		New requirements for electrochemical energy storage systems to provide maximum allowable quantities.
	1207.5.1 Size and separation. Electrochemical ESS shall be segregated into groups not exceeding 50 kWh (180 megajoules). Each group shall be separated a minimum of 3 feet (914 mm) from other groups and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10. 1. Lead-acid and nickel-cadmium battery systems in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76. 2. The <i>fire code official</i> is authorized to approve larger capacities or smaller separation distances based on large-scale fire testing complying with Section 1207.1.5.		New requirements for electrochemical energy storage systems.
	1207.5.2 Maximum allowable quantities. <i>Fire areas</i> within rooms, areas and walk-in units containing electrochemical ESS shall not exceed the maximum allowable quantities in Table 1207.5. 1. Where <i>approved</i> by the <i>fire code official</i> , rooms, areas and walk-in units containing electrochemical ESS that exceed the amounts in Table 1207.5 shall be permitted based on hazardous mitigation analysis in accordance with Section 1207.1.4 and large-scale fire testing complying with Section 1207.1.5. 2. Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities, and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76. 3. Dedicated-use buildings in compliance with Section 1207.7.1.		New requirements for electrochemical energy storage systems.
	1207.5.2.1 Mixed electrochemical energy systems. Where rooms, areas and walk-in units contain different types of electrochemical energy technologies, the total aggregate quantities of the systems shall be determined based on the sum of percentages of each technology-type quantity divided by the maximum allowable quantity of each technology type. The sum of percentages shall not exceed 100 percent of the maximum allowable quantity.		New requirements for electrochemical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.5.3 Elevation. Electrochemical ESS shall not be located in the following areas: - Where the floor is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access. - Where the floor is located below the lowest <i>level of exit discharge</i>. Exceptions: - Lead-acid and nickel-cadmium battery systems less than 50 VAC and 60 VDC installed in facilities under the exclusive control of communications utilities in accordance with NFPA 76. - Where <i>approved</i>, installations shall be permitted in underground vaults complying with NFPA 70, Article 450, Part III. - Where <i>approved</i> by the <i>fire code official</i>, installations shall be permitted on higher and lower floors.		New requirements for electrochemical energy storage systems.
	1207.5.4 Fire detection. An <i>approved</i> automatic smoke detection system or radiant energy-sensing fire detection system complying with Section 907.2 shall be installed in rooms, indoor areas and walk-in units containing electrochemical ESS. An <i>approved</i> radiant energy-sensing fire detection system shall be installed to protect open parking garage and rooftop installations. Alarm signals from detection systems shall be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or where <i>approved</i> to a constantly attended location.		New requirements for electrochemical energy storage systems.
	1207.5.4.1 System status. Where required by the <i>fire code official</i>, visible annunciation shall be provided on cabinet exteriors or in other <i>approved</i> locations to indicate that potentially hazardous conditions associated with the ESS exist.		New requirements for electrochemical energy storage systems.
	1207.5.5 Fire suppression systems. Rooms and areas within buildings and walk-in units containing electrochemical ESS shall be protected by an automatic fire suppression system designed and installed in accordance with one of the following: - An <i>automatic sprinkler system</i> designed and installed in accordance with Section 903.3.1.1 with a minimum density of 0.3 gpm/ft² (1.14 L/min) based on the <i>fire area</i> or 2,500 square-foot (232 m²) design area, whichever is smaller. - Where <i>approved</i>, an <i>automatic sprinkler system</i> designed and installed in accordance with Section 903.3.1.1 with a sprinkler hazard classification based on large-scale fire testing complying with Section 1207.1.5. - The following alternative automatic fire-extinguishing systems designed and installed in accordance with Section 904, provided that the installation is <i>approved</i> by the <i>fire code official</i> based on large-scale fire testing complying with Section 1207.1.5:		New requirements for electrochemical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3.1. <u>NFPA 12, Standard on Carbon Dioxide Extinguishing Systems.</u> 3.2. <u>NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection.</u> 3.3. <u>NFPA 750, Standard on Water Mist Fire Protection Systems.</u> 3.4. <u>NFPA 2001, Standard on Clean Agent Fire-Extinguishing Systems.</u> 3.5. <u>NFPA 2010, Standard for Fixed Aerosol Fire-Extinguishing Systems.</u> Exception: <u>Fire suppression systems for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that operate at less than 50 VAC and 60 VDC shall be provided where required by NFPA 76.</u>		
	1207.5.5.1 Water-reactive systems. <u>Electrochemical ESS that utilize water-reactive materials shall be protected by an <i>approved</i> alternative automatic fire-extinguishing system in accordance with Section 904, where the installation is <i>approved</i> by the <i>fire code official</i> based on large-scale fire testing complying with Section 1207.1.5.</u>		New requirements for electrochemical energy storage systems.
	1207.5.6 Maximum enclosure size. <u>Outdoor walk-in units housing ESS shall not exceed 53 feet by 8 feet by 9.5 feet high (16 154 mm x 2438 mm x 2896 mm), not including bolt-on HVAC and related equipment, as <i>approved</i>. Outdoor walk-in units exceeding these limitations shall be considered indoor installations and comply with the requirements in Section 1207.7.</u>		New requirements for electrochemical energy storage systems.
	1207.5.7 Vegetation control. <u>Areas within 10 feet (3048 mm) on each side of outdoor ESS shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees, shrubbery or cultivated ground cover such as green grass, ivy, succulents or similar plants used as ground cover shall be permitted to be exempt provided that they do not form a means of readily transmitting fire.</u>		New requirements for electrochemical energy storage systems.
	1207.5.8 Means of egress separation. <u>ESS located outdoors and in open parking garages shall be separated from any <i>means of egress</i> as required by the <i>fire code official</i> to ensure safe egress under fire conditions, but in no case less than 10 feet (3048 mm).</u> Exception: <u>The <i>fire code official</i> is authorized to approve a reduced separation distance if large-scale fire testing complying with Section 1207.1.5 is provided that shows that a fire involving the ESS will not adversely impact occupant egress.</u>		New requirements for electrochemical energy storage systems.
	TABLE 1207.6 ELECTROCHEMICAL ESS TECHNOLOGY-SPECIFIC REQUIREMENTS		New requirements for electrochemical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1207.6 Electrochemical ESS technology-specific protection. <u>Electrochemical ESS installations shall comply with the requirements of this section in accordance with the applicable requirements of Table 1207.6.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1 Exhaust ventilation. <u>Where required by Table 1207.6 or elsewhere in this code, exhaust ventilation of rooms, areas and walk-in units containing electrochemical ESS shall be provided in accordance with the <i>International Mechanical Code</i> and Section 1207.6.1.1 or 1207.6.2.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1.1 Ventilation based on LFL. <u>The exhaust ventilation system shall be designed to limit the maximum concentration of flammable gas to 25 percent of the lower flammable limit (LFL) of the total volume of the room, area or walk-in unit during the worse-case event of simultaneous charging of batteries at the maximum charge rate, in accordance with nationally recognized standards.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1.2 Ventilation based on exhaust rate. <u>Mechanical exhaust ventilation shall be provided at a rate of not less than 1 ft³/min/ft² (5.1 L/sec/m²) of floor area of the room, area or walk-in unit. The ventilation shall be either continuous or shall be activated by a gas detection system in accordance with Section 1207.6.1.2.4.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1.2.1 Standby power. <u>Mechanical exhaust ventilation shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.5.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1.2.2 Installation instructions. <u>Required mechanical exhaust ventilation systems shall be installed in accordance with the manufacturer's installation instructions and the <i>International Mechanical Code</i>.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1.2.3 Supervision. <u>Required mechanical exhaust ventilation systems shall be supervised by an <i>approved</i> central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible signal at an <i>approved</i> constantly attended on-site location.</u>		New requirements for electrochemical energy storage systems.
	1207.6.1.2.4 Gas detection system. <u>Where required by Section 1207.6.1.2, rooms, areas and walk-in units containing ESS shall be protected by an <i>approved</i> continuous gas detection system that complies with Section 916 and with the following:</u> <u>1. The gas detection system shall be designed to activate the mechanical ventilation system when the level of flammable gas in the room, area or walk-in unit exceeds 25 percent of the LFL.</u>		New requirements for electrochemical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	<u>2. The mechanical ventilation system shall remain on until the flammable gas detected is less than 25 percent of the LFL.</u> <u>3. The gas detection system shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.5.</u> <u>4. Failure of the gas detection system shall annunciate a trouble signal at an <i>approved</i> central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible trouble signal at an <i>approved</i> constantly attended on-site location.</u>		
	1207.6.2 Spill control and neutralization. Where required by Table 1207.6 or elsewhere in this code, areas containing free-flowing liquid electrolyte or hazardous materials shall be provided with spill control and neutralization in accordance with this section.		New requirements for electrochemical energy storage systems.
	1207.6.2.1 Spill control. Spill control shall be provided to prevent the flow of liquid electrolyte or hazardous materials to adjoining rooms or areas. The method shall be capable of containing a spill from the single largest battery or vessel.		New requirements for electrochemical energy storage systems.
	1207.6.2.2 Neutralization. An <i>approved</i> method that is capable of neutralizing spilled liquid electrolyte from the largest battery or vessel to a pH between 5.0 and 9.0 shall be provided.		New requirements for electrochemical energy storage systems.
	1207.6.2.3 Communications utilities. The requirements of Section 1207.6.2 shall apply only when the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L) for lead-acid and nickel-cadmium battery systems operating at less than 50 VAC and 60 VDC that are located at facilities under the exclusive control of communications utilities, and those facilities comply with NFPA 76 in addition to applicable requirements of this code.		New requirements for electrochemical energy storage systems.
	1207.6.3 Explosion control. Where required by Table 1207.6 or elsewhere in this code, explosion control complying with Section 911 shall be provided for rooms, areas or walk-in units containing electrochemical ESS technologies. Exceptions: <u>1. Where <i>approved</i>, explosion control is permitted to be waived by the <i>fire code official</i> based on large-scale fire testing complying with Section 1207.1.5 that demonstrates that flammable gases are not liberated from electrochemical ESS cells or modules where tested in accordance with UL 9540A.</u> <u>2. Where <i>approved</i>, explosion control is permitted to be waived by the <i>fire code official</i> based on documentation provided in accordance with Section</u>		New requirements for electrochemical energy storage systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	<u>104.7 that demonstrates that the electrochemical ESS technology to be used does not have the potential to release flammable gas concentrations in excess of 25 percent of the LFL anywhere in the room, area, walk-in unit or structure under thermal runaway or other fault conditions.</u>		
	1207.6.4 Safety caps. Where required by Table 1207.6 or elsewhere in this code, vented batteries and other ESS shall be provided with flame-arresting safety caps.		New requirements for electrochemical energy storage systems.
	1207.6.5 Thermal runaway. Where required by Table 1207.6 or elsewhere in this code, batteries and other ESS shall be provided with a <i>listed</i> device or other <i>approved</i> method to prevent, detect and minimize the impact of thermal runaway.		New requirements for electrochemical energy storage systems.
	1207.7 Indoor installations. Indoor ESS installations shall be in accordance with Sections 1207.7.1 through 1207.7.4.		New requirements for electrochemical energy storage systems.
	TABLE 1207.7 INDOOR ESS INSTALLATIONS		New requirements for indoor energy storage system installations.
	1207.7.1 Dedicated-use buildings. For the purposes of Table 1207.7, dedicated-use ESS buildings shall be classified as Group F-1 occupancies and comply with all the following: 1. The building shall only be used for ESS, electrical energy generation and other electrical grid-related operations. 2. Occupants in the rooms and areas containing ESS are limited to personnel that operate, maintain, service, test and repair the ESS and other energy systems. 3. No other occupancy types shall be permitted in the building. 4. Administrative and support personnel shall be permitted in areas within the buildings that do not contain ESS, provided that: 4.1. The areas do not occupy more than 10 percent of the <i>building area</i> of the story in which they are located. 4.2. A <i>means of egress</i> is provided from the incidental use areas to the <i>public way</i> that does not require occupants to traverse through areas containing ESS or other energy system equipment.		New requirements for indoor energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.7.2 Nondedicated-use buildings. For the purpose of Table 1207.7, nondedicated-use buildings include all buildings that contain ESS and do not comply with Section 1207.7.2 dedicated-use building requirements.		New requirements for indoor energy storage system installations.
	1207.7.3 Dwelling units and sleeping units. ESS shall not be installed in <i>sleeping units</i> or in <i>habitable spaces of dwelling units</i> .		New requirements for indoor energy storage system installations.
	1207.7.4 Fire-resistance-rated separations. Rooms and areas containing ESS shall include <i>fire-resistance-rated</i> separations as follows: 1. In dedicated-use buildings, rooms and areas containing ESS shall be separated from areas in which administrative and support personnel are located. 2. In nondedicated-use buildings, rooms and areas containing ESS shall be separated from other areas in the building. Separation shall be provided by 2-hour <i>fire barriers</i> constructed in accordance with Section 707 of the <i>International Building Code</i> and 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711 of the <i>International Building Code</i> , as appropriate.		New requirements for indoor energy storage system installations.
	1207.8 Outdoor installations. Outdoor installations shall be in accordance with Sections 1207.8.1 through 1207.8.3. Exterior wall installations for individual ESS units not exceeding 20 kWh shall be in accordance with Section 1207.8.4.		New requirements for indoor energy storage system installations.
	TABLE 1207.8 OUTDOOR ESS INSTALLATIONS^a		New requirements for outdoor energy storage system installations.
	1207.8.1 Remote outdoor installations. For the purpose of Table 1207.8, remote outdoor installations include ESS located more than 100 feet (30 480 mm) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high-piled stock and other exposure hazards.		New requirements for outdoor energy storage system installations.
	1207.8.2 Installations near exposures. For the purpose of Table 1207.8, installations near exposures include all outdoor ESS installations that do not comply with Section 1207.8.1 remote outdoor location requirements.		New requirements for outdoor energy storage system installations.
	1207.8.3 Clearance to exposures. ESS located outdoors shall be separated by a minimum of 10 feet (3048 mm) from the following exposures: 1. Lot lines. 2. Public ways. 3. Buildings. 4. Stored combustible materials.		New requirements for outdoor energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5. Hazardous materials. 6. High-piled stock. 7. Other exposure hazards. Exceptions: 1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour free-standing <i>fire barrier</i> suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure. 2. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where noncombustible exterior walls with no openings or combustible overhands are provided on the wall adjacent to the ESS and the <i>fire-resistance rating</i> of the exterior wall is a minimum of 2 hours. 3. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large-scale fire testing complying with Section 1207.1.5.		
	1207.8.4 Exterior wall installations. ESS shall be permitted to be installed outdoors on exterior walls of buildings when all of the following conditions are met: 1. The maximum energy capacity of individual ESS units shall not exceed 20 kWh. 2. The ESS shall comply with applicable requirements in Section 1207. 3. The ESS shall be installed in accordance with the manufacturer's instructions and their listing. 4. Individual ESS units shall be separated from each other by at least 3 feet (914 mm). 5. The ESS shall be separated from doors, windows, operable openings into buildings or HVAC inlets by at least 5 feet (1524 mm). Exception: Where <i>approved</i>, smaller separation distances in Items 4 and 5 shall be permitted based on large-scale fire testing complying with Section 1207.1.5.		New requirements for outdoor energy storage system installations.
	1207.9 Special installations. Rooftop and open parking garage ESS installations shall comply with Sections 1207.9.1 through 1207.9.6.		New requirements for outdoor energy storage system installations.
	TABLE 1207.9 SPECIAL ESS INSTALLATIONS		New requirements for special energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.9.1 Rooftop installations. For the purpose of Table 1207.9, rooftop ESS installations are those located on the roofs of buildings.		New requirements for special energy storage system installations.
	1207.9.2 Open parking garage installations. For the purpose of Table 1207.9, open parking garage ESS installations are those located in a structure or portion of a structure that complies with Section 406.5 of the <i>International Building Code</i> .		New requirements for special energy storage system installations.
	1207.9.3 Clearance to exposures. ESS located on rooftops and in open parking garages shall be separated by a minimum of 10 feet (3048 mm) from the following exposures: 1. Buildings, except the building on which rooftop ESS is mounted. 2. Any portion of the building on which a rooftop system is mounted that is elevated above the rooftop on which the system is installed. 3. Lot lines. 4. Public ways. 5. Stored combustible materials. 6. Locations where motor vehicles can be parked. 7. Hazardous materials. 8. Other exposure hazards. Exceptions: 1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour free-standing <i>fire barrier</i> suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure. 2. Clearances are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large-scale fire testing complying with Section 1207.1.5.		New requirements for special energy storage system installations.
	1207.9.4 Fire suppression systems. ESS located in walk-in units on rooftops or in walk-in units in open parking garages shall be provided with automatic fire suppression systems within the ESS enclosure in accordance with Section 1207.5.5. Areas containing ESS other than walk-in units in open parking structures on levels not open above to the sky shall be provided with an automatic fire suppression system complying with Section 1207.5.5. Exception: A fire suppression system is not required in open parking garages if large-scale fire testing complying with Section 1207.1.5 is provided that shows that a fire will not impact the exposures in Section 1207.9.3.		New requirements for special energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1207.9.5 Rooftop installations. ESS and associated equipment that are located on rooftops and not enclosed by building construction shall comply with the following: 1. Stairway access to the roof for emergency response and fire department personnel shall be provided either through a bulkhead from the interior of the building or a stairway on the exterior of the building. 2. Service walkways at least 5 feet (1524 mm) in width shall be provided for service and emergency personnel from the point of access to the roof to the system. 3. ESS and associated equipment shall be located from the edge of the roof a distance equal to at least the height of the system, equipment or component but not less than 5 feet (1524 mm). 4. The roofing materials under and within 5 feet (1524 mm) horizontally from an ESS or associated equipment shall be noncombustible or shall have a Class A rating when tested in accordance with ASTM E108 or UL 790. 5. A Class I standpipe outlet shall be installed at an <i>approved</i> location on the roof level of the building or in the stairway bulkhead at the top level. 6. The ESS shall be the minimum of 10 feet (3048 mm) from the fire service access point on the rooftop.		New requirements for special energy storage system installations.
	1207.9.6 Open parking garages. ESS and associated equipment that are located in open parking garages shall comply with all of the following: 1. ESS shall not be located within 50 feet (15 240 mm) of air inlets for building HVAC systems. Exception: This distance shall be permitted to be reduced to 25 feet (7620 mm) if the automatic fire alarm system monitoring the radiant-energy sensing detectors de-energizes the ventilation system connected to the air intakes upon detection of fire. 2. ESS shall not be located within 25 feet (7620 mm) of exits leading from the attached building where located on a covered level of the parking structure not directly open to the sky above. 3. An <i>approved</i> fence with a locked gate or other <i>approved</i> barrier shall be provided to keep the general public at least 5 feet (1524 mm) from the outer enclosure of the ESS.		New requirements for special energy storage system installations.
	1207.10 Mobile ESS equipment and operations. Mobile ESS equipment and operations shall comply with Sections 1207.10.1 through 1207.10.7.7.		New requirements for special energy storage system installations.
	TABLE 1207.10 MOBILE ENERGY STORAGE SYSTEMS (ESS)		New requirements for mobile energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.10.1 Charging and storage. For the purpose of Section 1207.10, charging and storage covers the operation where mobile ESS are charged and stored so they are ready for deployment to another site, and where they are charged and stored after a deployment.		New requirements for mobile energy storage system installations.
	1207.10.2 Deployment. For the purpose of Section 1207.10, deployment covers operations where mobile ESS are located at a site other than the charging and storage site and are being used to provide power.		New requirements for mobile energy storage system installations.
	1207.10.3 Permits. Construction and operational permits shall be provided for charging and storage of mobile ESS and operational permits shall be provided for deployment of mobile ESS as required by Section 1207.1.2.		New requirements for mobile energy storage system installations.
	1207.10.4 Construction documents. Construction documents complying with Section 1207.1.3 shall be provided with the construction permit application for mobile ESS charging and storage locations.		New requirements for mobile energy storage system installations.
	1207.10.4.1 Deployment documents. The following information shall be provided with the operation permit applications for mobile ESS deployments: 1. Relevant information for the mobile ESS equipment and protection measures in the construction documents required by Section 1207.1.3. 2. Location and layout diagram of the area in which the mobile ESS is to be deployed, including a scale diagram of all nearby exposures. 3. Location and content of signage, including no smoking signs. 4. Description of fencing to be provided around the ESS, including locking methods. 5. Details on fire suppression, smoke and automatic fire detection, system monitoring, thermal management, exhaust ventilation and explosion control, if provided. 6. For deployment, the intended duration of operation, including anticipated connection and disconnection times and dates. 7. Location and description of local staging stops during transit to the deployment site. See Section 1207.10.7.5. 8. Description of the temporary wiring, including connection methods, conductor type and size, and circuit overcurrent protection to be provided. 9. Description of how fire suppression system connections to water supplies or extinguishing agents are to be provided. 10. Contact information for personnel who are responsible for maintaining and servicing the		New requirements for mobile energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	<u>equipment, and responding to emergencies as required by Section 1207.1.6.1.</u>		
	1207.10.5 Approved locations. <u>Locations where mobile ESS are charged, stored and deployed shall be restricted to the locations established on the construction and operational permits.</u>		New requirements for mobile energy storage system installations.
	1207.10.6 Charging and storage. <u>Installations where mobile ESS are charged and stored shall be treated as permanent ESS indoor or outdoor installations, and shall comply with the following sections, as applicable:</u> 1. <u>Indoor charging and storage shall comply with Section 1207.7.</u> 2. <u>Outdoor charging and storage shall comply with Section 1207.8.</u> 3. <u>Charging and storage on rooftops and in open parking garages shall comply with Section 1207.9.</u> Exceptions: 1. <u>Electrical connections shall be permitted to be made using temporary wiring complying with the manufacturer's instructions, the UL 9540 listing and NFPA 70.</u> 2. <u>Fire suppression system connections to the water supply shall be permitted to use <i>approved</i> temporary connections.</u>		New requirements for mobile energy storage system installations.
	1207.10.7 Deployed mobile ESS requirements. <u>Deployed mobile ESS equipment and operations shall comply with this section and Table 1207.10.</u>		New requirements for mobile energy storage system installations.
	1207.10.7.1 Duration. <u>The duration of mobile ESS deployment shall not exceed 30 days.</u> Exceptions: 1. <u>Mobile ESS deployments that provide power for durations longer than 30 days shall comply with Section 1207.10.6.</u> 2. <u>Mobile ESS deployments shall not exceed 180 days unless additional operational permits are obtained.</u>		New requirements for mobile energy storage system installations.
	1207.10.7.2 Restricted locations. <u>Deployed mobile ESS operations shall not be located indoors, in covered parking garages, on rooftops, below grade or under building overhangs.</u>		New requirements for mobile energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.10.7.3 Clearance to exposures. Deployed mobile ESS shall be separated by a minimum of 10 feet (3048 mm) from the following exposures: 1. Public ways. 2. Buildings. 3. Stored combustible materials. 4. Hazardous materials. 5. High-piled storage. 6. Other exposure hazards. Deployed mobile ESS shall be separated by a minimum of 50 feet (15 240 mm) from public seating areas and from tents, canopies and membrane structures with an <i>occupant load</i> of 30 or more.		New requirements for mobile energy storage system installations.
	1207.10.7.4 Electrical connections. Electrical connections shall be made in accordance with the manufacturer's instructions and the UL 9540 listing. Temporary wiring for electrical power connections shall comply with NFPA 70. Fixed electrical wiring shall not be provided.		New requirements for mobile energy storage system installations.
	1207.10.7.5 Local staging. Mobile ESS in transit from the charging and storage location to the deployment location and back shall not be parked within 100 feet (30 480 mm) of an occupied building for more than 1 hour during transit, unless specifically <i>approved</i> by the <i>fire code official</i> when the permit is issued.		New requirements for mobile energy storage system installations.
	1207.10.7.6 Fencing. An <i>approved</i> fence with a locked gate or other <i>approved</i> barrier shall be provided to keep the general public at least 5 feet (1524 mm) from the outer enclosure of a deployed mobile ESS.		New requirements for mobile energy storage system installations.
	1207.10.7.7 Smoking. Smoking shall be prohibited within 10 feet (3048 mm) of mobile ESS. Signs shall be posted in accordance with Section 310.		New requirements for mobile energy storage system installations.
	1207.11 ESS in Group R-3 and R-4 occupancies. ESS in Group R-3 and R-4 occupancies shall be installed and maintained in accordance with Sections 1207.11.1 through 1207.11.9. The temporary use of an <i>owner</i> or occupant's electric-powered vehicle as an ESS shall be in accordance with Section 1207.11.10.		New requirements for mobile energy storage system installations.
	1207.11.1 Equipment listings. ESS shall be <i>listed</i> and <i>labeled</i> in accordance with UL 9540. ESS <i>listed</i> and <i>labeled</i> solely for utility or commercial use shall not be used for residential applications. Exceptions: 1. Where <i>approved</i> , repurposed unlisted battery systems from electric vehicles are allowed to be installed outdoors or in detached dedicated cabinets located not less than 5 feet (1524 mm) from exterior walls, property lines and public ways. 2. ESS less than 1 kWh (3.6 megajoules).		New requirements for mobile energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.11.2 Installation. ESS shall be installed in accordance with the manufacturer's instructions and their listing.		New requirements for mobile energy storage system installations.
	1207.11.2.1 Spacing. Individual units shall be separated from each other by at least 3 feet (914 mm) of spacing unless smaller separation distances are documented to be adequate based on large-scale fire testing complying with Section 1207.1.5.		New requirements for mobile energy storage system installations.
	1207.11.3 Location. ESS shall be installed only in the following locations: 1. Detached garages and detached accessory structures. 2. Attached garages separated from the <i>dwelling unit</i> living space and <i>sleeping units</i> in accordance with Section 406.3.2 of the <i>International Building Code</i> . 3. Outdoors on exterior walls located a minimum of 3 feet (914 mm) from doors and windows. 4. Utility closets and storage or utility spaces within <i>dwelling units</i> and <i>sleeping units</i> .		New requirements for mobile energy storage system installations.
	1207.11.4 Energy ratings. Individual ESS units shall have a maximum rating of 20 kWh. The aggregate rating structure shall not exceed: 1. 40 kWh within utility closets and storage or utility spaces. 2. 80 kWh in attached or detached garages and detached accessory structures. 3. 80 kWh on exterior walls. 4. 80 kWh outdoors on the ground.		New requirements for mobile energy storage system installations.
	1207.11.5 Electrical installation. ESS shall be installed in accordance with NFPA 70. Inverters shall be <i>listed</i> and <i>labeled</i> in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters <i>listed</i> for utility interaction.		New requirements for mobile energy storage system installations.
	1207.11.6 Fire detection. Rooms and areas within <i>dwelling units</i> , <i>sleeping units</i> and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section 907.2.10. A <i>heat detector listed</i> and interconnected to the smoke alarms shall be installed in locations within <i>dwelling units</i> , <i>sleeping units</i> and attached garages where smoke alarms cannot be installed based on their listing.		New requirements for mobile energy storage system installations.
	1207.11.7 Protection from impact. Stationary storage battery systems installed in a location subject to vehicle damage shall be protected by <i>approved</i> barriers. Appliances in garages shall also be installed in accordance with Section 304.3 of the <i>International Mechanical Code</i> .		New requirements for mobile energy storage system installations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	1207.11.8 Ventilation. Indoor installations of ESS that include batteries that produce hydrogen or other flammable gases during charging shall be provided with exhaust ventilation in accordance with Section 1207.6.1.		New requirements for mobile energy storage system installations.
	1207.11.9 Toxic and highly toxic gas. ESS that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within Group R-3 or R-4 occupancies.		New requirements for mobile energy storage system installations.
	1207.11.10 Electric vehicle use. The temporary use of an owner or occupant's electric-powered vehicle to power a dwelling unit or sleeping unit while parked in an attached or detached garage or outside shall comply with the vehicle manufacturer's instructions and NFPA 70.		New requirements for mobile energy storage system installations.
2015 Houston IFC – Chapter 21 Dry Cleaning	2021 IFC – Chapter 21 – Dry Cleaning	2021 Houston Amendments	Code Change Summary
	SECTION 2004 AIRCRAFT MAINTENANCE		
	2004.7 Other aircraft maintenance. Maintenance, repairs, modifications, or construction performed upon aircraft not addressed elsewhere in this code shall be conducted in accordance with NFPA 410.		Minor wordsmithing for clarification.
	SECTION 2005 PORTABLE FIRE EXTINGUISHERS		
	2005.4 On aircraft fuel-servicing tank vehicles. Aircraft fuel-servicing tank vehicles shall be equipped with not less than two listed portable fire extinguishers complying with Section 906, each having a minimum rating of 20-B:C. A portable fire extinguisher shall be provided with readily accessible from either side of the vehicle.		Minor wordsmithing for clarification.
	2005.7 Fire extinguisher access. Access to portable fire extinguishers required by this chapter shall be accessible maintained at all times. Where necessary, provisions shall be made to clear accumulations of snow, ice and other forms of weather-induced obstructions.		Minor wordsmithing for clarification.
	2005.7.1 Cabinets. Cabinets and enclosed compartments used to house portable fire extinguishers shall be clearly marked with the words FIRE EXTINGUISHER in letters not less than 2 inches (51 mm) high. Cabinets and compartments shall be readily provided with ready accessible at all times.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2005.8 Reporting use. Use of a fire extinguisher under any circumstances shall be immediately reported to the manager of the airport and the fire code official ~~immediately after use.~~		Minor wordsmithing for clarification.
	SECTION 2006 AIRCRAFT FUELING		No Houston amendment.
	2006.3.1.3 Vibration isolation. Flexible connections for the purpose of eliminating vibration are allowed if the material used therein is designed, installed and maintained in an approved manner, provided that such connections do not exceed 24 inches (610 mm) in length.		Minor wordsmithing for clarification.
	2006.3.6 Accessory equipment. Ladders, hose reels and similar accessory equipment shall be of an approved type and constructed substantially as follows: 1. Ladders constructed of noncombustible material are allowed to be used with or attached to aircraft-fueling vehicles, provided that the manner of attachment or use of such ladders is approved and does not constitute an additional fire or accident hazard in the operation of such fueling vehicles. 2. Hose reels used in connection with fueling vehicles shall be constructed of noncombustible materials and shall be provided with a packing gland or other device that will preclude fuel leakage between reels and fuel manifolds.		Minor wordsmithing for clarification.
	2006.5.2.2 Bonding conductors on transfer nozzles. Transfer nozzles shall be equipped with approved bonding conductors that shall be clipped or otherwise positively engaged with the bonding attachment provided on the aircraft adjacent to the fuel tank cap prior to removal of the cap. Exception: In the case of overwing fueling where a ~~no~~ appropriate bonding attachment adjacent to the fuel fill port has ~~not~~ been provided on the aircraft, the fueling operator shall touch the fuel tank cap with the nozzle spout prior to removal of the cap. The nozzle shall be kept in contact with the fill port until fueling is completed.		Minor wordsmithing for clarification.
	2006.6.1 ~~Accessibility Controls~~. Emergency fuel shutoff controls shall be ~~readily provided with ready accessible~~ at all times when the fueling system is being operated.		No Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2006.8 Loading and unloading. Aircraft-fueling vehicles shall be loaded only at an approved loading rack. Such loading racks shall be in accordance with Section 5706.5.1.12. Exceptions: 1. Aircraft-refueling units are allowed to be loaded from the fuel tanks of an aircraft during defueling operations. 2. Fuel transfer between tank vehicles is allowed to be performed in accordance with Section 5706.6 when where the operation is not less than 200 feet (60 960 mm) from an aircraft.		Minor wordsmithing for clarification.
	2006.9 Passengers. Passenger traffic is allowed during the time fuel transfer operations are in progress, provided that the following provisions are strictly enforced by the owner of the aircraft or the owner's authorized employee: 1. Smoking and producing an open flame in the cabin of the aircraft or the outside thereof within 50 feet (15 240 mm) of such aircraft shall be prohibited. A qualified employee of the aircraft owner shall be responsible for seeing that the passengers are not allowed to smoke when remaining aboard the aircraft or while going across the ramp from the gate to such aircraft, or vice versa. 2. Passengers shall not be permitted to linger about the plane, but shall proceed directly between the loading gate and the aircraft. 3. Passenger loading stands or walkways shall be left in loading position until all fuel transfer operations are completed. 4. Fuel transfer operations shall not be performed on the main exit side of any aircraft containing passengers except when the owner of such aircraft or a capable and qualified employee of such owner remains inside the aircraft to direct and assist the escape of such passengers through regular and emergency exits in the event fire should occur during fuel transfer operations.		Minor wordsmithing for clarification.
	2006.13 Vehicle and equipment restrictions. During aircraft-fueling operations, only the equipment actively involved in the fueling operation is allowed within 50 feet (15 240 mm) of the aircraft being fueled. Other equipment shall be prohibited in this area until the fueling operation is complete. ~~Exception: Aircraft-fueling operations utilizing single-point refueling with a sealed, mechanically locked fuel line connection and the fuel is not a Class I flammable liquid.~~ A clear space of not less than 10 feet (3048 mm) shall be maintained between aircraft fuel-system vent openings and any part or portion of aircraft-servicing vehicles or equipment. ~~Exception: Aircraft-fueling operations utilizing single-point refueling with a sealed, mechanically locked fuel line connection and the fuel is not a Class I flammable liquid.~~		Exception moved in base code.
	2006.20.1 Parking area design. Parking areas for tank vehicles shall be designed and utilized such that a clearance of 10 feet (3048 mm) is maintained between each parked vehicle for fire department access. In addition, a minimum clearance of 50 feet (15 240 mm) shall be maintained between tank vehicles and parked aircraft and structures		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	other than those used for the maintenance and/or garaging of aircraft fuel-servicing vehicles.		
	SECTION 2007 HELISTOPS AND HELIPORTS		
	2007.2 Clearances. The touchdown area shall be surrounded on all sides by a clear area having minimum average width at roof level of 15 feet (4572 mm) but and not width less than 5 feet (1524 mm) at any point. The clear area shall be maintained.		Minor wordsmithing for clarification.
2104.2.1 Ventilation. Ventilation shall be provided in accordance with Section ~~502~~ 505 of the ~~International Mechanical Code~~ and DOL 29 CFR Part 1910.1000, where applicable.		2104.2.1 Ventilation. Ventilation shall be provided in accordance with Section ~~502~~ 505 of the ~~International Mechanical Code~~ and DOL 29 CFR Part 1910.1000, where applicable.	No change to Houston amendment.
2015 Houston IFC – Chapter 22 Combustible Dust-Producing Operations	2021 IFC – Chapter 22 – Combustible Dust- Producing Operations	2021 Houston Amendments	Code Change Summary
	SECTION 2201 GENERAL 2201.1 Scope. The equipment, processes and operations involving dust explosion hazards and use or handling of combustible dust shall comply with the provisions of this chapter, code and NFPA 652. Exceptions: 1. Storage and use of consumer materials in Group B or R occupancies. 2. Storage and use of commercially packaged materials in Group M occupancies. 3. Materials displayed in original packaging in Group M occupancies and intended as building materials or for personal or household use. 4. Storage of sealed containers of combustible dust at facilities not associated with an operation that uses, handles or generates combustible dust . 5. Materials stored or used in farm buildings or similar occupancies intended for on-premises agricultural purposes.		Updates to the scope and use of Chapter 22. See Technical Memo #24 for more information on changes to Chapter 22.
	SECTION 2202 DEFINITIONS 2202.1 Definition. The following terms are defined in Chapter 2: COMBUSTIBLE DUST . DUST COLLECTION SYSTEM .		New base code definition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	SECTION 2203 ~~PRECAUTIONS~~DUST EXPLOSION PREVENTION ~~2203.1 Owner responsibility.~~ The owner or operator of a facility with operations that manufacture, process, blend, convey, repackage, generate or handle potentially combustible dust or combustible particulate solids shall be responsible for compliance with the provisions of this code and NFPA 652.		Added clarification and restructuring of section.
	2203.1 Critical depth layer. The maximum dust layer on all surfaces, including but not limited to walls, ceilings, beams, equipment, furniture, pipes and ducts, shall not exceed the critical depth layer specified in Table 2203.1. The critical depth layer is permitted to be adjusted for explosion hazard where further evaluated in accordance with one of the following: 1. Section 7.2.1.3 of NFPA 654. 2. Section 4.1.3.3 of NFPA 664 for wood flour. 3. Accumulated <i>combustible dust</i> shall be collected by one of the methods listed in Section 2203.5.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	TABLE 2203.1 CRITICAL DEPTH LAYER		New table for accumulated dust.
	~~2203.2 Dust hazard analysis (DHA).~~ The requirements of NFPA 652 apply to all new and existing facilities and operations with combustible dust hazard. Existing facilities shall have a dust hazard analysis (DHA) completed in accordance with Section 7.1.2 of NFPA 652. ~~The fire code official shall be authorized to order a dust hazard analysis to occur sooner if a combustible dust hazard has been identified in a facility that has not previously performed an analysis.~~ 2203.2 Dust-producing and dust-handling equipment. Dust-producing equipment and dust-handling equipment, including but not limited to vacuums, dust collection systems, dryers, mixers, blenders, separators, conveyors, storage containers, silos or other similar devices, shall be <i>listed</i> and shall be maintained in accordance with the manufacturer's recommended standards.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.2.1 Signages and markings. Signages and markings shall be provided in accordance with Sections 2203.2.1.1 through 2203.2.1.3.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.2.1.1 Deflagration vent discharge area markings. Where dust collection systems and other equipment, systems or system components are provided with deflagration vents, the area within the deflagration vent's discharge area shall be marked in an <i>approved manner</i>.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.2.1.2 Caution signs. Signs that read as follows shall be posted near the dust-containing equipment with deflagration vents:		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	CAUTION: THIS EQUIPMENT CAN CONTAIN EXPLOSIVE DUST. KEEP OUTSIDE THE MARKED AREA WHILE EQUIPMENT IS OPERATING.		
	2203.2.1.3 Warning signs. Where dust collection systems and other equipment, systems or system components are provided with deflagration vents, vent closures shall be clearly marked as follows: WARNING: EXPLOSION RELIEF DEVICE. STAY CLEAR.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	~~2203.3 Sources of ignition.~~ Smoking, the use of heating or other devices employing an open flame, or the use of sparkproducing equipment is prohibited in areas where <i>combustible dust</i> is generated, stored, manufactured, processed or handled. 2203.3 Dust-collection and dust-conveying systems. Dust-collection and dust-conveying systems shall be in accordance with Sections 2203.3.1 through 2203.3.3.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.3.1 Dust-collection systems. Dust-collection systems shall be designed to collect dust emissions from dust-producing equipment at the point of generation. Dust-collection systems shall be in accordance with Section 511 of the <i>International Mechanical Code</i> . Exception: <i>Closed systems</i> using <i>listed</i> equipment and designed in accordance with manufacturer's recommendations and specifications, where cleanouts are provided in accordance with Section 2203.3.3. Heating, ventilation, and air conditioning (HVAC) systems shall not be used as the means to collect dusts from localized sources.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.3.1.1 Location. Dust collectors shall be located outside of buildings. Exceptions: Dust collectors inside buildings complying with Section 511 of the <i>International Mechanical Code</i> . Wet-type dust collectors specifically <i>listed</i> for the type of dust conveyed shall be permitted inside buildings where in accordance with the manufacturer's instructions and specifications. Dust collectors designed to specific NFPA standards listed in Table 2205.1 for the specific type of dust conveyed.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.3.1.2 Minimum conveying velocities. The minimum velocities within ducts used as part of the dust collection system shall be in accordance with Table 2203.3.1.2.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	TABLE 2203.3.1.2 MINIMUM CONVEYING VELOCITIES		New table for dust conveying velocities.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2203.3.2 Plastic ducts and conveying systems. Plastic, fiberglass, other nonconductive ducts, duct liners or pipes shall not be used as part of ducts and conveying systems. Ductwork utilizing a combustible lining shall be permitted only in high-impact areas and where <i>approved</i> . Flexible hose shall be permitted if designed and installed in accordance with the following requirements: 1. Manufactured of static dissipative construction. 2. Used only for connections and isolation purposes. 3. Limited to 18 inches (457 mm) in length. 4. Properly grounded.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.3.3 Cleanouts. Openings in enclosed equipment and conveyors shall be provided to allow access to all parts of the equipment and conveyors to permit inspection, cleaning, maintenance and the effective use of portable fire extinguishers or hose streams. Cleanouts for ducts used as part of the dust- collection system shall be in accordance with the <i>International Mechanical Code</i> .		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4 Housekeeping. Accumulation of <i>combustible dust</i> shall be kept to a minimum in the interior of buildings. Accumulated <i>combustible dust</i> shall be collected by vacuum cleaning or other means that will not place <i>combustible dust</i> into suspension in air. Forced air or similar methods shall not be used to remove dust from surfaces. 2203.4 Sources of ignition. Sources of ignition shall be controlled in accordance with Sections 2203.4.1 through 2203.4.9.5.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.1 Classified electrical. Classified electrical shall be in accordance with NFPA 70. Electrical motors and electrical components of the equipment shall not be installed in the dust-laden airstream unless <i>listed</i> for Class II, Division 1, locations.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.2 Static electricity. Bonding and grounding is required to minimize accumulation of static electric charge in the following locations: 1. Dust-producing equipment. 2. Dust-collection system. 3. Pneumatic dust-conveying systems conveying <i>combustible dust</i> from one location to another. <i>combustible dust</i> conveyors, piping and conductive components. Conveying systems include transport modes such as railcars, hopper cars, boxcars, tank cars and trucks into which or from which commodities or products are pneumatically conveyed. 4. Conveying systems using metallic piping.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.3 Hot works. Hot work and similar spark-producing operations shall not be conducted in or adjacent to <i>combustible dust</i> -producing areas unless precautions have been taken to provide safety. Hot work shall be permitted only in safe, designated areas in accordance with Chapter 35. Hot work is prohibited on equipment that is operating.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2203.4.3.1 Signs. Conspicuous signs with the following warning shall be posted in the vicinity of <i>combustible dust</i>-producing areas or in the vicinity of <i>combustible dust</i> use: NO WELDING. THE USE OF WELDING OR CUTTING EQUIPMENT IN OR NEAR THIS AREA IS DANGEROUS BECAUSE OF FIRE AND EXPLOSION HAZARDS. WELDING AND CUTTING SHALL BE DONE ONLY UNDER THE SUPERVISION OF THE PERSON IN CHARGE.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.4 Hot surfaces and hot equipment. In areas where a dust explosion hazard or dust flash fire hazard exists, the temperature (in degrees Celsius) of external surfaces shall be maintained below 80 percent of the lower of the dust-surface ignition temperature or the dust-cloud ignition temperature for worst-case dusts. External surfaces shall include but are not limited to: 1. Compressors. 2. Steam, water or process piping. 3. Ducts. 4. Conveyors. 5. Process equipment. 6. Where steam pipes or hot surfaces occur in dust-producing or dust-handling areas, accumulation of dust on the surfaces shall be minimized by an <i>approved</i> method. Exception: Drying apparatus <i>listed</i> for the intended use and installed in accordance with the manufacturer's instructions.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.5 Powered industrial trucks. Powered industrial trucks used in electrically classified areas shall be <i>listed</i> for such use.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.6 Smoking prohibited. Smoking shall be prohibited in or adjacent to dust-producing or dust-handling areas. "No Smoking" signs complying with Section 310 shall be conspicuously posted in such areas. Smoking shall be permitted only in designated areas.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.7 Spark-producing devices. Spark-producing devices shall not be located within 20 feet (6096 mm) of areas requiring classified electrical unless separated by a permanent partition.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.8 Self-heating materials. Materials in silos and other large storage piles of particulates prone to self-heating shall be in accordance with Section 9.4.11 of NFPA 652.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.9 Open flames and fuel-fired equipment. Open flames and fuel-fired equipment shall be in accordance with Sections 2203.4.9.1 through 2203.4.9.5.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.9.1 Release of airborne combustible dust. Production, maintenance or repair activities that have the potential to release or force <i>combustible dust</i> to become airborne shall not be conducted within 35 feet (11 m) of an open flame or pilot flame.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2203.4.9.2 Space heaters. Fuel-fired space heaters <u>drawing local ambient air shall not be located within electrically classified areas. Space-heating appliances in dust-producing or dust-handling areas shall be located where not subject to the accumulation of deposits of combustible dust.</u>		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.9.3 Equipment listing. Fuel-fired process equipment shall be <u>listed</u> for its intended use and shall be operated and maintained in accordance with the manufacturer's instructions.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.9.4 Inspection and preventive maintenance. Inspection and maintenance of fuel-fired process equipment shall include verification that significant <u>combustible dust</u> accumulations do not exist within or around the equipment.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.4.9.5 Sources of combustion air. In Class II electrically classified locations, heating units shall be provided with a source of combustion air ducted directly from the building exterior or from an unclassified location.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.5 Housekeeping. Accumulation of <u>combustible dust</u> on surfaces inside buildings shall be maintained below the critical depth layer in Section 2203.1. Pressurized air or similar methods shall not be used to remove dust from surfaces. Accumulated combustible dust shall be collected by one of the following methods: 1. Portable vacuum cleaners <u>listed</u> for use in Class II, Group G, Division 1, atmospheres as defined in NFPA 70. 2. Dust collection systems. 3. Other <u>approved</u> means that will not place <u>combustible dust</u> into suspension in air. Exception: Forced-air or similar methods shall be permitted to remove dust in accordance with NFPA 652, NFPA 654 or NFPA 664.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.6 Standard operational procedures. Dust-producing equipment and all associated equipment, including dust-collection equipment, shall be maintained in accordance with the manufacturer's instructions and specifications and applicable codes. The inspection, testing and maintenance program shall include the following, as applicable: 1. Fire and explosion protection and prevention equipment, as applicable, in accordance with the appropriate NFPA standards. 2. Dust-control equipment. 3. Control of potential ignition sources. 4. Electrical, process and mechanical equipment, including applicable process interlocks. 5. Lubrication of bearings for dust-collection, dust-handling and dust-producing equipment. 6. Additional maintenance in accordance with the manufacturer's instructions and specifications for dust-collection, dust-handling and dust-producing equipment.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~7. Records shall be kept of maintenance and repairs performed. The standard operating procedures shall be submitted to the <i>fire code official</i> for review and approval. The written standard operating procedures shall be signed by the person responsible for facility operations.~~		
	2203.7 Emergency response plan. A written emergency response plan shall be developed for preventing, preparing for and responding to work-related emergencies, including but not limited to fire and explosion. The following information shall be developed into the plan: 1. Identification of dust hazards. 2. Identification and location of all utilities to affected areas. 3. Site plans or floor plans locating utility shutoff controls, including water, gas and power. 4. The potential for explosion. 5. Locations of fire-extinguishing equipment compatible with the hazards present. 6. Any additional information required by the <i>fire code official</i>.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2203.8 Training. The plans and procedures required in Sections 2203.5, 2203.6 and 2203.7 shall be <i>approved by the fire code official</i> . The plans and procedures shall be reviewed annually and updated as required by process changes. Initial and annual refresher training shall be provided to employees who are involved in operating, maintaining and supervising facilities that handle <i>combustible dust</i> . Initial and annual refresher training shall include: 1. Workplace hazards. 2. General orientation, plant diagrams and plant safety rules. 3. Process description or flowchart. 4. Equipment operation, safe startup and shutdown, and response to hazard conditions or an incident. 5. The location and use of all related fire and explosion protection and prevention systems. 6. Equipment maintenance requirements and practices, including visual inspections of conveyors and ducts. 7. Housekeeping requirements, including the maintenance of the critical depth layer in Section 2203.1. 8. Emergency response plans as required in Section 2203.7. 9. The employer shall maintain records of initial and annual training and review.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	SECTION 2204 ADDITIONAL REQUIREMENTS DUST EXPLOSION SCREENING TESTS ~~2204.1 Specific hazards standards. The industry or commodity-specific codes and standards listed in Table 2205.1 shall be complied with based on the identification and evaluation of the specific fire and deflagration hazards that exist at a facility.~~ 2204.1 Combustibility and explosivity tests. Where combustibility or explosivity screening tests are required to analyze the <i>combustible dust</i> as part of compliance with Section 104.8 and Section 414.1.3 of the <i>International Building Code</i>, they shall be in accordance with Section 5.4 of NFPA 652.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2204.2 Samples. Representative samples for the screening test shall be obtained in accordance with Section 5.5 of NFPA 652.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	SECTION 2205 STANDARDS 2205.1 Specific hazards standards. The fire code official is authorized to enforce additional industry- or material-specific provisions of the codes and standards listed in Table 2205.1 to prevent and control dust explosions, as applicable.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	~~TABLE 2204.1~~ TABLE 2205.1 SPECIFIC HAZARDS STANDARDS EXPLOSION PROTECTION STANDARDS		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
	2205.1.1 Dust hazard analysis. If a dust hazard analysis (DHA) is required by the fire code official for new or existing facilities and operations, it shall be in accordance with NFPA 652. The DHA for existing facilities shall be in accordance with Section 7.1.1 of NFPA 652.		New requirements for combustible dust operations. See Technical Memo #24 for more information on changes to Chapter 22.
2015 Houston IFC – Chapter 23 Motor Fuel-Dispensing Facilities and Repair Garages	2021 IFC – Chapter 23 – Motor Fuel-Dispensing Facilities and Repair Garages	2021 Houston Amendments	Code Change Summary
	SECTION 2301 GENERAL 2301.1 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 International Mechanical Code. Such operations shall include both those that are accessible open to the public and private operations.		Minor wordsmithing for clarification.
	SECTION 2302 DEFINITIONS		
	SECTION 2303 LOCATION OF DISPENSING DEVICES 2303.1 Location of dispensing devices. Dispensing devices shall be located as follows: 1. Ten feet (3048 mm) or more from lot lines . 2. Ten feet (3048 mm) or more from buildings having combustible exterior wall surfaces or buildings having noncombustible exterior wall surfaces that are not part of a 1-hour fire-resistance-rated assembly or buildings having combustible overhangs. Exception: Canopies constructed in accordance with the International Building Code providing weather protection for the fuel islands. 3. Such that all portions of the vehicle being fueled will be on the premises of the motor fuel-dispensing facility.		Minor wordsmithing for clarification, new requirements added.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	4. Such that the nozzle, ~~when where~~ the hose is fully extended, will not reach within 5 feet (1524 mm) of building openings. 5. Twenty feet (6096 mm) or more from fixed sources of ignition. 6. Such that fuel dispensing is in view of the attendant at attended self-service motor fuel-dispensing facilities, as required by Section 2304.2.4.		
2303.2 Emergency disconnect switches. An <i>approved</i> , clearly identified and readily accessible emergency disconnect switch shall be provided at an <i>approved</i> location to stop the transfer of fuel to the fuel dispensers in the event of a fuel spill or other emergency. The emergency disconnect switch for exterior fuel dispensers shall be located within 100 feet (30,480 mm) of, but not less than 20 feet (6,096 mm) from, the fuel dispensers. For interior fuel-dispensing operations, the emergency disconnect switch shall be installed at an <i>approved</i> location. Such devices shall be distinctly <i>labeled</i> as: EMERGENCY FUEL SHUTOFF. <u>The sign lettering shall be not less than 2 inches (50 mm) in height on a background of contrasting color so that the lettering is clearly visible.</u> Signs shall be provided in <i>approved</i> locations.	2303.2 Emergency disconnect switches. An approved, ~~clearly identified and readily accessible~~ emergency disconnect switch shall be provided at an approved location to stop the transfer of fuel to the fuel dispensers in the event of a fuel spill or other emergency. The emergency disconnect switch for exterior fuel dispensers shall be provided with ready access and shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from, the fuel dispensers. For interior fuel-dispensing operations, the emergency disconnect switch shall be provided with ready access and be installed at an approved location. Such devices shall be distinctly labeled as: EMERGENCY FUEL SHUTOFF. Signs shall be provided in approved locations.	2303.2 Emergency disconnect switches. An <i>approved</i> emergency disconnect switch shall be provided at an <i>approved</i> location to stop the transfer of fuel to the fuel dispensers in the event of a fuel spill or other emergency. The emergency disconnect switch for exterior fuel dispensers shall be provided with <i>ready access</i> and shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from, the fuel dispensers. For interior fuel-dispensing operations, the emergency disconnect switch shall be provided with <i>ready access</i> and be installed at an <i>approved</i> location. Such devices shall be distinctly <i>labeled</i> as: "EMERGENCY FUEL SHUTOFF". ~~The sign lettering shall be not less than 2 inches (50 mm) in height on a background of contrasting color so that the lettering is clearly visible. Signs shall be provided in approved locations.~~	Minor wordsmithing for clarification. No change to Houston amendment.
	2303.2.1 Height. The height of the emergency disconnect switch shall be not less than 42 inches (1067 mm) and not more than 48 inches (1372 mm) measured vertically, from the floor level to the activating button.		New height requirements for emergency disconnect switch.
	SECTION 2304 DISPENSING OPERATIONS		
	2304.2.1 Special-type dispensers. Approved special-dispensing devices and systems such as, but not limited to, card- or coin-operated and remote-preset types, are allowed at motor fuel-dispensing facilities provided ~~that~~ there is not less than one qualified attendant on duty while the facility is open to the public. Remote preset-type devices shall be set in the "off" position while not in use so that the dispenser cannot be activated without the knowledge of the attendant.		Minor wordsmithing for clarification.
	2304.2.4 Obstructions to view. ~~Dispensing devices shall be in clear view of the attendant.~~ The attendant shall have a direct line of sight to observe fuel- dispensing operations at all times. Obstructions shall not be placed between the dispensing area and the attendant. Exception: Video monitoring systems shall be permitted to supplement direct line of sight supervision where approved by the fire code official.		New visibility requirements for operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 2305 OPERATIONAL REQUIREMENTS		
	2305.1.1 Delivery vehicle location. Where liquid delivery to above-ground storage tanks is accomplished by positive-pressure operation, tank vehicles shall be positioned not less than 25 feet (7620 mm) from tanks receiving Class I liquids and 15 feet (4572 mm) from tanks receiving Class II and IIIA liquids, measured from the tank to the nearest unloading valve on the tank vehicle.		Minor wordsmithing for clarification.
	SECTION 2306 FLAMMABLE AND COMBUSTIBLE LIQUID MOTOR FUEL-DISPENSING FACILITIES		
2306.2.3 Above-ground tanks located outside, above grade. Above-ground tanks shall not be used for the storage of Class I, II or III liquid motor fuels, except as provided by this section and Houston Fire Department LSB Standard No. 13, "Outside Protected Aboveground Tanks for Generators and Fire Pumps." {EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2015 IFC.}	2306.2.3 Above-ground tanks located outsideoutdoors, above grade. Above-ground tanks shall not be used for the storage of Class I, II or III liquid motor fuels, except as provided by this section. 1. Above-ground tanks used for outside outdoors , above-grade storage of Class I liquids shall be listed and labeled as protected above-ground tanks in accordance with UL 2085 and shall be in accordance with Chapter 57. Such tanks shall be located in accordance with Table 2306.2.3. 2. Above-ground tanks used for outside outdoors , above-grade storage of Class II or IIIA liquids shall be listed and labeled as protected above-ground tanks in accordance with UL 2085 and shall be installed in accordance with Chapter 57. Tank locations shall be in accordance with Table 2306.2.3. Exception: Other above-ground tanks that comply with Chapter 57 where approved by the fire code official. 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 5706.2. 5. Above-ground tanks used for outside outdoors , above-grade storage of Class IIIB liquid motor fuel shall be listed and labeled in accordance with UL 142 or listed and labeled as protected above-ground tanks in accordance with UL 2085 and shall be installed in accordance with Chapter 57. Tank locations shall be in accordance with Table 2306.2.3.	2306.2.3 Above-ground tanks located outdoors, above grade. Above-ground tanks shall not be used for the storage of Class I, II or III liquid motor fuels, except as provided by this section <u>and Houston Fire Department LSB Standard No. 13, "Outside Protected Aboveground Tanks for Generators and Fire Pumps."</u> {EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2021 IFC.}	Minor wordsmithing for clarification. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	TABLE 2306.2.3 MINIMUM SEPARATION REQUIREMENTS FOR ABOVE-GROUND TANKS		New table for tank separation requirements.
	2306.2.5 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 III liquids into the fuel tanks of motor vehicles or motorized equipment on premises not normally ~~accessible open~~ to the public. The approval shall include a definite time limit.		Minor wordsmithing for clarification.
	2306.7.3.1 Additional impact protection. The fire code official is authorized to require additional impact protection in accordance with Section 312 where dispensing devices are located in areas near parking areas, multiple dispensing devices, highway on- and off-ramps, and other areas where there is a higher potential for vehicle impacts.		New requirements for impact protection.
	2306.7.7.2 Location. Remote pumps installed above grade, outside of buildings, shall be located not less than 10 feet (3048 mm) from lines of adjoining property that can be built ~~upon~~ and not less than 5 feet (1524 mm) from any building opening. Where an outside pump location is impractical, pumps are permitted to be installed inside buildings as provided for dispensers in Section 2301.4 and Chapter 57. Pumps shall be substantially anchored and protected against physical damage.		Minor wordsmithing for clarification.
	2306.7.9.2.2 Location. Vapor-processing equipment shall be located at or above grade. Sources of ignition shall be located not less than 50 feet (15 240 mm) from fuel-transfer areas and not less than 18 inches (457 mm) above tank fill openings and tops of dispenser islands. Vapor-processing units shall be located not less than 10 feet (3048 mm) from the nearest building or lot line of a property that can be built ~~upon~~ . Exception: Where the required distances to buildings, lot lines or fuel-transfer areas cannot be obtained, means shall be provided to protect equipment against fire exposure. Acceptable means shall include but not be limited to either of the following: 1. Approved protective enclosures, which extend not less than 18 inches (457 mm) above the equipment, constructed of fire-resistant or noncombustible materials. 2. Fire protection using an approved water-spray system.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2306.8.2 Compatibility. Dispensers shall be used only with the fuels for which they have been listed and ~~which that~~ are marked on the product. Field-installed components including hose assemblies, breakaway fittings, swivel connectors and hose nozzle valves shall be provided in accordance with the listing and the marking on the unit.		Minor wordsmithing for clarification.
	SECTION 2307 LIQUEFIED PETROLEUM GAS MOTOR FUEL-DISPENSING FACILITIES		
	2307.4 Location of dispensing operations and equipment. The point of transfer for LP-gas dispensing operations shall be separated from buildings and other exposures in accordance with the following: 1. Not less than 25 feet (7620 mm) from buildings where the exterior wall is not part of a fire-resistance-rated assembly having a rating of 1 hour or greater. 2. Not less than 25 feet (7620 mm) from combustible overhangs on buildings, measured from a vertical line dropped from the face of the overhang at a point nearest the point of transfer. 3. Not less than 25 feet (7620 mm) from the lot line of property that can be built ~~upon~~. 4. Not less than 25 feet (7620 mm) from the centerline of the nearest mainline railroad track. 5. Not less than 10 feet (3048 mm) from public streets, highways, thoroughfares, sidewalks and driveways. 6. Not less than 10 feet (3048 mm) from buildings where the exterior wall is part of a fire-resistance-rated assembly having a rating of 1 hour or greater. Exception: The point of transfer for LP-gas dispensing operations need not be separated from canopies that are constructed in accordance with the International Building Code and that provide weather protection for the dispensing equipment. LP-gas containers shall be located in accordance with Chapter 61. LP-gas storage and dispensing equipment shall be located outdoors.		Minor wordsmithing for clarification.
	SECTION 2308 COMPRESSED NATURAL GAS MOTOR FUEL- DISPENSING FACILITIES 2308.1 General. Motor fuel-dispensing facilities for compressed natural gas (CNG) fuel shall be in accordance with this section, ~~and Chapter 53~~ and Section 413 of the <i>International Fuel Gas Code</i>.		New reference to the Fuel Gas Code.
	2308.2 Approvals. Storage vessels and equipment used for the storage, compression or dispensing of CNG shall be <i>approved</i> or <i>listed</i> in accordance with Sections 2308.2.1 through 2308.2.4 ~~and 2308.2.2.~~		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2308.2.2 Listed equipment. Hoses, hose connections, dispensers, ~~gas detection systems~~ and electrical equipment used for CNG shall be listed. Vehicle-fueling connections shall be listed and labeled.		Minor wordsmithing for clarification.
	2308.2.3 Residential fueling appliance (RFA). Residential fueling appliances shall be <i>listed</i> and installed in accordance with the installation requirements of CSA/ANSI NGV 5.1, manufacturer's installation instructions and Section 413 of the <i>International Fuel Gas Code</i> . The capacity of an RFA shall not exceed 5 cubic feet per minute (0.14 m³/min) of natural gas.		New requirements for residential fueling appliances.
	2308.2.4 Vehicle fueling appliance (VFA). Nonresidential fueling appliances shall be <i>listed</i> and installed in accordance with the installation requirements of CSA/ANSI NGV 5.2, manufacturer's installation instructions and the requirements of Section 413 of the <i>International Fuel Gas Code</i> for VFAs. The capacity of the VFA shall not exceed 10 cubic feet per minute (0.28 m³/min) of natural gas.		New requirements for vehicle fueling appliances.
	2308.3 Location of dispensing operations and equipment. Compression, storage and dispensing equipment shall be located above ground, outside door. Exceptions: 1. Compression, storage or dispensing equipment shall be allowed in buildings of noncombustible construction, as set forth in the International Building Code, that are unenclosed for three-quarters or more of the perimeter. 2. Compression, storage and dispensing equipment shall be allowed indoors or in vaults in accordance with Chapter 53.		Minor wordsmithing for clarification.
	2308.6 Valves. Gas piping to equipment shall be provided with a remote, ~~readily accessible~~ manual shutoff valve ~~that is provided with ready access~~ .		Minor wordsmithing for clarification.
	2308.7 Emergency shutdown control. An emergency shutdown control shall be located within 75 feet (22 860 mm) of, but not less than 25 feet (7620 mm) from, dispensers and shall ~~also~~ be provided in the compressor area. Upon activation, the emergency shutdown system shall automatically shut off the power supply to the compressor and close valves between the main gas supply and the compressor and between the storage containers and dispensers.		Minor wordsmithing for clarification.
	SECTION 2309 HYDROGEN MOTOR FUEL-DISPENSING AND GENERATION FACILITIES 2309.1 General. Hydrogen motor fuel-dispensing and generation facilities shall be in accordance with this section, ~~and~~ Chapter 58 ~~and NFPA 2~~ . Where a fuel-dispensing facility includes a repair garage, the repair operation shall comply with Section 2311.		Minor change to reference NFPA standard.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2309.2.2 Listed or approved equipment. Hoses, hose connections, compressors, hydrogen generators, dispensers, ~~detection systems~~ , motor-fueling connections and electrical equipment used for hydrogen shall be ~~listed or approved for use with hydrogen~~ . Hydrogen motor-fueling connections shall be ~~listed and labeled~~ or <i>approved</i> for use with hydrogen.		Minor wordsmithing for clarification.
	2309.4 Dispensing into motor vehicles at self-servicehydrogen motor fuel-dispensing facilities. Self-service ~~hydrogen~~ Hydrogen motor fuel-dispensing systems, including key, code and card lock dispensing systems, shall be limited to the filling of permanently mounted motor vehicle fuel tanks containers on hydrogen-powered vehicles. In addition to the requirements in Section 2311, the <i>owner</i> of a self-servicehydrogen motor fuel-dispensing facility shall provide for the safe operation of the system by complying with this code and the fueling protocols in NFPA 2 and through the institution of a fire safety plan submitted in accordance with Section 404, the training of employees and operators who use and maintain the system in accordance with Section 406, and provisions for hazard communication in accordance with Section 407. Exception: <u>Filling of nonpermanently mounted storage containers or tanks for motor fuel-dispensing system testing purposes is permitted.</u>		Updates to code language for hydrogen fuel-dispensing systems, includes new exception for filling nonpermanently mounted containers/tanks.
	2309.6 Defueling of hydrogen from fuel storage containers Repairs, purging, defueling and discharge. ~~The discharge or defueling of hydrogen from fuel storage tanks for the purpose of maintenance, cylinder certification, calibration of dispensers or other activities shall be in accordance with Sections 2309.6.1 through 2309.6.1.2.4~~ The repair, purging, defueling or discharge activities associated with hydrogen motor fuel ~~supply systems and dispensing and generation systems~~ , storage tanks and the installation of the systems shall be in accordance with Chapters 53 and 58 and NFPA 2. Exception: The motor vehicle fuel tank and the fuel supply piping from the motor vehicle fuel storage tank to the engine compartment on a motor vehicle or forklift unless the fuel tank is required to be defueled in accordance with Section 2311.8.11.		New requirements for repairs, purging, defueling and discharging of hydrogen systems to comply with NFPA.
	2309.6.1 Methods of discharge Documented procedure. ~~The discharge of hydrogen from motor fuel storage tanks shall be accomplished through a closed transfer system in accordance with Section 2309.6.1.1 or an approved method of atmospheric venting in accordance with Section 2309.6.1.2A~~ documented procedure that explains the logic sequence for defueling or discharging operations shall be maintained on site and shall be provided to the fire code official upon request. The procedure shall include what actions the operator is required to take in the event of a low-pressure or high-pressure hydrogen release during discharging activity. Schematic design documents shall be maintained on site, illustrating the arrangement of piping.		New requirements for documented procedure for the sequence of operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	regulators and equipment settings. The schematic shall illustrate the piping and regulator arrangement and shall be shown in spatial relation to the location of the vehicle being defueled and, if applicable, to the compressor, storage vessels and emergency shutdown devices.		
	~~2309.6.1.1 Closed transfer system. A documented procedure that explains the logic sequence for discharging the storage tank shall be provided to the fire code official for review and approval. The procedure shall include what actions the operator is required to take in the event of a low-pressure or high-pressure hydrogen release during discharging activity. Schematic design documents shall be provided illustrating the arrangement of piping, regulators and equipment settings. The construction documents shall illustrate the piping and regulator arrangementts and shall be shown in spatial relation to the instalocation of the compressor, storage vessels and emergency shutdown devices.~~		Base code section removed.
	~~2309.6.1.2 Atmospheric venting of hydrogen from fuel storage containers. Where atmospheric venting is used for the discharge of hydrogen from fuel storage tanks, such venting shall be in accordance with Sections 2309.6.1.2.1 through 2309.6.1.2.1.4.~~		Base code section removed.
	~~2309.6.1.2.1 Defueling equipment. Equipmeant used for defueling shall be listed 5and labeled or58 approved for the intended NFPA use2.~~		Base code section removed.
	~~2309.6.1.2.1.1 ManufaExcturer's equipment required.on: TheEquipiment lsupply ped pingby fromthe manufacturer shall be used to connect the storage tanks to be defueled to the vent pgipne syscompartment on a motor vehicle or forklift.~~		Base code section removed.
	~~2309.6.1.2.1.2 Vent pipe maximum diameter. Defueling vent pipes shall have a maximum inside diameter of 1 inch (25 mm).~~		Base code section removed.
	~~2309.6.1.2.1.3 MaximDocumented flprow cedurate. A documented procedure that explains the logic sequence for defueling or discharging operations shall be maintained on site and shall be provided to the fire code official upon request. The mprocedure shaxll imclude what actions the operator is required to take in the event of a low-pressure or high-pressure hydrogen frelease during discharging activity. Schematic design documents shall be maintained own site, illustrating the arrangement of piping, regulators and equipment settings. The schematic shall~~		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~illustrate the vent pipe systeming shall not exceed 1,000 cfm regulat NTP (0.47 or 3/s)ent and shall be cshown in spatrolial redlation byto mthe locations of the manufavehicturler's bequipmng defueled antd, atif applicable, tow the compressuor, storage vessels and witemergency shoutdown adjustmentvices.~~		
	2309.6.1.2.1.4 Isolated use. ~~The vent pipe used for defueling shall not be connected to another venting system used for any other purpose.~~		Base code section removed.
	2309.6.1.2.2 Construction documents. ~~Construction documents shall be provided illustrating the defueling system to be utilized. Plan details shall be of sufficient detail and clarity toallow for evaluation of the piping and control systems to be utilized and include the method of support for cylinders, containers or tanks to be used as part of a closed transfer system, the method of grounding and bonding and other requirements specified herein.~~		Base code section removed.
	2309.6.1.2.3 Stability of cylinders, containers and tanks. ~~A method of rigidly supporting cylinders, containers or tanks used during the closed transfer system discharge or defueling of hydrogen shall be provided. The method shall provide not less than two points of support and shall be designed to resist lateral movement of the receiving cylinder, container or tank. The system shall be designed to resist movement of the receiver based on the highest gas-release velocity through valve orifices atthe receiver's rated service pressure and volume. Supporting structures or appurtenances used to support receivers shall be constructed of noncombustible materials in accordance with the International Building Code.~~		Base code section removed.
	2309.6.1.2.4 Grounding and bonding. ~~Cylinders, containers or tanks and piping systems used for defueling shall be bonded and grounded. Structures or appurtenances used for supporting the cylinders, containers or tanks shall be grounded in accordance with NFPA 70. The valve of the vehicle storage tank shall be bonded with the defueling system prior to the commencement of discharge or defueling operations.~~		Base code section removed.
	2309.6.2 Repair of hydrogen piping. ~~Piping systems containing hydrogen shall not be opened to the atmosphere for repair without first purging the piping with an inert gas to achieve 1 percent hydrogen or less by volume. Defueling operations and exiting purge flow shall be vented in accordance with Section 2309.6.1.2.~~		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~2309.6.3 Purging.~~ Each individual manufactured component of a hydrogen generating, compression, storage or dispensing system shall have a label affixed as well as a description in the installation and owner's manuals describing the procedure for purging air from the system during startup, regular maintenance and for purging hydrogen from the system prior to disassembly (to admit air).For the interconnecting piping between the individual manufactured components, the pressure rating must be not less than 20 times the absolute pressure present in the piping when any hydrogen meets any air.		Base code section removed.
	~~2309.6.3.1 System purge required.~~ After installation, repair or maintenance, the hydrogen piping system shall be purged of air in accordance with the manufacturer's procedure for purging air from the system.		Base code section removed.
	SECTION 2310 MARINE MOTOR FUEL-DISPENSING FACILITIES		
	2310.6.3 Access. Where the pier is accessible to designed for vehicular traffic, an unobstructed roadway to the shore end of the wharf shall be maintained for access by fire apparatus.		Minor wordsmithing for clarification.
	SECTION 2311 REPAIR GARAGES		
	~~2311.5 Preparation of vehicles for repair~~ Vehicles powered by liquefied petroleum gas (LP-gas). For vehicles powered by gaseous fuels, the fuel shutoff valves shall be closed prior to repairing any portion of the vehicle fuel system. Vehicles powered by gaseous fuels in which the fuel system has been damaged shall be inspected and evaluated for fuel system integrity prior to being brought into the repair garage. The inspection shall include testing of the entire fuel delivery system for leakage Vehicles powered by LP-gas and the servicing of vehicles powered by LP-gas shall be in compliance with this chapter, Chapter 61 of this code and NFPA 58.		New requirements for LP-gas powered vehicles to comply with NFPA.
	~~2311.6 Fire extinguishers~~ Vehicles powered by liquefied natural gas (LNG) and compressed natural gas (CNG). Fire extinguishers shall be provided in accordance with Section 906LNG vehicles and CNG vehicles shall comply with Sections 2311.6.1 and 2311.6.2, as applicable.		New requirements for LNG/CNG powered vehicles.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2311.6.1 Fire extinguishers-Liquefied natural gas (LNG). ~~Fire extinguishers shall be provided in accordance with Section 906.~~ LNG vehicle fuel system pressure shall be measured and recorded prior to entering the repair facility. The maximum allowable system pressure shall be not more than 170 psig (1172 kPa). Pressure greater than 170 psig (1172 kPa) shall be reduced by operating the vehicle or limited venting outdoors, as required.		New requirements for LNG/CNG powered vehicles.
	2311.6.2 Compressed natural gas (CNG). CNG vehicle fuel system pressure and the ambient temperature shall be measured and recorded prior to entering the repair facility. Pressure greater than the indicated maximum pressure in accordance with Table 2311.6.2 shall be reduced by defueling the vehicle.		New requirements for LNG/CNG powered vehicles.
	TABLE 2311.6.2 TEMPERATURE COMPENSATED CYLINDER PRESSURE TABLE^a		New table for pressure limits for LNG/CNG cylinders.
	2311.7 Repair garages for vehicles fueled by lighter-than-air fuels-Fire extinguishers. ~~Repair garages for the conversion and repair of vehicles that use CNG, liquefied natural gas (LNG), hydrogen or other lighter-than-air motor fuels shall be in accordance with Sections 2311.7 through 2311.7.2.3 in addition to the other requirements of Section 2311.~~ Fire extinguishers shall be provided in accordance with Section 906. Exceptions: 1. Repair garages where work is not performed on the fuel system and is limited to exchange of parts and maintenance not requiring open flame or welding on the CNG, LNG, hydrogen or other lighter-than-air fueled motor vehicle. 2. 2. Repair garages for hydrogen-fueled vehicles where work is not performed on the hydrogen storage tank and is limited to the exchange of parts and maintenance not requiring open flame or welding on the hydrogen-fueled vehicle. During the work, the entire hydrogen fuel system shall contain a quantity that is less than 200 cubic feet (5.6 m3) of hydrogen.		Base code section relocated to 2311.8.
	2311.7.1 Ventilation. ~~Repair garages used for the repair of natural gas or hydrogen-fueled vehicles shall be provided with an approved mechanical ventilation system. The mechanical ventilation system shall be in accordance with the International Mechanical Code and Sections 2311.7.1.1 and 2311.7.1.2.~~ Exception: Repair garages with natural ventilation when approved.		Base code section relocated to 2311.8.
	2311.7.1.1 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.~~		Base code section relocated to 2311.8.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~Ventilation shall be by a continuous mechanical ventilation system or by a mechanical ventilation system activated by a continuously monitoring natural gas detection system or, for hydrogen, a continuously monitoring flammable gas detection system, each activating at a gas concentration of not more than 25 percent of the lower flammable limit (LFL). In all cases, the system shall shut down the fueling system in the event of failure of the ventilation system.~~ ~~The ventilation rate shall be not less than 1 cubic foot per minute per 12 cubic feet [0.00139 m3 × (s ÷ m3)] of room volume.~~		
	2311.7.1.2 Operation. ~~The mechanical ventilation system shall operate continuously.~~ Exceptions: ~~Mechanical ventilation systems that are interlocked with a gas detection system designed in accordance with Sections 2311.7.2 through 2311.7.2.3.~~ ~~Mechanical ventilation systems in repair garages that are used only for repair of vehicles fueled by liquid fuels or odorized gases, such as CNG, where the ventilation system is electrically interlocked with the lighting circuit.~~		Base code section relocated to 2311.8.
	2311.7.2 Gas detection system. ~~Repair garages used for repair of vehicles fueled by nonodorized gases including, but not limited to, hydrogen and nonodorized LNG, shall be provided with a flammable gas detection system.~~		Base code section relocated to 2311.8.
	2311.7.2.1 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. 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 be provided in lubrication or chassis service pits of repair garages used for repairing nonodorized LNG fueled vehicles.~~		Base code section relocated to 2311.8.
	2311.7.2.1.1 Gas detection system components. ~~Gas detection system control units shall be listed and labeled in accordance with UL 864 or UL 2017. Gas detectors shall be listed and labeled in accordance with UL 2075 for use with the gases and vapors being detected.~~		Base code section relocated to 2311.8.
	2311.7.2.2 Operation. ~~Activation of the gas detection system shall result in all the following:~~ ~~Initiation of distinct audible and visual alarm signals in the repair garage.~~ ~~Deactivation of all heating systems located in the repair garage.~~ ~~Activation of the mechanical ventilation system, where the system is interlocked with gas detection.~~		Base code section relocated to 2311.8.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~2311.7.2.3 Failure of the gas detection system. Failure of the gas detection system shall result in the deactivation of the heating system, activation of the mechanical ventilation system where the system is interlocked with the gas detection system and cause a trouble signal to sound in an approved location.~~		Base code section relocated to 2311.8.
	~~2311.8 Defueling equipment required at vehicle maintenance and repair facilities. Repair garages for vehicles fueled by lighter-than-air fuels. Facilities for repairing hydrogen fuel systems on hydrogen-fueled vehicles shall have equipment to defuel vehicle storage tanks. Where work must be performed on a vehicle's fuel storage tank for the purpose of maintenance, repair or cylinder certification, defueling and purging shall be conducted in accordance with Section 2309.6The room, motor vehicle repair booth or motor vehicle repair space containing repair garage activities for the conversion or repair of vehicles that use CNG, LNG, hydrogen or other lighter-than-air motor fuels shall be in accordance with Sections 2311.8 through 2311.8.11 in addition to the other requirements of Section 2311. Repair garages for the repair of vehicles that use hydrogen fuel shall be in accordance with this code and NFPA 2.~~ Exceptions: Repair garages where work is conducted only on vehicles where the motor vehicle fuel tank and system have been defueled and their systems the motor vehicle fuel tank has been purged with nitrogen gas, and where standard operating procedures to document and maintain the fueling status throughout repair operations are <i>approved</i>. 1. Repair garages where work is not performed on the fuel system and is limited to exchange of parts and maintenance not requiring open flame or welding on the CNG-, LNG-, hydrogen- or other lighter-than-air-fueled motor vehicle. Movement of a subassembly o n which the motor vehicle fuel tank remains mounted to allow access to other parts of the vehicle that are not a portion of the fuel system shall be permitted. 2. Repair garages for hydrogen-fueled vehicles where work is not performed on the ~~hydrogen storage tank~~ motor vehicle fuel tank and is limited to the exchange of parts and maintenance not requiring open flame or welding on the hydrogen-fueled vehicle. During the work, the entire hydrogen fuel system shall contain less than ~~200~~400 cubic feet (~~5.6~~11.3 m³) of hydrogen. 3. Repair garages for natural-gas-fueled vehicles where work is not being performed on the motor vehicle ~~fuel storage tank~~, and is limited to the exchange of parts and maintenance not requiring open flame or welding on the natural-gas-fueled vehicle. During the work, the natural gas in the motor vehicle fuel tank shall contain a pressure of not more than 250 psi at 70°F (1724 kPa at 21°C).		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2311.8.1 Preparation of vehicles for repair. For vehicles powered by gaseous fuels, the fuel shutoff valves shall be closed prior to repairing any portion of the vehicle fuel system. Vehicles powered by gaseous fuels in which the fuel system has been damaged shall be inspected and evaluated for fuel system integrity prior to being brought into the repair garage. The inspection shall include testing of the entire fuel delivery system for leakage.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.2 Repair garages used for the repair of hydrogen-fueled vehicles. Repair garages used for the repair of hydrogen-fueled vehicles shall be provided with an approved exhaust ventilation system in accordance with the International Mechanical Code and Chapter 6 of NFPA 2.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.3 Motor vehicle repair rooms. Motor vehicle repair rooms shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code, or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both, with 1-hour rated opening protectives.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.4 Motor vehicle repair booths. The design and construction of motor vehicle repair booths shall be in accordance with Sections 2311.8.4.1 through 2311.8.4.4.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.4.1 Construction. Motor vehicle repair booths shall be constructed of approved noncombustible materials. Where walls or ceiling assemblies are constructed of sheet metal, single-skin assemblies shall be not thinner than 0.0478 inch (18 gage) (1.2 mm) and each sheet of double-skin assemblies shall be not thinner than 0.0359 inch (20 gage) (0.9 mm). Structural sections of motor vehicle repair booths shall be sealed in an approved manner.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.4.2 Surfaces. The interior surfaces of motor vehicle repair booths shall be constructed to permit the free passage of exhaust air from all parts of the interior.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.4.3 Means of egress. Means of egress shall be provided in accordance with Chapter 10. Exception: Means of egress doors from premanufactured motor vehicle repair booths shall be not less than 30 inches (762 mm) in width by 80 inches (2032 mm) in height.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.4.4 Clear space. Motor vehicle repair booths shall be installed so that all parts of the booth provide ready access for cleaning. A clear area of not less than 3 feet (914 mm) wide shall be maintained on all sides of the motor vehicle repair booth. This clear area shall be kept free of any storage or combustible construction.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Exceptions: 1. This requirement shall not prohibit locating a motor vehicle repair booth closer than 3 feet (914 mm) to or directly against an interior partition, wall or floor/ceiling assembly that has a fire-resistance rating of not less than 1 hour, provided that the motor vehicle repair booth can be adequately maintained and cleaned. 2. This requirement shall not prohibit locating a motor vehicle repair booth closer than 3 feet (914 mm) to an exterior wall or a roof assembly, provided that the wall or roof is constructed of noncombustible material and the motor vehicle repair booth can be adequately maintained and cleaned.		
	2311.8.5 Motor vehicle repair spaces. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of flammable gases.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.6 Fire protection. Motor vehicle repair booths or spaces installed in a room or area protected by an automatic sprinkler system shall have the protection extended to include the inside of the motor vehicle repair booth or space.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.7 Fire extinguishers. Portable fire extinguishers complying with Section 906 shall be provided for motor vehicle repair rooms, motor vehicle repair booths or motor vehicle repair spaces.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.8 Exhaust ventilation system. Repair garages used for the repair of CNG, LNG, or other lighter-than-air motor fuels other than hydrogen shall be provided with an approved mechanical ventilation system. The mechanical exhaust ventilation system shall be in accordance with the International Mechanical Code and Sections 2311.8.8.1 and 2311.8.8.2. Exception: Where approved by the fire code official, natural ventilation shall be permitted in lieu of mechanical exhaust ventilation.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.8.1 Design. For indoor locations, air supply inlets and exhaust outlets for mechanical ventilation shall be arranged to provide uniformly distributed air movement with inlets uniformly arranged on walls near floor level and outlets at the high point of the room in walls or the roof. Failure of the ventilation system shall cause the fueling system to shut down. The exhaust ventilation rate shall be not less than 1 cubic foot per minute (0.03 m3/minute) per 12 cubic feet (34 m3) of room volume.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2311.8.8.2 Operation. The mechanical exhaust ventilation system shall operate continuously. Exceptions: 1. Mechanical exhaust ventilation systems that are interlocked with a gas detection system designed in accordance with Sections 2311.8.9 through 2311.8.9.2. 2. Mechanical exhaust ventilation systems in repair garages that are used only for repair of vehicles fueled by liquid fuels or odorized gases, such as CNG, where the ventilation system is electrically interlocked with the lighting circuit.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.9 Gas detection system. Repair garages used for repair of vehicles fueled by nonodorized gases including, but not limited to, hydrogen and nonodorized LNG, shall be provided with a gas detection system that complies with Section 916. The gas detection system shall be designed to detect leakage of nonodorized gaseous fuel. Where lubrication or chassis service pits are provided in garages used for repairing nonodorized LNG-fueled vehicles, gas sensors shall be provided in such pits.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.9.1 System activation. Activation of the gas detection alarm shall result in all of the following: 1. Initiation of local audible and visual alarms in approved locations. 2. Deactivation of heating systems located in the repair garage. 3. Activation of the mechanical exhaust ventilation system, where the ventilation system is interlocked with gas detection.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.9.2 Failure of the gas detection system. Failure of the gas detection system shall automatically deactivate the heating system, activate the mechanical exhaust ventilation system where the system is interlocked with the gas detection system and cause a trouble signal to sound in an approved location.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
	2311.8.10 Classified electrical area. Areas within 18 inches (450 mm) of a ceiling within a motor vehicle repair room or motor vehicle repair booth shall be designed and installed in accordance with the requirements for Class I, Division 2 classified locations, as set forth in NFPA 70. Exceptions: 1. Rooms with exhaust ventilation of not less than 1 cubic foot per minute per square foot (0.3 m3/min/m2) of floor area, with suction taken from a point within 18 inches (450 mm) of the highest point in the ceiling in repair garages for vehicles that use CNG, liquefied natural gas (LNG) or other lighter-than-air motor fuels. 2. Rooms used for the repair of hydrogen-fueled vehicles that have an approved exhaust ventilation system in accordance with the International Mechanical Code and NFPA 2.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2311.8.11 Defueling equipment required at vehicle maintenance and repair facilities. Facilities for repairing or replacing hydrogen fuel tanks on hydrogen-fueled vehicles shall have equipment to defuel vehicle storage tanks. Where work must be performed on a vehicle's motor vehicle's fuel storage tank for the purpose of maintenance, repair or cylinder certification, defueling and purging shall be conducted in accordance with Section 2309.6 and NFPA 2.		Section relocated from 2311.7, minor updates to coincide with NFPA requirements.
2015 Houston IFC – Chapter 24 Flammable Finishes	2021 IFC – Chapter 24 – Flammable Finishes	2021 Houston Amendments	Code Change Summary
	SECTION 2401 GENERAL 2401.1 Scope. This chapter shall apply to locations or areas where any of the following activities are conducted: 1. The application of flammable finishes to articles or materials by means of spray apparatus. 2. The application of flammable finishes by dipping or immersing articles or materials into the contents of tanks, vats or containers of flammable or combustible liquids for coating, finishing, treatment or similar processes. 3. The application of flammable finishes by applying combustible powders to articles or materials utilizing powder spray guns, electrostatic powder spray guns, fluidized beds or electrostatic fluidized beds. 4. Floor surfacing or finishing operations using Class I or II liquids in areas exceeding 350 square feet (32.5 m²). 5. The application of flammable finishes consisting of dual-component coatings or Class I or II liquids when where applied by brush or roller in quantities exceeding 1 gallon (4 L).		Minor wordsmithing for clarification.
	2401.2 Nonapplicability. This chapter shall not apply to spray finishing utilizing flammable or combustible liquids that do not sustain combustion, including: 1. Liquids that do not have ~~no~~ a 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. 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.		Minor wordsmithing for clarification.
	SECTION 2403 PROTECTION OF OPERATIONS		No Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2403.2.1.3 Areas adjacent to spray booths. Electrical wiring and equipment located outside of, but within 5 feet (1524 mm) horizontally and 3 feet (914 mm) vertically of openings in a spray booth or a spray room, shall be approved for Class I, Division 2 or Class II, Division 2 hazardous locations, whichever is applicable.		Minor wordsmithing for clarification.
	2403.3.5.2 Within spray booths and spray rooms. ~~When where~~ solvents are used for cleaning spray nozzles and auxiliary equipment within spray booths and spray rooms, the ventilating equipment shall be operated during cleaning.		Minor wordsmithing for clarification.
	SECTION 2404 SPRAY FINISHING		
2404.2 Location of spray-finishing operations. Spray-finishing operations conducted in buildings used for Group A, E, I or R occupancies shall be located in a spray room protected with an <i>approved automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 and separated vertically and horizontally from other areas in accordance with the ~~International Building Code~~ . In other occupancies, spray-finishing operations shall be conducted in a spray room, spray booth or spraying space <i>approved</i> for such use. <u>Outside spraying or spray-finishing operations in basements or sub-basements are prohibited except when approved by the fire code official.</u> Exceptions: 1. Automobile undercoating spray operations and spray-on automotive lining operations conducted in areas with <i>approved</i> natural or mechanical ventilation shall be exempt from the provisions of Section 2404 when <i>approved</i> and where utilizing Class IIIA or IIIB <i>combustible liquids</i>. 2. In buildings other than Group A, E, I or R occupancies, <i>approved</i> limited spraying space in accordance with Section 2404.9. 3. Resin application areas used for manufacturing of reinforced plastics complying with Section 2409 shall not be required to be located in a spray room, spray booth or spraying space.	2404.2 Location of spray-finishing operations. Spray-finishing operations conducted in buildings used for Group A, E, I or R occupancies shall be located in a spray room protected with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 and separated vertically and horizontally from the remainder of the building by fire barrier walls and horizontal assemblies with not less than a 1-hour fire-resistance rating in accordance with the ~~International Building Code~~ . In other occupancies, spray-finishing operations shall be conducted in a spray room, spray booth or spraying space <i>approved</i> for such use. <u>Outside spraying or spray-finishing operations in basements or sub-basements are prohibited except when approved by the fire code official.</u> Exceptions: 1. Automobile undercoating spray operations and spray-on automotive lining operations conducted in areas with <i>approved</i> natural or mechanical ventilation shall be exempt from the provisions of Section 2404 when <i>approved</i> and where utilizing Class IIIA or IIIB <i>combustible liquids</i>. 2. In buildings other than Group A, E, I or R occupancies, approved limited spraying space in accordance with Section 2404.9. 3. Resin application areas used for manufacturing of reinforced plastics complying with Section 2409 shall not be required to be located in a spray room, spray booth or spraying space.	2404.2 Location of spray-finishing operations. Spray-finishing operations conducted in buildings used for Group A, E, I or R occupancies shall be located in a spray room protected with an <i>approved automatic sprinkler system</i> installed in accordance with Section 903.3.1.1 and separated vertically and horizontally from the remainder of the building by <i>fire barrier walls and horizontal assemblies</i> with not less than 1-hour <i>fire-resistance rating</i> in accordance with the ~~International Building Code~~ . In other occupancies, spray-finishing operations shall be conducted in a spray room, spray booth or spraying space <i>approved</i> for such use. <u>Outside spraying or spray-finishing operations in basements or sub-basements are prohibited except when approved by the fire code official.</u> Exceptions: 1. Automobile undercoating spray operations and spray-on automotive lining operations conducted in areas with <i>approved</i> natural or mechanical ventilation shall be exempt from the provisions of Section 2404 when <i>approved</i> and where utilizing Class IIIA or IIIB <i>combustible liquids</i>. 2. In buildings other than Group A, E, I or R occupancies, <i>approved</i> limited spraying space in accordance with Section 2404.9. 3. Resin application areas used for manufacturing of reinforced plastics complying with Section 2409 shall not be required to be located in a spray room, spray booth or spraying space.	Updated Houston amendment to be in line with base code.
	2404.3.1 Spray rooms. Spray rooms shall be constructed and designed in accordance with Section ~~2404.3.1.1 416~~ and of the International Building Code ~~and Section 2404.3.2~~ of this code, and shall comply with Sections 2404.4 through 2404.8 of this code.		Minor wordsmithing for clarification, base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2404.3.1.12 Floor.		Base code renumbering.
	2404.3.23 Spray booths. The design and construction of spray booths shall be in accordance with Sections 2404.3.23.1 through 2404.3.23.6, Sections 2404.4 through 2404.8 and NFPA 33.		Base code renumbering.
	2404.3.23.1 Construction. Spray booths shall be constructed of approved noncombustible materials. Aluminum shall not be used. Where walls or ceiling assemblies are constructed of sheet metal, single-skin assemblies shall be not thinner than 0.0478 inch (18 gage) (1.2 mm) and each sheet of double-skin assemblies shall be not thinner than 0.0359 inch (20 gage) (0.9 mm). Structural sections of spray booths are allowed to be sealed with latex-based or similar caulks and sealants.		Minor wordsmithing for clarification, base code renumbering.
	2404.3.23.2 Surfaces.		Base code renumbering.
	2404.3.23.3 Floor.		Base code renumbering.
	2404.3.23.4 Means of egress.		Base code renumbering.
	2404.3.23.5 Clear space. Spray booths shall be installed so that all parts of the booth are readily accessible able to be accessed for cleaning. A clear space of not less than 3 feet (914 mm) shall be maintained on all sides of the spray booth. This clear space shall be kept free of any storage or combustible construction. Exceptions: 1. This requirement shall not prohibit locating a spray booth closer than 3 feet (914 mm) to or directly against an interior partition, wall or floor/ceiling assembly that has a fire-resistance rating of not less than 1 hour, provided that the spray booth can be adequately maintained and cleaned. 2. This requirement shall not prohibit locating a spray booth closer than 3 feet (914 mm) to an		Minor wordsmithing for clarification, base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	exterior wall or a roof assembly, provided ~~that~~ the wall or roof is constructed of noncombustible material and the spray booth can be adequately maintained and cleaned.		
	2404.3.23.6 Size. The aggregate area of spray booths in a building shall not exceed the lesser of 10 percent of the area of any floor of a building or the basic area allowed for a Group H-2 occupancy without area increases, as set forth in the <i>International Building Code</i>. ~~The area of an individual spray booth in a building shall not exceed the lesser of the aggregate size limit or 1,500 square feet (139 m²).~~ Exception: One individual booth not exceeding 500 square feet (46 m²).		Base code renumbering.
	2404.3.34 Spraying spaces.		Base code renumbering.
	2404.3.34.1 Floor.		Base code renumbering.
	2404.4 Fire protection. Spray booths and spray rooms shall be protected by an approved automatic fire-extinguishing system complying with Chapter 9. Protection shall ~~also~~ extend to exhaust plenums, exhaust ducts and both sides of dry filters ~~when where~~ such filters are used.		Minor wordsmithing for clarification.
	2404.6.1.2 Drying apparatus. Fixed drying apparatus shall comply with this chapter and the applicable provisions of Chapter 30. ~~When~~ Where recirculation ventilation is provided in accordance with Section 2404.7.2, the heating system shall not be within the recirculation air path.		Minor wordsmithing for clarification.
	2404.6.1.2.1 Interlocks. The spraying apparatus, drying apparatus and ventilating system for the spray booth or spray room shall be equipped with interlocks arranged to accomplish all of the following: 1. Prevent operation of the spraying apparatus while drying operations are in progress. 2. Where the drying apparatus is located in the spray booth or spray room, prevent operation of the drying apparatus until a timed purge of spray vapors from the spray booth or spray room is complete. This purge time shall be based ~~upon~~ completing ~~at least~~ not fewer than four air changes of spray booth or spray room volume		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	or for a period of not less than 3 minutes, whichever is greater. 3. Have the ventilating system maintain a safe atmosphere within the spray booth or spray room during the drying process and automatically shut off drying apparatus in the event of a failure of the ventilating system. 4. Shut off the drying apparatus automatically if the air temperature within the booth exceeds 200°F (93°C).		
	2404.6.2.3 Integral luminaires. Luminaires that are an integral part of the walls or ceiling of a flammable vapor area are allowed to be separated from the flammable vapor area by glass panels that are an integral part of the luminaire. Such luminaires shall be listed for use in Class I, Division 2 or Class II, Division 2 locations, whichever is applicable, and also shall be suitable for accumulations of deposits of combustible residues. Such luminaires are allowed to be serviced from inside the flammable vapor area.		Minor wordsmithing for clarification.
2404.7 Ventilation. Mechanical ventilation of flammable vapor areas shall be provided in accordance with Section ~~502.7~~ <u>505</u> of the ~~International Mechanical Code~~ .	No change.	2404.7 Ventilation. Mechanical ventilation of flammable vapor areas shall be provided in accordance with Section ~~502.7~~ <u>505</u> of the ~~International Mechanical Code~~ .	No change to Houston amendment.
	2404.7.2 Recirculation. Air exhausted from spraying operations shall not be recirculated. Exceptions: 1. Air exhausted from spraying operations is allowed to be recirculated as makeup air for unmanned spray operations, provided that all of the following conditions exist: 1.1. The solid particulate has been removed. 1.2. The vapor concentration is less than 25 percent of the LFL. 1.3. Approved equipment is used to monitor the vapor concentration. 1.4. When the vapor concentration exceeds 25 percent of the LFL, both of the following shall occur: a 1.4.1. An alarm shall sound. b 1.4.2. Spray operations shall automatically shut down. 1.5. In the event of shutdown of the vapor concentration monitor, 100 percent of the air volume specified in Section 510 of the International Mechanical Code is automatically exhausted. 2. Air exhausted from spraying operations is allowed to be recirculated as makeup air to manned spraying operations where all of the conditions provided in Exception 1 are included in the installation and documents have been prepared to show that the		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	installation does not pose a life safety hazard to personnel inside the spray booth, spraying space or spray room.		
	2404.7.5 Independent ducts. Each spray booth and spray room shall have an independent exhaust duct system discharging to the outside. Exceptions: 1. Multiple spray booths having a combined frontal area of 18 square feet (1.67 m ²) or less are allowed to have a common exhaust ~~when~~ where identical spray finishing material is used in each booth. If more than one fan serves one booth, fans shall be interconnected such that all fans will operate simultaneously. 2. Where treatment of exhaust is necessary for air pollution control or for energy conservation, ducts shall be allowed to be manifolded if all of the following conditions are met: 2.1. The sprayed materials used are compatible and will not react or cause ignition of the residue in the ducts. 2.2. Nitrocellulose-based finishing material shall not be used. 2.3. A filtering system shall be provided to reduce the amount of overspray carried into the duct manifold. 2.4. Automatic sprinkler protection shall be provided at the junction of each booth exhaust with the manifold, in addition to the protection required by this chapter.		Minor wordsmithing for clarification.
	2404.7.8.2 Attachment. Overspray collection filters shall be readily removable and ~~accessible~~ able to be accessed for cleaning or replacement.		Minor wordsmithing for clarification.
	2404.8.1.2 Alarm station location. Not less than one manual fire alarm and emergency system shutdown station shall be ~~readily accessible to~~ provided with ready access for operating personnel. Where access to this station is likely to involve exposure to danger, an additional station shall be located adjacent to an exit from the area.		Minor wordsmithing for clarification.
	2404.9.3 Ventilation. Positive mechanical ventilation providing ~~a minimum~~ not fewer than six complete air changes per hour shall be installed. Such system shall meet the requirements of this code for handling flammable vapor areas. Explosion venting is not required.		Minor wordsmithing for clarification.

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	SECTION 2405 DIPPING OPERATIONS		No Houston amendment.
	2405.3.2 Bottom drains. Dip tanks greater than 500 gallons (1893 L) in liquid capacity shall be equipped with bottom drains that are arranged to automatically and manually drain the tank quickly in the event of a fire unless the viscosity of the liquid at normal atmospheric temperature makes this impractical. Access to the manual operation shall be from a safe, accessible location. Where gravity flow is not practicable, automatic pumps shall be provided. Such drains shall be trapped and discharged to a closed, vented salvage tank or to an approved outside location. Exception: Dip tanks containing Class IIIB combustible liquids where the liquids are not heated above room temperature and the process area is protected by automatic sprinklers.		Minor wordsmithing for clarification.
	2405.11 Roll-coating operations. Roll-coating operations shall comply with Section 2405.10. In roll-coating operations utilizing flammable or combustible liquids, sparks from static electricity shall be prevented by electrically bonding and grounding all metallic rotating and other parts of machinery and equipment and equipment and by the installation of static collectors, or by maintaining a conductive atmosphere such as a high relative humidity.		Minor wordsmithing for clarification.
	SECTION 2408 ORGANIC PEROXIDES AND DUAL-COMPONENT COATINGS		No Houston amendment.
	2408.4.2 Spilled material. Spilled organic peroxides shall be promptly removed ~~so there are no residues and any residue thereof promptly eliminated.~~ Spilled material absorbed by using a noncombustible absorbent shall be promptly disposed of in accordance with the manufacturer's recommendation.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary

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2015 Houston IFC – Chapter 26 Fumigation and Insecticidal Fogging	2021 IFC – Chapter 26	2021 Houston Proposed	Code Analysis
	SECTION 2603 FIRE SAFETY REQUIREMENTS		
	2603.3.1 Warning signs. Approved warning signs indicating the danger, type of chemical involved and necessary precautions shall be posted on all doors and entrances to the affected building, structure or space and upon all gangplanks and ladders from the deck, pier or land to a ship. Such notices shall be printed in red ink on a white background. Letters in the headlines shall be not less than 2 inches (51 mm) in height and shall state the date and time of the operation, the name and address of the person, the name of the operator in charge, and a warning stating that the affected building, structure or space shall be vacated not less than 1 hour before the operation begins and shall not be reentered until the danger signs have been removed by the proper authorities.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2015 Houston IFC – Chapter 27 – Semiconductor Fabrication Facilities	2021 IFC – Chapter 27 – Semiconductor Fabrication Facilities	2021 Houston Amendments	Code Change Summary
SECTION 2702 DEFINITIONS 2702.1 Definitions. The following terms are defined in Chapter 2: <u>GAS DETECTION SYSTEM.</u> <u>HPM.</u>	SECTION 2702 DEFINITIONS 2702.1 Definitions. The following terms are defined in Chapter 2: CONTINUOUS GAS DETECTION SYSTEM. EMERGENCY CONTROL STATION . FABRICATION AREA . GAS DETECTION SYSTEM . HAZARDOUS PRODUCTION MATERIAL (HPM) . HPM . HPM ROOM . PASS-THROUGH . SEMICONDUCTOR FABRICATION FACILITY . SERVICE CORRIDOR . TOOL . WORKSTATION .		New definitions included in base code. Previous Houston amendment definitions removed as they're now part of base code.
	SECTION 2703 GENERAL SAFETY PROVISIONS		
	2703.1.3 Signals. The emergency control station shall receive signals from emergency equipment and alarm and detection systems. Such emergency equipment and alarm and detection systems shall include, but not be limited to, the following where such equipment or systems are required to be provided either in this chapter or elsewhere in this code: 1. Automatic sprinkler system alarm and monitoring systems. 2. Manual fire alarm systems. 3. Emergency alarm systems. 4. Continuous Gas detection systems. 5. Smoke detection systems. 6. Emergency power systems. 7. Automatic detection and alarm systems for pyrophoric liquids and Class 3 water-reactive liquids required by Section 2705.2.3.4. 8. Exhaust ventilation flow alarm devices for pyrophoric liquids and Class 3 water-reactive liquids and cabinet exhaust ventilation systems required by Section 2705.2.3.4.		Minor wordsmithing for clarification.
	2703.2.2 General requirements. In addition to the requirements in Section 2703.2, systems, equipment and processes shall also comply with Section 5003.2, other applicable provisions of this code, the International Building Code and the International Mechanical Code.		Minor wordsmithing for clarification.

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	2703.10.1.1 Combustible workstations. A sprinkler head shall be installed within each branch exhaust connection or individual plenums of workstations of combustible construction. The sprinkler head in the exhaust connection or plenum shall be located not more than 2 feet (610 mm) from the point of the duct connection or the connection to the plenum. Where necessary to prevent corrosion, the sprinkler head and connecting piping in the duct shall be coated with approved or listed corrosion-resistant materials. Access to the sprinkler head shall be accessible provided for periodic inspection. Exceptions: 1. Approved alternative automatic fire-extinguishing systems are allowed. Activation of such systems shall deactivate the related processing equipment. 2. Process equipment that operates at temperatures exceeding 932°F (500°C) and is provided with automatic shutdown capabilities for hazardous materials. 3. Exhaust ducts 10 inches (254 mm) or less in diameter from flammable gas storage cabinets that are part of a workstation. 4. Ducts listed or approved for use without internal automatic sprinkler protection.		Minor wordsmithing for clarification.
	2703.10.4.4.5 Maintenance and inspection. Access to sprinklers in exhaust ducts shall be accessible provided for periodic inspection and maintenance.		Minor wordsmithing for clarification.
	2703.13 Continuous Gas detection systems. A continuous gas detection system complying with Section 916 shall be provided for HPM gases where the physiological warning threshold level of the gas is at a higher level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in accordance with Sections 2703.13.1 through 2703.13.2.2.		Minor wordsmithing for clarification.
	2703.13.1 Where required. A continuous gas detection system shall be provided in the areas identified in Sections 2703.13.1.1 through 2703.13.1.4.		Minor wordsmithing for clarification.
	2703.13.1.1 Fabrication areas. A continuous gas detection system shall be provided in fabrication areas where HPM gas is used in the fabrication area.		Minor wordsmithing for clarification.

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	2703.13.1.2 HPM rooms. A continuous gas detection system shall be provided in HPM rooms where HPM gas is used in the room.		Minor wordsmithing for clarification.
	2703.13.1.3 Gas cabinets, exhausted enclosures and gas rooms. A continuous gas detection system shall be provided in gas cabinets and exhausted enclosures for HPM gas . A continuous gas detection system shall be provided in gas rooms where HPM gases are not located in gas cabinets or exhausted enclosures.		Minor wordsmithing for clarification.
	2703.13.1.4 Corridors. Where HPM gases are transported in piping placed within the space defined by the walls of a corridor and the floor or roof above the corridor, a continuous gas detection system shall be provided where piping is located and in the corridor. Exception: A continuous gas detection system is not required for occasional transverse crossings of the corridors by supply piping that is enclosed in a ferrous pipe or tube for the width of the corridor.		Minor wordsmithing for clarification.
	2703.13.2 Gas detection system operation. The continuous gas detection system shall be capable of monitoring the room, area or equipment in which the HPM gas is located at or below all the following gas concentrations: 1. Immediately dangerous to life and health (IDLH) values where the monitoring point is within an exhausted enclosure, ventilated enclosure or gas cabinet. 2. Permissible exposure limit (PEL) levels where the monitoring point is in an area outside an exhausted enclosure, ventilated enclosure or gas cabinet. 3. For flammable gases, the monitoring detection thresholdlevel shall be vapor concentrations in excess of 25 percent of the lower flammable limit (LFL) where the monitoring is within or outside an exhausted enclosure, ventilated enclosure or gas cabinet. 4. Except as noted in this section, monitoring for highly toxic and toxic gases shall also comply with Chapter 60.		Minor wordsmithing for clarification.

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2015 Houston IFC – Chapter 28	2021 IFC – Chapter 28 – Lumber Yards and Agro-Industrial, Solid Biomass and Woodworking Facilities	2021 Houston Amendments	Code Change Summary
	SECTION 2801 GENERAL 2801.1 Scope. The storage, manufacturing and processing of solid biomass feedstock, timber, lumber, plywood, nonmetallic pallets , veneers and agro-industrial byproducts shall be in accordance with this chapter.		Minor wordsmithing for clarification.
	SECTION 2803 GENERAL REQUIREMENTS		
	2803.7 Access plan. Where storage pile configurations could change because of changes in product operations and processing, the access plan shall be submitted for approval when where required by the fire code official.		Minor wordsmithing for clarification.
	SECTION 2806 LOG STORAGE AREAS 2806.1 General. Log storage areas shall comply with Sections 2806.2 through and 2806.3.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2808.3 Size of piles. Piles shall not exceed 25 feet (7620 mm) in height, 150 feet (45 720 mm) in width and 250 feet (76 200 mm) in length. Stackable products shall not be stacked in excess of 25 feet (7620 mm) in height, 80 feet (24 384 mm) in width and 250 feet (76 200 mm) in length. Exception: The fire ~~code official~~ is authorized to allow the pile size to be increased where a fire protection plan is provided for approval that includes, but is not limited to, the following: 1. Storage yard areas and materials handling equipment selection, design and arrangement shall be based on sound fire prevention and protection principles. 2. Factors that lead to spontaneous heating shall be identified in the plan, and control of the various factors shall be identified and implemented, including provisions for monitoring the internal condition of the pile. 3. The plan shall include means for early fire detection and reporting to the public fire department; and facilities needed by the fire department for fire extinguishment including a water supply and fire hydrants. 4. Fire apparatus access roads around the piles and access roads to the top of the piles shall be established, identified and maintained. 5. Regular yard inspections by trained personnel shall be included as part of an effective fire prevention maintenance program. Additional fire protection called for in the plan shall be provided and shall be installed in accordance with this code. The increase of the pile size shall be based on the capabilities of the installed ~~fire protection systems~~ and features.		New requirements for stackable product height.

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	2808.3.1 Increase in pile or stack size. Piles or stackable products are permitted to be increased beyond the dimensions in Section 2808.3 provided that a written fire protection plan is <i>approved by the fire code official</i> . The fire protection plan shall include, but not be limited to, the following: 1. Contact information for after-hours response by facility personnel. 2. Storage yard areas and material-handling equipment selection, pile design and arrangement shall be based on sound safety and fire protection principles. 3. Fire apparatus access roads around the piles or stacks and access roads to the top of piles, if applicable, shall be established, identified and maintained. 4. The potential for spontaneous heating shall be evaluated and provisions made to control the temperature of the piles. Methods for monitoring the internal temperature of the pile shall be provided. 5. Routine yard inspections shall be conducted by trained personnel. 6. A means for early fire detection and reporting to the public fire department shall be provided. 7. Facilities and equipment needed by the fire department for fire extinguishment shall be provided, including a water supply in compliance with Section 507 and heavy equipment necessary to move material. 8. A de-inventory plan shall be utilized to remove alternating piles or stacked products in a manner to increase the separation distances between the remaining piles or stacks. 9. The increased pile size shall be based on the capabilities of the installed <i>fire protection systems</i> and features. 10. A controlled burn area shall be provided on-site for smoldering or damaged product.		New section for increasing pile stacks of stackable products
	2808.4 Pile separation. Piles or stacked product shall be separated from buildings, property lines and adjacent piles by ~~approved fire apparatus access roads~~ or stacks by a distance of not less than one and one-half times the height of the pile or stack. The distance between rows shall be a minimum of 30 feet (9144 mm). <i>Approved</i> fire apparatus access roads shall be provided within the separation space in accordance with Section 503.		New requirements for stack pile distances to buildings and/or property lines.
SECTION 2810 OUTDOOR STORAGE OF PALLETS AT PALLET MANUFACTURING AND RECYCLING FACILITIES 2810.1 General. The outside storage of wood pallets and wood composite pallets on the same site as a pallet manufacturing or recycling facility shall comply with Sections 2810.2 through 2810.11.	SECTION 2810 OUTDOOR STORAGE OF PALLETS AT PALLET MANUFACTURING AND RECYCLING FACILITIES 2810.1 General. The outside storage of wood pallets and wood composite pallets on the same site as a pallet manufacturing or pallet recycling facility shall comply with Sections 2810.2 through 2810.11.		Previous Houston amendment was based on 2018 IFC requirements for outdoor storage of pallets. Amendments for Section 2810 have been removed as they're now part of base code.

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2810.2 Site plan. Each site shall maintain a current site plan that includes a general description of the property, the boundaries of the lot, the size and location of buildings, and all of the following: 1. Utilities. 2. Type of construction and presence of sprinkler protection for other buildings on the site. 3. Water supply sources for fire-fighting purposes. 4. Location of hazardous material storage areas. 5. Location of pallet storage. 6. Equipment protected with a dust collection system. 7. <i>Fire apparatus access roads.</i> 8. Designated smoking areas. 9. Location of fire alarm control panels.	2810.2 Site plan. Each site shall maintain a current site plan The site plan shall be submitted to the fire code official for approval ~~that includes a general description of the property, the boundaries of the lot, the size and location of buildings, and~~ contain all of the following: 1. Lot lines. 4.2. Utilities. 2.3. Size, location and type of construction ~~and presence of sprinkler protection for other of the buildings on the site~~ property. 4. Presence of the fire protection systems. 3.5. Water supply sources for fire-fighting purposes. 4.6. Location of hazardous material storage areas. 5.7. Location of pallet storage. 6.8. Equipment protected with a dust collection system. 7.9. Fire apparatus access roads. 8.10. Designated smoking areas. 9.11. Location of fire alarm control panels.		Minor changes to base code section. Houston amendment removed, now part of base code.
2810.3 Fire prevention plan. The <i>owner</i> or <i>owner's</i> authorized representative shall prepare an <i>approved</i> fire prevention plan that includes all of the following: 1. Frequency of walk-through inspections to verify compliance with the plan. 2. Hot work permit program in accordance with Chapter 35. 3. Preventative maintenance program for equipment associated with pallet activities. 4. Inspection, testing and maintenance of <i>fire protection systems</i> in accordance with Chapter 9.	2810.3 Fire prevention plan. The <i>owner</i> or <i>owner's</i> authorized representative shall ~~prepare an approved~~ submit a fire prevention plan for review and approval by the fire code official that includes all of the following: 1. Frequency of walk-through inspections to verify compliance with the plan. 2. Hot work permit program in accordance with Chapter 35. 3. Preventative maintenance program for equipment associated with pallet activities. 4. Inspection, testing and maintenance of fire protection systems in accordance with Chapter 9.		Minor changes to base code section. Houston amendment removed, now part of base code.
2810.4 Fire safety and emergency evacuation plan. The <i>owner</i> or <i>owner's</i> authorized representative shall prepare and train employees in an <i>approved</i> fire safety and emergency evacuation plan in accordance with Chapter 4.	2810.4 Fire safety and emergency evacuation plan. The <i>owner</i> or <i>owner's</i> authorized representative shall prepare and train employees in an <i>approved</i> fire safety and ~~emergency~~ evacuation plan in accordance with Chapter 4.		Minor changes to base code section. Houston amendment removed, now part of base code.
2810.5 Security management plan. The <i>owner</i> or <i>owner's</i> authorized representative shall prepare a security management plan based on a security risk assessment and shall make the plan and assessment available to the <i>fire code official</i> upon request.	2810.5 Security management plan. The <i>owner</i> or <i>owner's</i> authorized representative shall prepare a security management plan based on a security risk assessment and shall make the plan and assessment available to the <i>fire code official</i> upon request.		Houston amendment removed, now part of base code.
2810.6 Clearance to property line. Stacks of pallets shall not be stored within 0.75 times the stack height or 8 feet (2,438 mm) of the property line, whichever is greater, or shall comply with Section 2810.11.	2810.6 Clearance to property line. Stacks of pallets shall not be stored within 0.75 times the stack height or 8 feet (2438 mm) of the property line, whichever is greater, or shall comply with Section 2810.11.		Houston amendment removed, now part of base code.
2810.7 Clearance to important buildings. Stacks of pallets shall not be stored within 0.75 times the stack height of any important building on site or shall comply with Section 2810.11.	2810.7 Clearance to important buildings. Stacks of pallets shall not be stored within 0.75 times the stack height of any important building on site, or shall comply with Section 2810.11.		Houston amendment removed, now part of base code.
2810.8 Height. Pallet stacks shall not exceed 20 feet (6,096 mm) in height.	2810.8 Height. Pallet stacks shall not exceed 20 feet (6096 mm) in height.		Houston amendment removed, now part of base code.

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2810.9 Fire flow. Fire-flow requirements for the site shall be determined by the <i>fire code official</i> .	2810.9 Fire flow. Fire-flow requirements for the site shall be determined by the <i>fire code official</i> .		Houston amendment removed, now part of base code.
2810.10 Portable fire extinguishers. Portable fire extinguishers shall be provided within 75 feet (22,860 mm) of any pallet stack.	2810.10 Portable fire extinguishers. Portable fire extinguishers shall be provided within 75 feet (22,860 mm) of any pallet stack. Turquoise selected, installed and maintained in accordance with Section 906.		Minor changes to base code section. Houston amendment removed, now part of base code.
2810.11 Alternative approach. Where <i>approved</i> by the <i>fire code official</i> , pallet stacks located closer to a property line or structure than as required by Sections 2810.6 and 2810.7 shall be provided with additional fire protection including, but not limited to, the following: 1. The storage yard areas and materials-handling equipment selection, design, and arrangement are based on an <i>approved</i> risk assessment. 2. Automatic fire detection that transmits an alarm to a supervising station in accordance with NFPA 72-2016. 3. <i>Fire apparatus access roads</i> around all storage areas.	2810.11 Alternative approach. Where <i>approved</i> by the <i>fire code official</i> , pallet stacks Turquoise are permitted to be located closer to a property line or structure than as required by Sections 2810.6 and 2810.7 ~~shall be provided with~~ Turquoise where additional fire protection Turquoise is provided, including, but not limited to, the following: 1. The storage yard areas and materials-handling equipment selection, design, and arrangement are based on an <i>approved</i> risk assessment. 2. Automatic fire detection that transmits an alarm to a supervising station in accordance with NFPA 72. 3. <i>Fire apparatus access roads</i> around all storage areas.		Minor changes to base code section. Houston amendment removed, now part of base code.
2015 Houston IFC – Chapter 29	2021 IFC – Chapter 29 – Manufacture of Organic Coatings	2021 Houston Amendments	Code Change Summary
	SECTION 2903 GENERAL PRECAUTIONS		
	2903.3 Fire-fighting access. The fire department shall be able to access the organic coating manufacturing operations ~~shall be accessible~~ from not less than one side for the purpose of fire control. Approved aisles shall be maintained for the unobstructed movement of personnel and fire suppression equipment.		Minor wordsmithing for clarification.
	SECTION 2907 PROCESS PIPING		
	2907.5 Tests. Before being placed in service, all piping shall be free of leaks when tested for not less than 30 minutes at not less than 1.5 times the working pressure or ~~a minimum of not less than~~ Turquoise 5 pounds per square inch gauge (psig) (35 kPa) at the highest point in the system.		Minor wordsmithing for clarification.
	SECTION 2909 RAW MATERIALS AND FINISHED PRODUCTS		
	2909.2 Tank storage. Tank storage for flammable and combustible liquids located inside of structures shall be limited to storage areas at or above grade ~~which that~~ are separated from the processing area in accordance with the International Building Code. Processing equipment containing flammable and combustible liquids and storage in quantities essential to the continuity of the operations shall not be prohibited in the processing area.		Minor wordsmithing for clarification.

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2015 Houston IFC – Chapter 30 Industrial Ovens	2021 IFC – Chapter 30 Industrial Ovens	2021 Houston Amendments	Code Change Summary
	SECTION 3004 FUEL PIPING		
	3004.2.1 Fuel supply lines. Valves for fuel supply lines shall be located within 6 feet (1829 mm) of the appliance served. Exception: ~~when~~ where approved and the valve is located in the same general area as the appliance served.		Minor wordsmithing for clarification.
	3004.3 Valve position. The design of manual fuel shutoff valves shall incorporate a permanent feature ~~which that~~ visually indicates the open or closed position of the valve. Manual fuel shutoff valves shall not be equipped with removable handles or wrenches unless the handle or wrench can only be installed parallel with the fuel line when the valve is in the open position.		Minor wordsmithing for clarification.
	SECTION 3006 FIRE PROTECTION 3006.1 Required protection. Class A and B ovens that contain, or are utilized for the processing of, combustible materials shall be protected by an <i>approved automatic fire- extinguishing system</i> complying with Chapter 9. Exceptions: 1. Small tabletop ovens used in laboratory facilities. 2. Nonwalk-in ovens that are less than 4 feet (1219 mm) in length and width.		New exceptions for certain ovens processing combustible materials.
2015 Houston IFC – Chapter 31 Tents and Other Membrane Structures	2021 IFC – Chapter 31 – Tents, Temporary Special Event Structures and Other Membrane Structures	2021 Houston Amendments	Code Change Summary
	SECTION 3101 GENERAL 3101.1 Scope. Tents, temporary ~~stage canopies~~ special event structures and membrane structures shall comply with this chapter. The provisions of Section 3103 are applicable only to temporary tents and membrane structures. The provisions of Sections 3104 ~~and 3106~~ are applicable to temporary and permanent tents and membrane structures. The provisions of Section 3105 are applicable to temporary special event structures. The provisions of Section 3106 are applicable to ~~outdoor assembly events~~ . Other temporary structures shall comply with the International Building Code.		Minor updates to base code for temporary structures to reference updated/new sections in Ch. 31.
	SECTION 3102 DEFINITIONS 3102.1 Definitions. The following terms are defined in Chapter 2: AIR-INFLATED STRUCTURE. AIR-SUPPORTED STRUCTURE. MEMBRANE STRUCTURE. TEMPORARY ~~STAGE CANOPY.~~ SPECIAL EVENT STRUCTURE.		New definition.

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	TENT.		
	SECTION 3103 TEMPORARY TENTS AND MEMBRANE STRUCTURES 3103.1 General. Tents and membrane structures used for temporary periods shall comply with this section and Section 3106 . Other temporary structures erected for a period of 180 days or less shall comply with the International Building Code.		Updates to base code to reference new section.
3103.2 Approval required. Tents, canopies, and membrane structures having an area in excess of 400 1,200 square feet (37 112 m ²), or an aggregate area in excess of 1,200 square feet (112 m ²), shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the <i>fire code official</i> . See Houston Fire Department LSB Standard No. 22, "Tents and Other Membrane Structures." Exceptions: 1. Tents used exclusively for recreational camping purposes. 2. ~~Tents open on all sides that comply with all of the following:~~ 2.1. Individual tents having a maximum size of 700 square feet (65 m ²). 2.2. The aggregate area of multiple 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 (3,658 mm) to all structures and other tents.		3103.2 Approval required. Tents, canopies, and membrane structures having an area in excess of 400 1,200 square feet (37 112 m ²), or an aggregate area in excess of 1,200 square feet (112 m ²), shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the <i>fire code official</i> . See Houston Fire Department LSB Standard No. 22, "Tents and Other Membrane Structures." Exceptions: 1. Tents used exclusively for recreational camping purposes. 2. Tents open on all sides that comply with all of the following: 2.1 Individual tents having a maximum size of 700 square feet (65 m ²). 2.2 The aggregate area of multiple 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.	No change to Houston amendment.
	3103.3 Place of Outdoor assembly event. For the purposes of this chapter, a place of an outdoor assembly event shall include a circus, carnival, tent show, theater, skating rink, dance hall or other place of assembly in or under which persons gather for any purpose.		Minor wordsmithing for clarification.
	3103.3.1 Special amusement building area. Tents and other membrane structures erected as a special amusement building area shall be equipped with an automatic sprinkler system in accordance with Section 914.7.1 of the International Building Code.		Updates to base code for special amusement areas.
3103.5 Use period. Temporary tents, and air-supported, air-inflated or tensioned membrane structures shall not be erected for a period of more than 17980 days within a 12-month period on a single premises.	No change.	3103.5 Use period. Temporary tents, and air-supported, air-inflated or tensioned membrane structures shall not be erected for a period of more than 17980 days within a 12-month period on a single premises.	No change to Houston amendment.
	3103.6 Construction documents. A detailed site and floor plan for tents or membrane structures with an occupant load of 50 or more shall be provided with each application for approval. The tent 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. The construction documents shall include an analysis of structural stability.		New requirement for construction documents to include structural analysis.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3103.8.2 Location. Tents or membrane structures shall not be located within 20 feet (6096 mm) of lot lines, buildings, other tents 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. Exceptions: 1. Separation distance between membrane structures and tents not used for cooking is not required where the aggregate floor area does not exceed 15,000 square feet (1394 m²). 2. Membrane structures or tents need not be separated from buildings when where all of the following conditions are met: 2.1. The aggregate floor area of the membrane structure or tent shall not exceed 10,000 square feet (929 m²). 2.2. The aggregate floor area of the building and membrane structure or tent shall not exceed the allowable floor area including increases as indicated in the International Building Code. 2.3. Required means of egress are provided for both the building and the membrane structure or tent including travel distances. 2.4. Fire apparatus access roads are provided in accordance with Section 503.		Minor wordsmithing for clarification.
	3103.9 Structural stability and anchorage required. Tents or membrane structures and their appurtenances shall be ~~adequately roped, braced~~ designed and anchored installed to withstand the elements of weather and prevent against collapsing. Documentation of structural stability shall be furnished to the fire code official ~~on request~~.		Minor wordsmithing for clarification.
	3103.9.1 Tents and membrane structures exceeding one greater than story. Tents and membrane structures exceeding one story shall be designed and constructed to comply with ~~Chapter 16~~ Sections 1606 through 1609 of the International Building Code.		Minor wordsmithing for clarification.
	3103.9.2 Tents and membrane structures greater than 7,500 square feet. Tents and membrane structures greater than 7,500 square feet (697 m²) shall be designed and constructed to comply with Sections 1606 through 1609 of the International Building Code.		New requirements for tents over 7,500 sq/ft.
	3103.9.3 Tents and membrane structures with an occupant load greater than 1,000. Tents and membrane structures with an occupant capacity greater than 1,000 persons shall be designed and constructed to comply with Sections 1606 through 1609 of the International Building Code.		New requirements for tents with an occupant load over 1,000.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3103.10.2 Fabric envelope design and construction. Air-supported and air-inflated structures shall have the design and construction of the fabric envelope and the method of anchoring in accordance with Architectural Fabric Structures Institute ~~FSAAS 177~~ .		Update to referenced standard.
	SECTION 3104 TEMPORARY AND PERMANENT TENTS AND MEMBRANE STRUCTURES 3104.1 General. Tents and membrane structures, both temporary and permanent, shall be in accordance with this section and Sections 3106 and 3107. Permanent tents and membrane structures shall also comply with the International Building Code.		Minor wordsmithing for clarification.
	3104.2 Flame propagation performance treatment, testing and certification. Before a permit is granted, the owner or agent shall file with the <i>fire code official</i> a certificate ~~executed~~ provided by the product manufacturer to verify that the materials have been tested and certified by an approved testing laboratory. The ~~certifying certificate shall indicate~~ that the ~~tents and floor coverings, tents, membrane structures and their appurtenances,~~ which include sidewalls, drops and tarpaulins ~~floor coverings,~~ are composed of materials meeting the flame propagation performance of Test Method 2 of NFPA 701. Additionally, it shall indicate that the bunting and combustible decorative materials and effects, ~~including sawdust where used on floors or passageways,~~ are composed of material meeting the flame propagation performance criteria of Test Method 1 or Test Method 2, ~~as appropriate,~~ of NFPA 701, ~~or as applicable.~~ Alternatively, the materials shall be treated with a flame retardant in an <i>approved</i> manner and meet the flame propagation performance criteria of ~~Test Method 1 or Test Method 2, as appropriate,~~ the applicable test method of NFPA 701. The certificate shall indicate compliance with the testing requirements of NFPA 701, Chapter 16. The flame propagation performance criteria ~~are~~ shall be effective for the period specified by the permit.		Updates to flame propagation requirements to coincide and reference NFPA requirements.
	3104.3 Label. <i>Membrane structures or tents</i> shall have a permanently affixed label bearing the following information: 1. The identification of size and fabric or material type. 2. The names and addresses of the manufacturers of the tent or air-supported structure. 3. A statement that the fabric or material meets the requirements of Section 3104.2. 4. If treated, the date the fabric or material was last treated with flame-retardant solution, the trade name or kind of chemical used in treatment, name of person or firm treating the fabric or material, and name of testing agency and test standard by which the fabric or material was tested. 5. If untreated, a statement that no treatment was applied when the fabric or material met the requirements of Section 3104.2.		New requirements for label requirements to be listed for fire code official.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3104.4 Certification. Affidavit. The affidavit required by Section 3104.2 shall contain all of the information specified in Section 3104.3. ~~An affidavit or affirmation shall be submitted to the <i>fire code official</i> and a copy retained on the premises on which the tent or air-supported structure is located. The affidavit shall attest to all of the following information relative to the flame propagation performance criteria of the fabric: Names and address of the <i>owners</i> of the tent or air-supported structure. Date the fabric was last treated with flame-retardant solution. Trade name or kind of chemical used in treatment. Name of person or firm treating the material. Name of testing agency and test standard by which the fabric was tested.~~		Update to affidavit requirements to contain information identified on label in Section 3104.3.
	~~3104.5 Combustible materials. Hay, straw, shavings or similar combustible materials shall not be located within any tent or membrane structure containing an assembly occupancy, except the materials necessary for the daily feeding and care 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.~~		Base code section removed and relocated to Section 3107.
	~~3104.6 Smoking. Smoking shall not be permitted in tents or membrane structures. Approved "No Smoking" signs shall be conspicuously posted in accordance with Section 310.~~		Base code section removed and relocated to Section 3107.
	~~3104.7 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 or membrane structures while open to the public unless approved by the fire code official.~~		Base code section removed and relocated to Section 3107.
3104.8 Fireworks. Fireworks shall not be used within 100 feet (30,480 mm) of tents, canopies or membrane structures <u>except as approved by the <i>fire code official</i>.</u> Moved to 3107.5	~~3104.8 Fireworks. Fireworks shall not be used within 100 feet (30,480 mm) of tents or membrane structures.~~		Base code section removed and relocated to Section 3107. Previous Houston amendment relocated to Section 3107.5.
	~~3104.9 Spot lighting. Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet (1829 mm) of such equipment shall be protected with approved noncombustible insulation not less than 9 1/4 inches (235 mm) thick.~~		Base code section removed and relocated to Section 3107.
	~~3104.10 Safety film. Motion pictures shall not be displayed in tents or membrane structures unless the motion picture film is safety film.~~		Base code section removed and relocated to Section 3107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3104.11 Clearance. There shall be a minimum clearance of at least 3 feet (914 mm) between the fabric envelope and all contents located inside membrane structures.~~		Base code section removed and relocated to Section 3107.
	~~3104.12 Portable fire extinguishers. Portable fire extinguishers shall be provided as required by Section 906.~~		Base code section removed and relocated to Section 3107.
	~~3104.13 Fire protection equipment. Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the fire code official.~~		Base code section removed and relocated to Section 3107.
	~~3104.14 Occupant load factors. The occupant load allowed in an assembly structure, or portion thereof, shall be determined in accordance with Chapter 10.~~		Base code section removed and relocated to Section 3107.
	~~3104.15 Heating and cooking equipment. Heating and cooking equipment shall be in accordance with Sections 3104.15.1 through 3104.15.7.~~		Base code section removed and relocated to Section 3107.
	~~3104.15.1 Installation. Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as specified in the International Mechanical Code and the International Fuel Gas Code, and shall be approved by the fire code official.~~		Base code section removed and relocated to Section 3107.
	~~3104.15.2 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 where required. Where vents or flues are used, all portions of the tent or membrane structure shall be not less than 12 inches (305 mm) from the flue or vent.~~		Base code section removed and relocated to Section 3107.
	~~3104.15.3 Location. Cooking and heating equipment shall not be located within 10 feet (3048 mm) of exits or combustible materials.~~		Base code section removed and relocated to Section 3107.
	~~3104.15.4 Operations. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices that do not pose an ignition hazard, shall be approved.~~		Base code section removed and relocated to Section 3107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3104.15.5 Cooking tents. Tents with sidewalls or drops where cooking is performed shall be separated from other tents or membrane structures by not less than 20 feet (6096 mm).~~		Base code section removed and relocated to Section 3107.
	~~3104.15.6 Outdoor cooking. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) of a tent or membrane structure.~~		Base code section removed and relocated to Section 3107.
	~~3104.15.7 Electrical heating and cooking equipment. Electrical cooking and heating equipment shall comply with NFPA 70.~~		Base code section removed and relocated to Section 3107.
	~~3104.16 LP-gas. The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with Sections 3104.16.1 through 3104.16.3.~~		Base code section removed and relocated to Section 3107.
	~~3104.16.1 General. LP-gas equipment such as tanks, piping, hoses, fittings, valves, tubing and other related components shall be approved and in accordance with Chapter 61 and with the International Fuel Gas Code.~~		Base code section removed and relocated to Section 3107.
	~~3104.16.2 Location of containers. LP-gas containers shall be located outside. Safety release valves shall be pointed away from the tent or membrane structure.~~		Base code section removed and relocated to Section 3107.
	~~3104.16.2.1 Containers 500 gallons or less. Portable LP-gas containers with a capacity of 500 gallons (1893 L) or less shall have a minimum separation between the container and structure not less than 10 feet (3048 mm).~~		Base code section removed and relocated to Section 3107.
	~~3104.16.2.2 Containers more than 500 gallons. Portable LP-gas containers with a capacity of more than 500 gallons (1893 L) shall have a minimum separation between the container and structures not less than 25 feet (7620 mm).~~		Base code section removed and relocated to Section 3107.
	~~3104.16.3 Protection and security. Portable LP-gas containers, piping, valves and fittings that are located outside and are being used to fuel equipment inside a tent 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.~~		Base code section removed and relocated to Section 3107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3104.17 Flammable and combustible liquids. The storage of flammable and combustible liquids and the use of flammable liquid-fueled equipment shall be in accordance with Sections 3104.17.1 through 3104.17.3.~~		Base code section removed and relocated to Section 3107.
	~~3104.17.1 Use. Flammable liquid-fueled equipment shall not be used in tents or membrane structures.~~		Base code section removed and relocated to Section 3107.
	~~3104.17.2 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 or membrane structures. Storage shall be in accordance with Chapter 57.~~		Base code section removed and relocated to Section 3107.
	~~3104.17.3 Refueling. Refueling shall be performed in an approved location not less than 20 feet (6096 mm) from tents or membrane structures.~~		Base code section removed and relocated to Section 3107.
	~~3104.18 Display of motor vehicles. Liquid and gas-fueled vehicles and equipment used for display within tents or membrane structures shall be in accordance with Sections 3104.18.1 through 3104.18.5.3.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.1 Batteries. Batteries shall be disconnected in an appropriate manner.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.2 Fuel. Vehicles or equipment shall not be fueled or defueled within the tent or membrane structure.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.2.1 Quantity limit. Fuel in the fuel tank shall not exceed one-quarter of the tank capacity or 5 gallons (19 L), whichever is less.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.2.2 Inspection. Fuel systems shall be inspected for leaks.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.2.3 Closure. Fuel tank openings shall be locked and sealed to prevent the escape of vapors.~~		Base code section removed and relocated to Section 3107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3104.18.3 Location. The location of vehicles or equipment shall not obstruct means of egress.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.4 Places of assembly. When a compressed natural gas (CNG) or liquefied petroleum gas (LP-gas) powered vehicle is parked inside a place of assembly, all the following conditions shall be met: 1. The quarter turn shutoff valve or other shutoff valve on the outlet of the CNG or LP-gas container shall be closed and the engine shall be operated until it stops. Valves shall remain closed while the vehicle is indoors. 2. The hot lead of the battery shall be disconnected. 3. Dual fuel vehicles equipped to operate on gasoline and CNG or LP-gas shall comply with this section and Sections 3104.18.1 through 3104.18.5.3 for gasoline-powered vehicles.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.5 Competitions and demonstrations. Liquid and gas-fueled vehicles and equipment used for competition or demonstration within a tent or membrane structure shall comply with Sections 3104.18.5.1 through 3104.18.5.3.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.5.1 Fuel storage. Fuel for vehicles or equipment shall be stored in approved containers in an approved location outside of the structure in accordance with Section 3104.17.2.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.5.2 Fueling. Refueling shall be performed outside of the structure in accordance with Section 3104.17.3.~~		Base code section removed and relocated to Section 3107.
	~~3104.18.5.3 Spills. Fuel spills shall be cleaned up immediately.~~		Base code section removed and relocated to Section 3107.
	~~3104.19 Separation of generators. Generators and other internal combustion power sources shall be separated from tents or membrane structures by not less than 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other approved means.~~		Base code section removed and relocated to Section 3107.
	~~3104.20 Standby personnel. Where, in the opinion of the fire code official, it is essential for public safety in a tent 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~~		Base code section removed and relocated to Section 3107.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	times such places are open to the public, or when such activity is being conducted.		
	~~3104.20.1 Duties. 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.~~		Base code section removed and relocated to Section 3107.
	~~3104.20.2 Crowd managers. There shall be trained crowd managers or crowd manager/supervisors at a ratio of one crowd manager/supervisor for every 250 occupants, as approved.~~		Base code section removed and relocated to Section 3107.
	~~3104.21 Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the area occupied by a tent or membrane structure, and from areas within 30 feet (9144 mm) of such structures.~~		Base code section removed and relocated to Section 3107.
	~~3104.22 Combustible waste material. The floor surface inside tents or membrane structures and the grounds outside and within a 30-foot (9144 mm) perimeter shall be kept free of combustible waste and other combustible materials that could create a fire hazard. Such waste shall be stored in approved containers and removed from the premises not less than once a day during the period the structure is occupied by the public.~~		Base code section removed and relocated to Section 3107.
	SECTION 3105 TEMPORARY SPECIAL EVENT STRUCTURES STAGE CANOPIES 3105.1 General. Temporary special event structures stage canopies shall comply with Section 3105.2 3104, Sections 3105.8 3105.2 through 3105.9 and ANSI E1.21.		Minor updates to base code language.
3105.2 Approval. Temporary stage canopies in excess of 400 <u>1,200</u> square feet (~~37~~ <u>112</u> m ²) shall not be erected, operated or maintained for any purpose without first obtaining approval and a permit from the <i>fire code official</i> and the building official.	3105.2 Approval. Temporary ~~stage canopies~~ special event structures in excess of 400 square feet (37 m ²) shall not be erected, operated or maintained for any purpose without first obtaining approval and a permit from the fire code official and the building official.	3105.2 Approval. Temporary special event structures in excess of ~~400~~ <u>1,200</u> square feet (~~37~~ <u>112</u> m ²) shall not be erected, operated or maintained for any purpose without first obtaining approval and a permit from the <i>fire code official</i> and the building official.	Updated language to be in line with base code, no major change to Houston amendment
	3105.3 Permits. Permits shall be required as set forth in Sections ~~405.6~~ 105.5 and ~~405.7~~ 105.6.		Base code renumbering.
	3105.4 Use period. Temporary ~~stage canopies~~ special event structures erected in accordance with ANSI E1.21 shall not be erected for a period of more than ~~45 days~~ six consecutive weeks.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3105.5 Required documents. The following documents shall be submitted to the <i>fire code official</i> and the building official for review before a permit is <i>approved</i> : 1. Construction documents: <i>Construction documents</i> shall be prepared by a <i>registered design professional</i> in accordance with the <i>International Building Code</i> ~~by a registered design professional~~ and ANSI E1.21 where applicable. <i>Construction documents</i> shall include: 1.1. A summary sheet showing the building code used, design criteria, loads and support reactions. 1.2. Detailed construction and installation drawings. 1.3. Design calculations. 1.4. Operating limits of the structure explicitly outlined by the <i>registered design professional</i> including environmental conditions and physical forces. 1.5. Effects of additive elements such as video walls, supported scenery, audio equipment, vertical and horizontal coverings. 1.6. Means for adequate stability including specific requirements for guying and cross-bracing, ground anchors or ballast for different ground conditions. 2. Designation of responsible party: The <i>owner</i> of the temporary ~~stage canopy~~ special event structure shall designate in writing a person to have responsibility for the temporary ~~stage canopy~~ special event structure on the site. The designated person shall have sufficient knowledge of the construction documents, manufacturer's recommendations and operations plan to make judgments regarding the structure's safety and to coordinate with the <i>fire code official</i>. 3. Operations plan: The operations plan shall reflect manufacturer's operational guidelines, procedures for environmental monitoring and actions to be taken under specified conditions consistent with the <i>construction documents</i>.		Minor wordsmithing for clarification.
	3105.6.1 Independent inspector. The <i>owner</i> of a temporary ~~special event structure~~ ~~stage canopies~~ shall employ a qualified, independent <i>approved</i> agency or individual to inspect the installation of a temporary ~~stage canopies~~ special event structure.		Minor wordsmithing for clarification.
	3105.7 Means of egress. The means of egress for temporary ~~stage canopy~~ special event structure shall comply with Chapter 10.		Minor wordsmithing for clarification.
	3105.8 Location. Temporary ~~stage canopy~~ special event structure shall be located a distance from property lines and buildings to accommodate distances indicated in the construction drawings for guy wires, cross-bracing, ground anchors or ballast. Location shall not interfere with egress from a building or encroach on fire apparatus access roads.		Minor wordsmithing for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3105.9 Portable fire extinguishers. Portable fire extinguishers shall be provided as required by Section 906.		New requirements for portable fire extinguishers.
	SECTION 3106 OUTDOOR ASSEMBLY EVENTS 3106.1 Scope. Outdoor assembly events shall comply with this section.		New section and requirements for outdoor assembly events.
	3106.2 General. Outdoor assembly events shall be in accordance with this section and Section 403.11. Temporary structures erected for outdoor assembly events shall comply with this chapter.		New section and requirements for outdoor assembly events.
	3106.2.1 Approval required. Outdoor assembly events shall be <i>approved</i> by the <i>fire code official</i> .		New section and requirements for outdoor assembly events.
	3106.2.2 Permits. An operational permit shall be required as set forth in Section 105.5.		New section and requirements for outdoor assembly events.
	3106.2.3 Access. An <i>approved</i> means of fire apparatus access shall be provided.		New section and requirements for outdoor assembly events.
	3106.2.3.1 Fire service features. Unobstructed access to fire hydrants, drafting sources and other fire protection features shall be maintained at all times.		New section and requirements for outdoor assembly events.
	3106.3 Occupancy and means of egress. The number and location of emergency egress and escape routes shall be <i>approved</i> by the <i>fire code official</i> .		New section and requirements for outdoor assembly events.
	3106.3.1 Occupant load. The <i>fire code official</i> shall establish an <i>occupant load</i> for the event site.		New section and requirements for outdoor assembly events.
	3106.3.2 Maintenance of emergency egress and escape routes. Emergency egress and escape routes shall be maintained at all times.		New section and requirements for outdoor assembly events.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3106.4 Public safety for events. Outdoor assembly events shall comply with Sections 3106.4.1 through 3106.4.7.		New section and requirements for outdoor assembly events.
	3106.4.1 Public safety plan for gatherings. A public safety plan shall be prepared where required by Section 403.11.2. The public safety plan shall be submitted to the <i>fire code official</i> with the application for an operational permit as required by Section 3106.2.2.		New section and requirements for outdoor assembly events.
	3106.4.2 Weather monitoring person. Where required by the <i>fire code official</i> , the event operator or agent shall designate one qualified individual to continuously monitor local weather reports, forecasts and conditions. Said person shall be responsible for initiating weather-related event mitigation activities, ordering the suspension or cancellation of the outdoor assembly event and issuing the evacuation signal in accordance with the <i>approved</i> public safety plan.		New section and requirements for outdoor assembly events.
	3106.4.3 Crowd managers. Where events involve a gathering of more than 1,000 people, trained crowd managers shall be provided in accordance with Section 403.11.3.		New section and requirements for outdoor assembly events.
	3106.4.4 Portable fire extinguishers. <i>Approved</i> portable fire extinguishers complying with Section 906 shall be provided and placed in locations <i>approved</i> by the <i>fire code official</i> .		New section and requirements for outdoor assembly events.
	3106.4.5 Smoking. Smoking shall be permitted only in designated areas. Other areas shall have <i>approved</i> “No Smoking” signs conspicuously posted and maintained in accordance with Section 310.		New section and requirements for outdoor assembly events.
	3106.4.6 Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the outdoor assembly event area.		New section and requirements for outdoor assembly events.
	3106.4.7 Combustible refuse. Combustible refuse shall be kept in noncombustible containers with tight-fitting or self-closing lids. Combustible refuse shall be removed from the event site at regular intervals to prevent an unsafe accumulation within the event site.		New section and requirements for outdoor assembly events.
	3106.5 Cooking appliances or devices. Outdoor assembly events with concession stands or booths using cooking appliances or devices shall comply with Sections 3106.5.1 through 3106.5.3.		New section and requirements for outdoor assembly events.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3106.5.1 Separation from tents or structures. Cooking appliances or devices that produce sparks or grease-laden vapors or flying embers (firebrands) shall not be used within 20 feet (6096 mm) of a <i>tent</i> or temporary structure. Exceptions: 1. Designated cooking <i>tents</i> not occupied by the public when <i>approved</i> by the <i>fire code official</i> . 2. <i>Tents</i> or structures where cooking appliances are protected with an automatic fire-extinguishing system in accordance with Section 904.13.		New section and requirements for outdoor assembly events.
	3106.5.2 Protection. Cooking equipment using combustible oils or solids shall meet the following: 1. A noncombustible lid shall be immediately available. The lid shall be of sufficient size to cover the cooking well completely. 2. The equipment shall be placed on a noncombustible surface. 3. An <i>approved</i> portable fire extinguisher for protection from cooking grease fires shall be provided at a location <i>approved</i> by the <i>fire code official</i> .		New section and requirements for outdoor assembly events.
	3106.5.3 Liquefied petroleum gas (LP-gas). The use of liquefied petroleum gas (LP-gas) shall be in accordance with Chapter 61.		New section and requirements for outdoor assembly events.
	3106.6 Electrical equipment and wiring. Outdoor assembly events with concession stands or booths using electrical equipment and temporary wiring for electrical power or lighting shall comply with the applicable provisions of NFPA 70 and Sections 3106.6.1 through 3106.6.3.		New section and requirements for outdoor assembly events.
	3106.6.1 Outdoor use. Electrical equipment and wiring shall be <i>listed</i> and <i>labeled</i> for outdoor use.		New section and requirements for outdoor assembly events.
	3106.6.2 Generators. Generators shall be installed not less than 10 feet (3048 mm) from combustible materials, and shall be isolated from the public by physical guard, fence or enclosure installed not less than 3 feet (914 mm) away from the internal combustion power source		New section and requirements for outdoor assembly events.
	3106.6.3 Portable fire extinguishers. Each generator shall be provided with an <i>approved</i> portable fire extinguisher complying with Section 906.		New section and requirements for outdoor assembly events.
	SECTION 3107 OPERATIONAL REQUIREMENTS 3107.1 General. Temporary and permanent <i>tents</i> and <i>membrane structures</i> shall comply with this section. **		No major changes to base code, relocated from Section 3104.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3107.2 Combustible materials. Hay, straw, shavings or similar combustible materials shall not be located within any <i>tent</i> or <i>membrane structure</i> containing an assembly occupancy, except the materials necessary for the daily feeding and care of animals. Sawdust and shavings utilized for a public performance or exhibit shall not be prohibited provided that the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time.		No major changes to base code, relocated from Section 3104.
	3107.3 Smoking. Smoking shall not be permitted in <i>tents</i> or <i>membrane structures</i> . <i>Approved</i> “No Smoking” signs shall be conspicuously posted in accordance with Section 310.		No major changes to base code, relocated from Section 3104.
	3107.4 Open or exposed flame. Open flame or other devices emitting flame, fire or heat or any <i>flammable</i> or <i>combustible liquids</i> , 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 <i>tent</i> or <i>membrane structures</i> while open to the public unless <i>approved</i> by the <i>fire code official</i> .		No major changes to base code, relocated from Section 3104.
	3107.5 Fireworks. Fireworks shall not be used within 100 feet (30 480 mm) of <i>tents</i> or <i>membrane structures</i> .	3107.5 Fireworks. Fireworks shall not be used within 100 feet (30,480 mm) of tents, <i>canopies</i> or membrane structures <i>except as approved</i> by the <i>fire code official</i> .	No major changes to base code, relocated from Section 3104. No change to Houston amendment, relocated from Section 3104.8.
	3107.6 Spot lighting. Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet (1829 mm) of such equipment shall be protected with <i>approved</i> noncombustible insulation not less than 9¼ inches (235 mm) thick.		No major changes to base code, relocated from Section 3104.
	3107.7 Safety film. Motion pictures shall not be displayed in <i>tents</i> or <i>membrane structures</i> unless the motion picture film is safety film.		No major changes to base code, relocated from Section 3104.
	3107.8 Clearance. There shall be a clearance of not less than 3 feet (914 mm) between the fabric envelope and all contents located inside <i>membrane structures</i> .		No major changes to base code, relocated from Section 3104.
	3107.9 Portable fire extinguishers. <i>Approved</i> portable fire extinguishers complying with Section 906 shall be provided and placed in locations as required by the <i>fire code official</i> .		No major changes to base code, relocated from Section 3104.
	3107.10 Fire protection equipment. Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the <i>fire code official</i> .		No major changes to base code, relocated from Section 3104.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3107.11 Occupant load factors. The <i>occupant load</i> allowed in an assembly structure, or portion thereof, shall be determined in accordance with Chapter 10. 3107.12 Heating and cooking equipment. Heating and cooking equipment shall be in accordance with Sections 3107.12.1 through 3107.12.7.		No major changes to base code, relocated from Section 3104.
	3107.12.1 Installation. Heating or cooking equipment, tanks, piping, hoses, fittings, valves, tubing and other related components shall be installed as specified in the <i>International Fuel Gas Code</i> and the <i>International Mechanical Code</i> , and shall be <i>approved</i> by the <i>fire code official</i> .		No major changes to base code, relocated from Section 3104.
	3107.12.2 Venting. Gas, liquid and solid fuel-burning equipment designed to be vented shall be vented to the outside air as specified in the <i>International Fuel Gas Code</i> and the <i>International Mechanical Code</i> . Such vents shall be equipped with <i>approved</i> spark arresters where required. Where vents or flues are used, all portions of the <i>tent</i> or <i>membrane structure</i> shall be not less than 12 inches (305 mm) from the flue or vent.		No major changes to base code, relocated from Section 3104.
	3107.12.3 Location. Cooking and heating equipment shall not be located within 10 feet (3048 mm) of <i>exits</i> or combustible materials.		No major changes to base code, relocated from Section 3104.
	3107.12.4 Operations. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices that do not pose an ignition hazard, shall be <i>approved</i> .		No major changes to base code, relocated from Section 3104.
	3107.12.5 Cooking tents. <i>Tents</i> with sidewalls or drops where cooking is performed shall be separated from other <i>tents</i> or <i>membrane structures</i> by not less than 20 feet (6096 mm).		No major changes to base code, relocated from Section 3104.
	3107.12.6 Outdoor cooking. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) of a <i>tent</i> or <i>membrane structure</i> .		No major changes to base code, relocated from Section 3104.
	3107.12.7 Electrical heating and cooking equipment. Electrical cooking and heating equipment shall comply with NFPA 70.		No major changes to base code, relocated from Section 3104.
	3107.13 LP-gas. The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with Sections 3107.13.1 through 3107.13.3.		No major changes to base code, relocated from Section 3104.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3107.13.1 General. LP-gas equipment such as containers, tanks, piping, hoses, fittings, valves, tubing and other related components shall be <i>approved</i> and in accordance with Chapter 61 and with the <i>International Fuel Gas Code</i> .		No major changes to base code, relocated from Section 3104.
	3107.13.2 Location of containers. LP-gas containers and tanks shall be located outside in accordance with Table 6104.3. Pressure relief devices shall be pointed away from the <i>tent</i> or <i>membrane structure</i> .		No major changes to base code, relocated from Section 3104.
	3107.13.3 Protection and security. Portable LP-gas containers, tanks, piping, valves and fittings that are located outside and are being used to fuel equipment inside a <i>tent</i> or <i>membrane structure</i> shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an <i>approved</i> location. Portable LP-gas containers shall be secured to prevent unauthorized movement.		No major changes to base code, relocated from Section 3104.
	3107.14 Flammable and combustible liquids. The storage of <i>flammable</i> and <i>combustible liquids</i> and the use of flammable-liquid-fueled equipment shall be in accordance with Sections 3107.14.1 through 3107.14.3.		No major changes to base code, relocated from Section 3104.
	3107.12.7 Electrical heating and cooking equipment. Electrical cooking and heating equipment shall comply with NFPA 70.		No major changes to base code, relocated from Section 3104.
	3107.13 LP-gas. The storage, handling and use of LP-gas and LP-gas equipment shall be in accordance with Sections 3107.13.1 through 3107.13.3.		No major changes to base code, relocated from Section 3104.
	3107.13.1 General. LP-gas equipment such as containers, tanks, piping, hoses, fittings, valves, tubing and other related components shall be <i>approved</i> and in accordance with Chapter 61 and with the <i>International Fuel Gas Code</i> .		No major changes to base code, relocated from Section 3104.
	3107.13.2 Location of containers. LP-gas containers and tanks shall be located outside in accordance with Table 6104.3. Pressure relief devices shall be pointed away from the <i>tent</i> or <i>membrane structure</i> .		No major changes to base code, relocated from Section 3104.
	3107.13.3 Protection and security. Portable LP-gas containers, tanks, piping, valves and fittings that are located outside and are being used to fuel equipment inside a <i>tent</i> or <i>membrane structure</i> shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an <i>approved</i> location. Portable LP-gas containers shall be secured to prevent unauthorized movement.		No major changes to base code, relocated from Section 3104.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3107.14 Flammable and combustible liquids. The storage of <i>flammable</i> and <i>combustible liquids</i> and the use of flammable-liquid-fueled equipment shall be in accordance with Sections 3107.14.1 through 3107.14.3.		No major changes to base code, relocated from Section 3104.
	3107.14.1 Use. Flammable-liquid-fueled equipment shall not be used in <i>tents</i> or <i>membrane structures</i> .		No major changes to base code, relocated from Section 3104.
	3107.14.2 Flammable and combustible liquid storage. <i>Flammable</i> and <i>combustible liquids</i> shall be stored outside in an <i>approved</i> manner not less than 50 feet (15 240 mm) from <i>tents</i> or <i>membrane structures</i> . Storage shall be in accordance with Chapter 57.		No major changes to base code, relocated from Section 3104.
	3107.14.3 Refueling. Refueling shall be performed in an <i>approved</i> location not less than 20 feet (6096 mm) from <i>tents</i> or <i>membrane structures</i> .		No major changes to base code, relocated from Section 3104.
	3107.15 Display of motor vehicles. Liquid- and gas-fueled vehicles and equipment used for display within <i>tents</i> or <i>membrane structures</i> shall be in accordance with Sections 3107.15.1 through 3107.15.5.3.		No major changes to base code, relocated from Section 3104.
	3107.15.1 Batteries. Batteries shall be disconnected in an appropriate manner, except where the <i>fire code official</i> requires that the batteries remain connected to maintain safety features.		No major changes to base code, relocated from Section 3104.
	3107.15.2 Fuel. Vehicles or equipment shall not be fueled or defueled within the <i>tent</i> or <i>membrane structure</i> .		No major changes to base code, relocated from Section 3104.
	3107.15.2.1 Quantity limit. Fuel in the fuel tank shall not exceed one-quarter of the tank capacity or 5 gallons (19 L), whichever is less.		No major changes to base code, relocated from Section 3104.
	3107.15.2.2 Inspection. Fuel systems shall be inspected for leaks.		No major changes to base code, relocated from Section 3104.
	3107.15.2.3 Closure. Fuel tank openings shall be locked and sealed to prevent the escape of vapors.		No major changes to base code, relocated from Section 3104.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3107.15.3 Location. The location of vehicles or equipment shall not obstruct <i>means of egress</i> .		No major changes to base code, relocated from Section 3104.
	3107.15.4 Places of assembly. When a compressed natural gas (CNG) or liquefied petroleum gas (LP-gas) powered vehicle is parked inside a place of assembly, all of the following conditions shall be met: 1. The quarter-turn shutoff valve or other shutoff valve on the outlet of the CNG or LP-gas container shall be closed and the engine shall be operated until it stops. Valves shall remain closed while the vehicle is indoors. 2. The hot lead of the battery shall be disconnected. 3. Dual-fuel vehicles equipped to operate on gasoline and CNG or LP-gas shall comply with this section and Sections 3107.15.1 through 3107.15.3 for gasoline-powered vehicles.		No major changes to base code, relocated from Section 3104.
	3107.15.5 Competitions and demonstrations. Liquid- and gas-fueled vehicles and equipment used for competition or demonstration within a <i>tent</i> or <i>membrane structure</i> shall comply with Sections 3107.15.5.1 through 3107.15.5.3.		No major changes to base code, relocated from Section 3104.
	3107.15.5.1 Fuel storage. Fuel for vehicles or equipment shall be stored in <i>approved</i> containers in an <i>approved</i> location outside of the structure in accordance with Section 3107.14.2.		No major changes to base code, relocated from Section 3104.
	3107.15.5.2 Fueling. Refueling shall be performed outside of the structure in accordance with Section 3107.14.3. 3107.15.5.3 Spills. Fuel spills shall be cleaned up immediately.		No major changes to base code, relocated from Section 3104.
	3107.16 Separation of generators. Generators and other internal combustion power sources shall be separated from <i>tents</i> or <i>membrane structures</i> by not less than 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other <i>approved</i> means.		No major changes to base code, relocated from Section 3104.
	3107.17 Standby personnel. Where, in the opinion of the <i>fire code official</i> , it is essential for public safety in a <i>tent</i> or <i>membrane structure</i> 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 <i>owner</i> , agent or lessee shall employ one or more qualified persons, as required and <i>approved</i> , to remain on duty during the times such places are open to the public, or when such activity is being conducted.		No major changes to base code, relocated from Section 3104.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3107.17.1 Duties. 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.		No major changes to base code, relocated from Section 3104.
	3107.17.2 Crowd managers. There shall be trained crowd managers or trained crowd supervisors at a ratio of one crowd manager or supervisor for every 250 occupants, as <i>approved</i> .		No major changes to base code, relocated from Section 3104.
	3107.18 Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the area occupied by a <i>tent</i> or <i>membrane structure</i> , and from areas within 30 feet (9144 mm) of such structures.		No major changes to base code, relocated from Section 3104.
	3107.19 Combustible waste material. The floor surface inside <i>tents</i> or <i>membrane structures</i> and the grounds outside and within a 30-foot (9144 mm) perimeter shall be kept free from combustible waste and other combustible materials that could create a fire hazard. Such waste shall be stored in <i>approved</i> containers and removed from the premises not less than once a day during the period the structure is occupied by the public.		No major changes to base code, relocated from Section 3104.
2015 Houston IFC – Chapter 32 Combustible Storage	2021 IFC – Chapter 32 – Combustible Storage	2021 Houston Amendments	Code Change Summary
	SECTION 3201 GENERAL		
	3201.2 Permits. A permit shall be required as set forth in Sections 105.6 and 105.7.		Base code renumbering.
	3201.3 Construction documents. At the time of building permit application for new structures designed to accommodate high-piled storage or for requesting a change of occupancy/use, and at the time of application for a storage permit, plans and specifications shall be submitted for review and approval. In addition to the information required by the <i>International Building Code</i> , the storage permit submittal shall include the information specified in this section. ~~Following approval of the plans, a copy of the approved plans shall be maintained on the premises in an approved location.~~ The ~~plans~~ construction documents shall include all of the following: 1. Floor plan of the building showing locations and dimensions of <i>high-piled storage areas</i> . 2. Usable storage height for each storage area. 3. Number of tiers within each rack, if applicable. 4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement. 5. Aisle dimensions between each storage array. 6. Maximum pile volume for each storage array.		Minor wordsmithing, no major change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	7. Location and classification of commodities in accordance with Section 3203. 8. Location of commodities that are banded or encapsulated. 9. Location of required fire department access doors. 10. Type of fire ~~suppression and fire detection~~ protection systems. 11. Location of valves controlling the water supply of ceiling and in-rack sprinklers. 12. Type, location and specifications of smoke removal and curtain board systems. 13. Dimension and location of transverse and longitudinal flue spaces. 14. Additional information regarding required design features, commodities, storage arrangement and fire protection features within the <i>high-piled storage area</i> shall be provided at the time of permit, ~~when where~~ required by the <i>fire code official</i> .		
	3201.3.1 Approved construction documents. Following approval of the construction documents, a copy of the approved plans shall be maintained on the premises in an approved location.		New requirements for construction documents.
	3201.3.2 Approved storage layout. A floor plan, of legible size, shall be provided, mounted on a wall and protected from damage. The floor plan shall be mounted in an approved location and show the following: 1. Locations, dimensions and rack layout of high-piled storage areas. 2. Design storage height for each storage area. 3. Types of commodities. 4. Commodity clearance between top of storage and the sprinkler deflector for each storage arrangement. 5. Aisle dimensions between each storage array. 6. For palletized and solid-piled storage, the maximum pile volume for each storage array. 7. Location and classification of commodities in accordance with Section 3203. 8. Location of required fire department access doors. 9. Location of valves controlling the water supply of ceiling and in-rack sprinklers.		New requirements for construction document details.
	3201.4 Fire safety and evacuation plan. ~~Where required by the Section 403, a fire code official, a fire safety and evacuation plan for public accessible areas and a separate set of plans indicating location and width of aisles, location of exits, exit access doors, exit signs, height of storage, and locations of hazardous materials shall be submitted at the time of permit application for review and approval. Following approval of the plans, A copy of the approved fire safety and evacuation plans shall be maintained on the premises in an approved location.~~ Where required by the Section 403, a fire safety and evacuation plan shall be submitted at the time of permit application for review and approval. A copy of the approved fire safety and evacuation plan shall be maintained on the premises in an approved location.		Updates to fire evacuation plan requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	SECTION 3203 COMMODITY CLASSIFICATION 3203.1 Classification of commodities. Commodities shall be classified as Class I, II, III, IV or high hazard in accordance with ~~this~~ Sections 3203.2 through 3203.10.3. Materials listed within each commodity classification are assumed to be unmodified for improved combustibility characteristics. Use of flame-retarding modifiers or the physical form of the material could change the classification. ~~See Section 3203.7 for classification of Group A, B and C plastics.~~		Minor changes and base code renumbering.
	3203.2 Class I commodities. Class I commodities are ~~essentially~~ noncombustible products ~~on wooden pallets~~, in ordinary corrugated cartons with or without single-thickness dividers, or in ordinary paper wrappings with or without wood pallets. ~~Class I commodities are allowed to contain a limited amount of Group A plastics shall be limited in accordance with Section 3203.9. Examples of Class I commodities include, but are not limited to, the following:~~ ~~Alcoholic beverages not exceeding 20 percent alcohol~~ ~~Appliances noncombustible, electrical~~ ~~Cement in bags~~ ~~Ceramics~~ ~~Dairy products in nonwax-coated containers (excluding bottles)~~ ~~Dry insecticides~~ ~~Foods in noncombustible containers~~ ~~Fresh fruits and vegetables in nonplastic trays or containers~~ ~~Frozen foods~~ ~~Glass~~ ~~Glycol in metal cans~~ ~~Gypsum board~~ ~~Inert materials, bagged~~ ~~Insulation, noncombustible~~ ~~Noncombustible liquids in plastic containers having less than a 5-gallon (19 L) capacity~~ ~~Noncombustible metal products~~		Section has been simplified and quantities moved to Section 3203.9.
	3203.3 Class II commodities. Class II commodities are Class I products in slatted wooden crates, solid wooden boxes, multiple-thickness paperboard cartons or equivalent combustible packaging material with or without wood pallets. ~~Class II commodities are allowed to contain a limited amount of Group A plastics shall be limited in accordance with Section 3203.9. Examples of Class II commodities include, but are not limited to, the following:~~ ~~Alcoholic beverages not exceeding 20 percent alcohol, in combustible containers~~ ~~Foods in combustible containers~~ ~~Incandescent or fluorescent light bulbs in cartons~~ ~~Thinly coated fine wire on reels or in cartons~~		Section has been simplified and quantities moved to Section 3203.9.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3203.4 Class III commodities. Class III commodities are ~~commodities are products~~ of wood, paper, natural fiber cloth, or Group C plastics or products thereof, with or without wood pallets. ~~Products are allowed to contain limited amounts of Group A or B plastics, such as metal bicycles with plastic handles, pedals, seats and tires.~~ Group A plastics shall be limited in accordance with Section 3203.9. ~~Examples of Class III commodities include, but are not limited to, the following:~~ ~~Aerosol, Level 1 (see Chapter 51)~~ ~~Biomass briquettes, bagged, and static piles~~ ~~Biomass pellets, bagged, and static piles~~ ~~Charcoal~~ ~~Combustible fiberboard~~ ~~Cork, baled~~ ~~Corn cobs, static piles~~ ~~Corn stover, baled and chopped~~ ~~Feed, bagged~~ ~~Fertilizers, bagged~~ ~~Firewood~~ ~~Food in plastic containers~~ ~~Forest residue, round wood or chipped (branches, bark, cross-cut ends, edgings and treetops)~~ ~~Furniture: wood, natural fiber, upholstered, nonplastic, wood or metal with plastic padded and covered armrests~~ ~~Glycol in combustible containers not exceeding 25 percent~~ ~~Lubricating or hydraulic fluid in metal cans~~ ~~Lumber~~ ~~Mattresses, excluding foam rubber and foam plastics~~ ~~Noncombustible liquids in plastic containers having a capacity of more than 5 gallons (19 L)~~ ~~Paints, oil base, in metal cans~~ ~~Paper, waste, baled~~ ~~Paper and pulp, horizontal storage, or vertical storage that is banded or protected with approved wrap~~ ~~Paper in cardboard boxes~~ ~~Peanut hulls, bagged, and static piles~~ ~~Pillows, excluding foam rubber and foam plastics~~ ~~Plastic-coated paper food containers~~ ~~Plywood~~ ~~Rags, baled~~ ~~Recovered construction wood~~ ~~Rice hulls, bagged, and static piles~~ ~~Rugs, without foam backing~~ ~~Seasonal grasses, baled and chopped~~ ~~Straw, baled~~ ~~Sugar, bagged~~ ~~Wood, baled~~ ~~Wood chips, bagged, and static piles~~ ~~Woody biomass, round wood or chipped (vase-shaped stubby bushes, bamboo, willows; branches, bark and stem wood)~~ ~~Wood doors, frames and cabinets~~ ~~Wood pellets, bagged, and static piles~~ ~~Yarns of natural fiber and viscose~~		Section has been simplified and quantities moved to Section 3203.9.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3203.5 Class IV commodities. Class IV commodities are Class I, II or III products containing Group A plastics in ordinary corrugated cartons ~~and~~; Class I, II and III products with Group A plastic packaging, ~~with or without pallets~~. Group B plastics; and free-flowing Group A plastics ~~are with also~~ included in this class, with or without wood pallets. The total amount of nonfree-flowing Group A plastics shall be ~~limited~~ in accordance with Section 3203.9. ~~Examples of Class IV commodities include, but are not limited to, the following:~~ ~~Aerosol, Level 2 (see Chapter 51)~~ ~~Alcoholic beverages, exceeding 20 percent but less than 80 percent alcohol, in cans or bottles in cartons~~ ~~Clothing, synthetic or nonviscose~~ ~~Combustible metal products (solid)~~ ~~Furniture, plastic upholstered~~ ~~Furniture, wood or metal with plastic covering and padding~~ ~~Glycol in combustible containers (greater than 25 percent and less than 50 percent)~~ ~~Linoleum products~~ ~~Paints, oil base in combustible containers~~ ~~Pharmaceutical, alcoholic elixirs, tonics, etc.~~ ~~Rugs, foam back~~ ~~Shingles, asphalt~~ ~~Thread or yarn, synthetic or nonviscose~~		Section has been simplified and quantities moved to Section 3203.9.
	3203.6 High-hazard commodities. High-hazard commodities are ~~high-hazard~~ products presenting special fire hazards beyond those of Class I, II, III or IV. Group A plastics not otherwise classified are included in this class. ~~Examples of high-hazard commodities include, but are not limited to, the following:~~ ~~Aerosol, Level 3 (see Chapter 51)~~ ~~Alcoholic beverages, exceeding 80 percent alcohol, in bottles or cartons~~ ~~Commodities of any class in plastic containers in carousel storage~~ ~~Flammable solids (except solid combustible metals)~~ ~~Glycol in combustible containers (50 percent or greater)~~ ~~Lacquers that dry by solvent evaporation, in metal cans or cartons~~ ~~Lubricating or hydraulic fluid in plastic containers~~ ~~Mattresses, foam rubber or foam plastics~~ ~~Pallets and flats that are idle combustible~~ ~~Paper and pulp, rolled, in vertical storage that is unbanded or not protected with an approved wrap~~ ~~Paper, asphalt, rolled, horizontal storage~~ ~~Paper, asphalt, rolled, vertical storage~~ ~~Pillows, foam rubber and foam plastics~~ ~~Pyroxylin~~ ~~Rubber tires~~ ~~Vegetable oil and butter in plastic containers~~		Section has been simplified and quantities moved to Section 3203.9.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3203.7.1 Group A plastics. Group A plastics are plastic materials having a heat of combustion that is much higher than that of ordinary combustibles, and a burning rate higher than that of Group B plastics. ~~Examples of Group A plastics include, but are not limited to, the following:~~ ~~ABS (acrylonitrile butadiene styrene copolymer)~~ ~~Acetal (polyformaldehyde)~~ ~~Acrylic (polymethyl methacrylate)~~ ~~Butyl rubber~~ ~~EPDM (ethylene propylene rubber)~~ ~~FRP (fiberglass reinforced polyester)~~ ~~Natural rubber (expanded)~~ ~~Nitrile rubber (acrylonitrile butadiene rubber)~~ ~~PET or PETE (polyethylene terephthalate)~~ ~~Polybutadiene~~ ~~Polycarbonate~~ ~~Polyester elastomer~~ ~~Polyethylene~~ ~~Polypropylene~~ ~~Polystyrene (expanded and unexpanded)~~ ~~Polyurethane (expanded and unexpanded)~~ ~~PVC (polyvinyl chloride greater than 15 percent plasticized, e.g., coated fabric unsupported film)~~ ~~SAN (styrene acrylonitrile)~~ ~~SBR (styrene butadiene rubber)~~		Section has been simplified and quantities moved to Section 3203.9.
	3203.7.2 Group B plastics. Group B plastics are plastic materials having a heat of combustion and a burning rate higher than that of ordinary combustibles, but not as high as those of Group A plastics. ~~Examples of Group B plastics include, but are not limited to, the following:~~ ~~Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)~~ ~~Chloroprene rubber~~ ~~Fluoroplastics (ECTFE, ethylene chlorotrifluoroethylene copolymer; ETFE, ethylene tetrafluoroethylene copolymer; FEP, fluorinated ethylene propylene copolymer)~~ ~~Natural rubber (nonexpanded)~~ ~~Nylon (Nylon 6, Nylon 6/6)~~ ~~PVC (polyvinyl chloride greater than 5 percent, but not exceeding 15 percent plasticized)~~ ~~Silicone rubber~~		Section has been simplified and quantities moved to Section 3203.9.
	3203.7.3 Group C plastics. Group C plastics are plastic materials having a heat of combustion and a burning rate similar to those of ordinary combustibles. ~~Examples of Group C plastics include, but are not limited to, the following:~~ ~~Fluoroplastics (PCTFE, polychlorotrifluoroethylene; PTFE, polytetrafluoroethylene)~~ ~~Melamine (melamine formaldehyde)~~ ~~Phenol~~ ~~PVC (polyvinyl chloride, rigid or plasticized less than 5 percent, e.g., pipe, pipe fittings)~~ ~~PVDC (polyvinylidene chloride)~~		Section has been simplified and quantities moved to Section 3203.9.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~PVDF (polyvinylidene fluoride)~~ ~~PVF (polyvinyl fluoride)~~ ~~Urea (urea formaldehyde)~~		
	~~3203.7.4 Limited quantities of Group A plastics in mixed commodities. Figure 3203.7.4 shall be used to determine the quantity of Group A plastics allowed to be stored in a package or carton or on a pallet without increasing the commodity classification.~~		Base code section removed.
	~~FIGURE 3203.7.4~~ ~~MIXED COMMODITIES~~		Base code table removed.
	3203.8 Examples of commodity classification. Table 3203.8 shall be used to determine the commodity classification for various products and materials. Products not found in the list shall be classified based on the classification descriptions in Sections 3203.2 through 3203.6 and the products they most nearly represent in Table 3203.8. Table 3203.8 considers the product and the packaging if listed with the item. Products with additional packaging consisting of Group A plastics shall be classified in accordance with Section 3203.9. The commodity classifications are based on products with, or without, wood pallets. Where plastic pallets are used, the commodity classification shall be modified in accordance with Section 3203.10.		New section for commodity classification examples.
	TABLE 3203.8 EXAMPLES OF COMMODITY CLASSIFICATION		New table for commodity classification examples.
	3203.9 Limited quantities of Group A plastics in mixed commodities. Figures 3203.9(1) and 3203.9(2) shall be used to determine the commodity classification based on the quantity of Group A plastics in the following situations: 1. The product is not listed in Table 3203.8 and contains Group A plastics. 2. The commodity contains Group A plastics and is not classified as high-hazard in Table 3203.8. 3. The product listing in Table 3203.8 does not specifically include packaging, and the packaging material includes Group A plastics.		New section for quantities of commodities.
	~~FIGURE 3203.9(1) EVALUATION BY VOLUME OF GROUP A EXPANDED PLASTICS IN MIXED COMMODITIES^{a, b}~~ FIGURE 3203.9(1) EVALUATION BY VOLUME OF GROUP A EXPANDED PLASTICS IN MIXED COMMODITIES^{a, b}		New figure added to base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~FIGURE 3203.9(2) EVALUATION BY WEIGHT OF GROUP A EXPANDED PLASTICS IN MIXED COMMODITIES^{a, b, c}~~ FIGURE 3203.9(2) EVALUATION BY WEIGHT OF GROUP A EXPANDED PLASTICS IN MIXED COMMODITIES ^{a, b, c}		New figure added to base code.
	3203.9.1 Classifying mixed commodities with limited Group A plastics. The percentage of Group A plastics determined in accordance with Section 3203.9.2 shall be used in Figures 3203.9(1) and 3203.9(2). Results from Figure 3203.9(1) must be compared to results from Figure 3203.9(2) and the commodity will be classified with the highest commodity classification. Figures 3203.9(1) and 3203.9(2) shall not be used to reduce the commodity classification shown in Table 3203.8.		New requirements for mixed commodities.
	3203.9.2 Percentage of Group A plastics. The pallet, if any, shall not be included when measuring the weight of the commodity (WPU or WPE) or the volume of the commodity (VPE). The pallet, if any, shall be included when measuring the weight of the entire load (WL) or the volume of the entire load (VL). Exception: Where noncombustible pallets are used, the pallets shall not be included in the volume and weight calculations. The percentage by weight of Group A unexpanded plastics in the load shall be calculated in accordance with Equation 32-1. The percentage by volume of Group A expanded plastics in the load shall be calculated in accordance with Equation 32-2. The percentage by weight of Group A expanded plastics in the load shall be calculated in accordance with Equation 32-3. (Equation 32-1) where: PWU = Percentage by weight of Group A unexpanded plastic. WPU = Weight of Group A unexpanded plastic in the commodity, not including the weight of the pallet, if any. WL = Weight of the entire load, including the weight of the pallet, if any. (Equation 32-2) where: PVE = Percentage by volume of Group A expanded plastic. VPE = Volume of Group A expanded plastic in the commodity, not including the volume of the pallet, if any. VL = Volume of the entire load, including the volume of the pallet, if any. (Equation 32-3) where: PWE = Percentage by weight of Group A expanded plastic.		New requirements for Group A plastics.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	WPE = Weight of Group A expanded plastic in the commodity, not including the weight of the pallet, if any. WL = Weight of the entire load, including the weight of the pallet, if any.		
	3203.10 Plastic pallets. The commodity classification determined in Section 3203.8 or 3203.9 shall be modified in accordance with Sections 3203.10.1 through 3203.10.3 where plastic pallets are used. Exception: The commodity classification is not modified where any of the following conditions occur: 1. Group A plastic commodities are stored on plastic pallets. 2. Sprinkler protection consists of sprinklers at the ceiling only, using sprinklers with a minimum K-factor of K-16.8 (240). 3. The plastic pallets are listed and labeled in accordance with Section 3206.4.1.1.		New requirements for plastic pallet storage.
	3203.10.1 Unreinforced plastic pallets. For Class I through IV commodities, where unreinforced polypropylene or unreinforced high-density polyethylene plastic pallets are used, the commodity classification shall be increased one class. To be considered unreinforced plastic pallets, the pallets shall be marked with a permanent symbol indicating the pallet is unreinforced.		New requirements for plastic pallet storage.
	3203.10.2 Reinforced plastic pallets. For Class I through IV commodities, where reinforced polypropylene or reinforced high-density polyethylene plastic pallets are used, the commodity classification shall be increased two classes except for Class IV commodities, which shall be increased to a high-hazard (Group A plastic, cartoned, unexpanded) commodity.		New requirements for plastic pallet storage.
	3203.10.3 Other pallets. For Class I through IV commodities stored on plastic pallets other than polypropylene or high-density polyethylene plastic pallets, the commodity classification shall be increased two classes unless specific testing is conducted by a testing laboratory.		New requirements for other pallet storage.
	SECTION 3204 DESIGNATION OF HIGH-PILED STORAGE AREAS 3204.1 General. High-piled storage areas, and portions of high-piled storage areas intended for storage of a different commodity class than adjacent areas, shall be designed and specifically designated to contain Class I, Class II, Class III, Class IV or high-hazard commodities. The designation of a high-piled ~~combustible~~ storage area, or portion thereof intended for storage of a different commodity class, shall be based on the highest hazard commodity class stored except as provided in Section 3204.2.		Minor wordsmithing, no major change to code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3204.2 Designation based on engineering analysis. The designation of a high-piled combustible storage area, or portion thereof, is allowed to be based on a lower hazard class than that of the highest class of commodity stored when where a limited quantity of the higher hazard commodity has been demonstrated by engineering analysis to be adequately protected by the automatic sprinkler system provided. The engineering analysis shall consider the ability of the sprinkler system to deliver the higher density required by the higher hazard commodity. The higher density shall be based on the actual storage height of the pile or rack and the minimum allowable design area for sprinkler operation as set forth in the density/area figures provided in NFPA 13. The contiguous area occupied by the higher hazard commodity shall not exceed 120 square feet (11 m²) and additional areas of higher hazard commodity shall be separated from other such areas by 25 feet (7620 mm) or more. The sprinkler system shall be capable of delivering the higher density over a minimum area of 900 square feet (84 m²) for wet pipe systems and 1,200 square feet (111 m²) for dry pipe systems. The shape of the design area shall be in accordance with Section 903.		Minor wordsmithing, no major change to code.
	SECTION 3205 HOUSEKEEPING AND MAINTENANCE 3205.1 Storage layout plan maintenance. The <u>approved storage layout shall be verified and evaluated annually in accordance with Section 3201.3.2. Modifications or changes to the provisions of the approved storage layout shall not be made without the prior approval of the fire code official.</u>		New storage layout plan requirements.
	~~3205.1~~ 3205.2 Rack structures.		Base code renumbering.
	~~3205.2~~ 3205.3 Ignition sources.		Base code renumbering.
	~~3205.3~~ 3205.4 Smoking..		Base code renumbering.
	~~3205.4~~ 3205.5 Aisle maintenance. When restocking is not being conducted, aisles shall be kept clear of storage, waste material and debris. Fire department access doors, aisles and exit doors shall not be obstructed. During restocking operations using manual stocking methods, a minimum unobstructed aisle width of 24 inches (610 mm) shall be maintained in 48-inch (1219 mm) or smaller aisles, and a minimum unobstructed aisle width of one-half of the required aisle width shall be maintained in aisles greater than 48 inches (1219 mm). During mechanical stocking		Base code renumbering, new exception included language provided by NFPA 13.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	operations, a minimum unobstructed aisle width of 44 inches (1118 mm) shall be maintained in accordance with Section 3206.10. Exception: In high-piled single- and double-row rack storage of combustible materials protected by <i>automatic sprinkler systems</i> designed and installed in accordance with the requirements of NFPA 13 governing the use of K-25.2 (360) sprinklers, displays and wing stacks not exceeding 48 inches (1219 mm) in height provided that they do not obstruct or reduce the clear width of the aisle to less than 48 inches (1219 mm).		
	~~3205.5~~ 3205.6 Pile dimension and height limitations.		Base code renumbering.
	~~3205.6~~ 3205.7 Designation of storage heights.		Base code renumbering.
	~~3205.7~~ 3205.8 Arrays. Arrays shall comply with Section 3207.4. ~~3205.8~~		Base code renumbering.
	3205.9 Flue spaces.		Base code renumbering.
	SECTION 3206 GENERAL FIRE PROTECTION AND LIFE SAFETY FEATURES 3206.1 General. Fire protection and life safety features for high-piled storage areas shall be in accordance with Sections 3206.2 through 3206.11.		Base code renumbering.
	3206.2 Extent and type of protection. Where required by Table 3206.2, fire detection systems, smoke and heat removal and automatic sprinkler design densities shall extend the lesser of 15 feet (4572 mm) beyond the high-piled storage area or to a permanent partition. Where portions of high-piled storage areas have different fire protection requirements because of commodity, method of storage or storage height, the fire protection features required by Table 3206.2 within this area shall be based on the most restrictive design requirements, be provided to protect the high-piled storage area.		Minor updates to reference Table 3206.2.
	3206.2.1 Extent of protection. The fire safety features required in Table 3206.2 shall extend to the lesser of 15 feet (4572 mm) beyond the high-piled storage area or a full height wall. Where portions of high-piled storage areas have different fire protection requirements because of commodity,		New requirements for fire protection in accordance with Table 3206.2.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	method of storage or storage height, the fire protection features required by Table 3206.2 within this area shall be based on the most restrictive design requirements.		
	3206.3 High-piled storage areas. For the application of Table 3206.2, the size of the high-piled storage areas shall be determined in accordance with Sections 3206.3.1 through 3206.3.2.1.		New requirements for high-pile storage areas.
	3206.3.1 Size of high-piled storage area. The size of each high-piled storage area shall include the footprint of the actual high-piled storage racks, shelves or piles and the following aisles:		New requirements for high-pile storage areas.
	~~3206.3 Separation of high-piled storage areas. High-piled storage areas shall be separated from other portions of the building where required by Sections 3206.3.1 through 3206.3.2.2. For the application of Table 3206.2, the size of the high-piled storage areas shall be determined in accordance with Sections 3206.3.1 through 3206.3.2.1.~~		New requirements for high-pile storage areas.
	~~3206.3.1 Separation from other uses. Size of high-piled storage area. Mixed occupancies shall be separated in accordance with the International Building Code. The size of each high-piled storage area shall include the footprint of the actual high-piled storage racks, shelves or piles and the following aisles:~~ 1. Interior aisles within the footprint of the storage area. 2. An aisle around the perimeter of the footprint with a minimum width as required in Section 3206.10.1 or the dimension to a wall or full height wall, whichever is less.		New requirements for high-pile storage areas.
	~~3206.3.2 Multiple high-piled storage areas. Multiple high-piled storage areas shall be in accordance with Section 3206.3.2.1 or 3206.3.2.2. Where a building contains multiple high-piled storage areas, the aggregate of all high-piled storage areas shall be used for the application of Table 3206.2 unless the high-piled storage areas are separated in accordance with one of the following:~~ 1. High-piled storage areas separated by fire barriers with a minimum fire-resistance-rating of 1 hour constructed in accordance with Section 707 of the International Building Code. 2. In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, high-piled storage areas separated by 100 feet (30 480 mm) or more. The area providing the separation shall not contain high-piled combustible storage.		New requirements for high-pile storage areas.
	~~3206.3.2.1 Aggregate area. Multiple class high-piled storage areas. The aggregate of all high-piled storage areas within a building shall be used for the application of Table 3206.2 unless such areas are separated from each other by 1-hour fire barriers constructed in~~		New requirements for high-pile storage areas.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~accordance with Section 707 the International Building Code. Openings in such fire barriers shall be protected by opening protectives having a 1-hour fire protection rating. High-piled storage areas classified as Class I through IV not separated from high-piled storage areas classified as high hazard shall utilize the aggregate of all high-piled storage areas as high hazard for the purposes of the application of Table 3206.2. Multiple class high-piled storage areas meeting the separation requirements in Section 3206.3.2 shall be considered as separated. The fire safety features in Table 3206.2 shall be extended beyond the higher-hazard storage area in accordance with Section 3206.2.1.~~		
	3206.3.2.2 Multiclass high-piled storage areas. High-piled storage areas classified as Class I through IV not separated from high-piled storage areas classified as high hazard shall utilize the aggregate of all high-piled storage areas as high hazard for the purposes of the application of Table 3206.2. To be considered as separated, 1-hour fire barriers shall be constructed in accordance with Section 707 of the International Building Code. Openings in such fire barriers shall be protected by opening protectives having a 1-hour fire protection rating. Exception: As provided for in Section 3204.2.		New requirements for high-pile storage areas.
	3206.4.1 Pallets. Automatic sprinkler system requirements based upon the presence of pallets shall be in accordance with NFPA 13.		Minor wordsmithing, no major change.
	3206.4.1.1 Plastic pallets. Plastic pallets listed and labeled in accordance with ~~UL 2335 or~~ FM 4996 or UL 2335 shall be treated as wood pallets for determining required sprinkler protection.		Minor wordsmithing, no major change.
	3206.6 Building access. ~~Where building access is required by Table 3206.2,~~ Fire apparatus access roads in accordance with Section 503 shall be provided within 150 feet (45 720 mm) of all portions of the exterior walls of buildings used for high-piled storage. Exception: Where fire apparatus access roads cannot be installed because of topography, railways, waterways, nonnegotiable grades or other similar conditions, the fire code official is authorized to require additional fire protection.		Minor wordsmithing, no major change.
	~~3206.6.1 Access doors. Where building access is required by Table 3206.2, fire department access doors shall be provided in accordance with this section. Access doors shall be accessible without the use of a ladder.~~		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3206.6.1.1 Number of doors required. Not less than one access door shall be provided in each 100 linear feet (30 480 mm), or fraction thereof, of the exterior walls that face required fire apparatus access roads. The required access doors shall be distributed such that the linear distance between adjacent access doors does not exceed 100 feet (30 480 mm).~~ ~~Exception: The linear distance between adjacent access doors is allowed to exceed 100 feet (30 480 mm) in existing buildings where no change in occupancy is proposed. The number and distribution of access doors in existing buildings shall be approved.~~		Base code section removed.
	~~3206.6.1.2 Door size and type. Access doors shall be not less than 3 feet (914 mm) in width and 6 feet 8 inches (2032 mm) in height. Roll-up doors shall not be used unless approved.~~		Base code section removed.
3206.6.1.4 Marking of access doors. Firefighter access doors shall be labeled with HFD on the exterior in the top left-hand corner. The letters shall be not less than 4 inches (100 mm) in height on a contrasting background. Lettering shall be legible, durable and reflective in nature.			Removed Houston amendment to go with base code provisions.
	~~3206.7 Smoke and heat removal. Fire department access doors. Where smoke and heat removal is required by Table 3206.2 it shall be provided in accordance with Section 940. Where fire department access doors are required by Table 3206.2, fire department access doors shall be provided in accordance Sections 3206.7.1 through 3206.7.8.~~		Update to fire department access requirements.
	~~3206.7.1 Exterior walls without fire department access doors. Fire department access doors are not required in an exterior wall that does not face a fire apparatus access road provided that all of the following conditions occur:~~ ~~1. The opposite exterior wall faces a fire apparatus access road.~~ ~~2. The opposite exterior wall is provided with fire department access doors.~~ ~~3. The entire interior surface of the exterior wall is less than 150 feet (45 720 mm) away from a fire department access door.~~ ~~4. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.~~		Update to fire department access requirements.
	~~3206.7.2 Where located. Where exterior walls surrounding high-piled storage areas face fire apparatus access roads, such walls shall be provided with fire department access doors.~~		Update to fire department access requirements.
	~~3206.7.3 Access to doors. Fire department access doors shall be able to be accessed without the use of a ladder.~~		Update to fire department access requirements.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3206.7.4 Marking on fire department access doors. Fire department access doors shall be labeled on the exterior side with the following sign or other approved sign: FIRE DEPARTMENT ACCESS DOOR DO NOT BLOCK The lettering shall be in a contrasting color to the background. Letters shall have a minimum height of 2 inches (51 mm) with a minimum stroke of 3/8 inch (10 mm).		Update to fire department access requirements.
	3206.7.5 Number of doors required. The required fire department access doors shall be distributed such that the lineal distance between adjacent fire department access doors does not exceed 125 feet (38 100 mm) measured center to center. Exception: The linear distance between adjacent access doors shall not exceed 200 feet (60 960 mm) in existing buildings where change in occupancy is not proposed.		Update to fire department access requirements.
	3206.7.6 Door size and type. Fire department access doors shall be not less than 3 feet (914 mm) in width and 6 feet 8 inches (2032 mm) in height. Roll-up doors shall not be considered fire department access doors unless approved.		Update to fire department access requirements.
	3206.7.7 Locking devices. Locking devices on fire department access doors shall be approved.		Update to fire department access requirements.
	3206.7.8 Key box. Where fire department access doors are required, a key box shall be installed in accordance with Section 506.1. The key box shall contain keys or devices to allow for entry through the fire department access doors.	3206.7.8 Key box. Where fire department access doors are required, a key box shall be installed in accordance with Section 506.1 and LSB Standard 5. The key box shall contain keys or devices to allow for entry through the fire department access doors.	Update to fire department access requirements. New Houston amendment to reference LSB #5 for key box requirements.
	3206.8 Smoke and heat removal. Where smoke and heat removal is required by Table 3206.2 it shall be provided in accordance with Section 910.		New requirements for smoke and heat removal.
	~~3206.8~~ 3206.9 Fire department hose connections. Where exit passageways are required by the International Building Code for egress, a Class I standpipe system shall be provided in accordance with Section 905. Exception: ~~Where aisles are precluded by rack storage systems, alternate methods of access and protection are allowed when approved.~~		Base code renumbering, exception for hose connections removed.
	~~3206.9~~ 3206.10 Aisles. Aisles providing access to exits and fire department access doors shall be provided in high-piled storage areas exceeding 500 square feet (46 m²), in accordance with Sections 3206.910.1 through 3206.910.3. Aisles separating storage piles or racks shall comply with NFPA 13. Aisles shall also comply with Chapter 10. Exception: Where aisles are precluded by rack storage systems, alternate methods of access and protection are allowed ~~when~~ where approved.		Base code renumbering, minor updates to code requirements for aisles.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3206.910.1.1 Sprinklered buildings. Aisles in sprinklered buildings shall be not less than 44 inches (1118 mm) wide. Aisles shall be not less than 96 inches (2438 mm) wide in high-piled storage areas exceeding 2,500 square feet (232 m²) in area, that are accessible to the public and designated to contain high-hazard commodities. Exception: Aisles shall be not less than 96 inches (2438 mm) wide in areas open to the public where mechanical stocking methods are used. Exceptions: 1. Aisles in high-piled storage areas exceeding 2,500 square feet (232 m²) in area, that are protected accessible to the public and designated to contain high-hazard commodities, and that are protected by a sprinkler system designed for multiple-row racks of high-hazard commodities, shall be not less than 44 inches (1118 mm) wide. 2. Aisles that are in high-piled storage areas exceeding 2,500 square feet (232 m²) in area, not open to the public and protected by a sprinkler system designed for multiple-row racks, shall be not less than 96 inches (2438 mm) wide in areas accessible to the public where mechanical stocking methods are used.		No Houston amendment.
	SECTION 3207 SOLID-PILED AND SHELF STORAGE 3207.1 General. Shelf storage and storage in solid piles, solid piles on pallets and bin box storage in bin boxes not exceeding 5 feet (1524 mm) in any dimension, shall be in accordance with Sections 3206 and this section.		Minor wordsmithing change.
	3207.4 Arrays.		Minor wordsmithing change.
	SECTION 3208 RACK STORAGE		No Houston amendment.
	3208.1.1 Storage racks. The design and installation of storage racks shall be in accordance with the <i>International Building Code</i>.		New requirements for storage racks to be in accordance with the IBC.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3208.3 Flue spaces. ~~Flue spaces~~ Rack storage areas protected with an automatic sprinkler system shall be provided with flue spaces in accordance with Table 3208.3. Required flue spaces shall be maintained.		Updates to flue space requirements.
	3208.3.1 Flue space protection. ~~Where required by the fire code official, Flue spaces required by Table 3208.3, above the first tier of storage in single-, double- or multiple-row rack storage installations shall, where required by the fire code official, be equipped with approved devices to protect the required flue spaces, protection devices. Such devices shall not be removed or modified.~~		No Houston amendment.
	SECTION 3209 AUTOMATED STORAGE		No Houston amendment.
	3209.4 Automated rack storage. <i>High-piled storage areas</i> with automated rack storage shall be provided with a manually activated emergency shutdown switch <u>and automatic shutdown in accordance with Sections 3209.4.1 and 3209.4.2.</u>		Updates to automatic shutdown requirements.
	3209.4.1 Manual activated shutdown. <u>A manually activated switch shall be provided to initiate the approved automatic shutdown process.</u> The switch shall be clearly identified and shall be in a location <i>approved</i> by the <i>fire code official</i> .		New requirements for manual activated shutdown.
	3209.4.2 Automatic shutdown. <u>Automatic shutdown shall be required for <i>high-piled combustible storage</i> areas greater than 500 square feet (46 m²). The approved automatic shutdown process shall commence upon any of the following events:</u> <u>1. Water flow is detected in the automatic sprinkler system, if present.</u> <u>2. Activation of the fire detection system, if present.</u>		New requirements for automatic shutdown.
	SECTION 3210 SPECIALTY STORAGE 3210.1 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 3206 <u>and</u> 3208 ~~and NFPA 13~~ . Palletized storage of records shall be in accordance with Section 3207.		Minor wordsmithing.
	3210.1.1 Alternative fire protection. <u>The design and installation of automatic fire-extinguishing systems in archives, vaults and record storage rooms shall be in accordance with NFPA 232.</u>		New requirements for alternative fire protection.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
2015 Houston IFC – Chapter 33 Fire Safety During Construction and Demolition	2021 IFC – Chapter 33 – Fire Safety During Construction and Demolition	2021 Houston Amendments	Code Change Summary
	SECTION 3303 OWNER'S RESPONSIBILITY FOR FIRE PROTECTION ~~3308.4~~3303.1 Program superintendent, development and maintenance. The owner shall designate a person to be the fire prevention program superintendent who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project. The fire prevention program superintendent shall have the authority to enforce the provisions of this chapter and other provisions as necessary to secure the intent of this chapter. Where guard service is provided, the superintendent shall be responsible for the guard service, or owner's authorized agent shall be responsible for the development, implementation and maintenance of a an approved , written site safety plan establishing a fire prevention program at the project site applicable throughout all phases of the construction, repair, alteration or demolition work. The plan shall be submitted and approved before a building permit is issued. Any changes to the plan shall address the requirements of this chapter and other applicable portions of this code, the duties of staff and staff training requirements. The plan shall be submitted for approval ~~made available for review by the fire code official upon request~~		Updates to base code requiring development and maintenance of a site safety plan.
	3303.1.1 Components of site safety plans. Site safety plans shall include the following as applicable: 1. Name and contact information of site safety director. 2. Documentation of the training of the site safety director and fire watch personnel. 3. Procedures for reporting emergencies. 4. Fire department vehicle access routes. 5. Location of fire protection equipment, including portable fire extinguishers, standpipes, fire department connections and fire hydrants. 6. Smoking and cooking policies, designated areas to be used where approved , and signage locations in accordance with Section 3305.8. 7. Location and safety considerations for temporary heating equipment. 8. Hot work permit plan. 9. Plans for control of combustible waste material. 10. Locations and methods for storage and use of flammable and combustible liquids and other hazardous materials. 11. Provisions for site security. 12. Changes that affect this plan. 13. Other site-specific information required by the fire code official.		New section outlining items needed for the site safety plan.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~3308.2~~ 3303.2 ~~Program superintendent.~~ Site safety director. The ~~owner~~ shall designate a person to be the fire prevention program superintendent ~~site safety director~~ . The ~~site safety director~~ who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project. The fire prevention program superintendent ~~ensuring compliance with the site safety plan~~ . The ~~site safety director~~ shall have the authority to enforce the provisions of this chapter and other provisions as necessary to secure the intent of this chapter. Where guard service is provided in accordance with NFPA 241, the superintendent ~~site safety director~~ shall be responsible for the guard service.		Updates to provisions for site safety director in charge of fire safety efforts on site.
	3303.3 Daily fire safety inspection. The site safety director shall be responsible for completion of a daily fire safety inspection at the project site. Each day, all building and outdoor areas shall be inspected to ensure compliance with the inspection list in this section. The results of each inspection shall be documented and maintained on-site until a certificate of occupancy has been issued. Documentation shall be immediately available on-site for presentation to the <i>fire code official</i> upon request. 1. Any contractors entering the site to perform hot work each day have been instructed in the hot work safety requirements in Chapter 35, and hot work is performed only in areas <i>approved</i> by the site safety director. 2. Temporary heating equipment is maintained away from combustible materials in accordance with the equipment manufacturer's instructions. 3. Combustible debris, rubbish and waste material is removed from the building in areas where work is not being performed. 4. Temporary wiring does not have exposed conductors. 5. <i>Flammable liquids</i> and other hazardous materials are stored in locations that have been <i>approved</i> by the site safety director when not involved in work that is being performed. 6. Fire apparatus access roads required by Section 3311 are maintained clear of obstructions that reduce the width of the usable roadway to less than 20 feet (6096 mm). 7. Fire hydrants are clearly visible from access roads and are not obstructed. 8. The location of fire department connections to standpipe and in-service sprinkler systems are clearly identifiable from the access road and such connections are not obstructed. 9. Standpipe systems are in service and continuous to the highest work floor, as specified in Section 3313.1. 10. Portable fire extinguishers are available in locations required by Sections 3316 and 3318.3.		New section detailing requirements for daily fire inspections.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary

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	~~3308.3~~3303.4 Prefire plans.<u>Qualifications.</u> The fire prevention program superintendent shall develop and maintain an ~~approved~~ prefire plan in cooperation with the fire chief. The fire chief and the ~~fire code official~~ shall be notified of changes affecting the utilization of information contained in such prefire plans. <u>Site safety directors shall acquire training specific to their roles and responsibilities. Upon request, the training and qualifications of the site safety director shall be submitted to the fire code official for approval.</u>		New requirements for site safety director qualifications.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3303.5 Fire safety requirements for buildings of Types IV-A, IV-B and IV-C construction. Buildings of Types IV-A, IV-B and IV-C construction designed to be greater than six stories above <i>grade plane</i> shall comply with the following requirements during construction unless otherwise <i>approved</i> by the <i>fire code official</i> : 1. Standpipes shall be provided in accordance with Section 3313. 2. A water supply for fire department operations, as <i>approved</i> by the <i>fire code official</i> and the <i>fire chief</i>. 3. Where building construction exceeds six stories above <i>grade plane</i> and noncombustible protection is required by Section 602.4 of the <i>International Building Code</i>, at least one layer of noncombustible protection shall be installed on all building elements on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected. Exception: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction. 4. Where building construction exceeds six stories above <i>grade plane</i>, required exterior wall coverings shall be installed on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected. Exception: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.		New section to address hazards associated with tall wood buildings that do not yet have fire protection systems fully installed.
	~~3308.4~~3303.6 Training. Training of <i>fire watch</i> and other responsible personnel in the use of fire protection equipment shall be the responsibility of the <i>site safety director</i>~~fire prevention program superintendent~~. Records of training shall be kept and made a part of the written plan for the <i>site safety plan</i>~~fire prevention program~~.		Base code renumbering, minor wordsmithing changes.
	~~3308.5~~3303.7 Fire protection devices. The ~~fire prevention program superintendent shall determine~~<i>site safety director shall ensure</i> that all fire protection equipment is maintained and serviced in accordance with this code. ~~The quantity and type of fire protection equipment shall be approved.~~ <i>Fire</i> protection equipment shall be inspected in accordance with the fire protection program.		Base code renumbering, minor wordsmithing changes.
	~~3308.6~~3303.8 Hot work operations. The ~~fire prevention program superintendent shall be responsible for supervising the permit system~~ <i>site safety director shall ensure</i> for hot work operations <i>and permit procedures are</i> in accordance with Chapter 35.		Base code renumbering, minor wordsmithing changes.
	~~3308.7~~3303.9 Impairment of fire protection systems. ~~Impairments~~ <i>The site safety director shall ensure impairments to any fire protection system shall be</i> <i>are</i> in accordance with Section 901.		Base code renumbering, minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3308.7.4~~ 3303.9.1 Smoke detectors and smoke alarms.		Base code renumbering.
	~~3308.8~~ 3303.10 Temporary covering of fire protection devices.		Base code renumbering.
	SECTION 3304 TEMPORARY HEATING EQUIPMENT ~~3303.4~~ 3304.1 Listed. Temporary heating devices shall be listed and labeled in accordance with the International Mechanical Code or the International Fuel Gas Code. The installation, maintenance and use of temporary heating devices shall be in accordance with the terms of the listing, listing and the manufacturer's instructions.		Base code renumbering, minor wordsmithing changes.
	~~3303.2~~ 3304.2 Oil-fired heaters.		Base code renumbering.
3304.2.1 Combustible waste material accumulation. Combustible debris, rubbish and waste material shall not be accumulated within buildings or allowed to accumulate around or overflow from dumpsters. Moved to 3305.2.1			Previous Houston amendment relocated to Section 3305.2.1.
3304.2.2 Combustible waste material removal. Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work. <u>Combustible waste storage dumpsters shall be used and maintained in accordance with Section 304.</u> Moved to 3305.2.2			Previous Houston amendment relocated to Section 3305.2.2.
3304.3 Burning of combustible debris, rubbish and waste. Combustible debris, rubbish and waste material shall not be disposed of by burning on the site unless approved. Moved to 3305.3	~~3303.3~~ 3304.3 LP-gas heaters.		Base code renumbering. Previous Houston amendment relocated to Section 3305.3.
	~~3303.4~~ 3304.4 Refueling.		Base code renumbering.
	~~3303.5~~ 3304.5 Installation.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3303.6~~ 3304.6 Supervision.		Base code renumbering.
	SECTION 3305 PRECAUTIONS AGAINST FIRE ~~3304.4~~ 3305.1 Smoking.		Base code renumbering.
	~~3304.2~~ 3305.2 Combustible debris, rubbish and waste.		Base code renumbering.
	~~3304.2.1~~ 3305.2.1 Combustible waste material accumulation.	3305.2.1 Combustible waste material accumulation. Combustible debris, rubbish and waste material shall not be accumulated within buildings ~~or allowed to accumulate around or overflow from dumpsters.~~	Base code renumbering. No change to Houston amendment, relocated from Section 3304.2.1.
	~~3304.2.2~~ 3305.2.2 Combustible waste material removal.	3305.2.2 Combustible waste material removal. Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work. ~~Combustible waste storage dumpsters shall be used and maintained in accordance with Section 304.~~	Base code renumbering. No change to Houston amendment, relocated from Section 3304.2.2.
	~~3304.2.3~~ 3305.2.3 Rubbish containers.		Base code renumbering.
	~~3304.2.4~~ 3305.2.4 Spontaneous ignition.		Base code renumbering.
	~~3304.3~~ 3305.3 Burning of combustible debris, rubbish and waste.	3305.3 Burning of combustible debris, rubbish and waste. Combustible debris, rubbish and waste material shall not be disposed of by burning on the site ~~unless approved.~~	Base code renumbering. No change to Houston amendment, relocated from Section 3304.3.
	~~3304.4~~ 3305.4 Open burning.		Base code renumbering.
	~~3304.5~~ 3305.5 Fire watch. Where required by the <i>fire code official</i> or the ~~prefire~~ site safety plan established in accordance with Section 3303.1, a fire watch shall be provided for building demolition and for building construction ~~that is hazardous in nature, such as temporary heating or hot work.~~		Base code renumbering, minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3304.5.1~~ 3305.5.1 Fire watch during construction. ~~Where required by the fire code official, a~~ A fire watch shall be provided during nonworking hours for new construction that exceeds 40 feet (12 192 mm) in height above the lowest adjacent grade at any point along the building perimeter, for new multistory construction with an aggregate area exceeding 50,000 square feet (4645 m²) per story or as required by the fire code official.		Base code renumbering, updates to when fire watch is required.
	~~3304.5.2~~ 3305.5.2 Fire watch personnel. Trained personnel shall be provided to serve as an on-site fire watch. Fire watch personnel shall be provided in accordance with this section with not fewer than one ~~approved~~ means for notification of the fire department, and the sole duty of such personnel shall be to perform constant patrols and watch for the occurrence of fire. The combination of fire watch duties and site security duties is acceptable. Fire watch personnel shall be trained in the use of portable fire extinguishers.		Base code renumbering, minor wordsmithing changes.
	3305.5.2.1 Duties. The primary duty of fire watch personnel shall be to perform constant patrols and watch for the occurrence of fire. The combination of fire watch duties and site security duties is acceptable.		New section detailing fire watch duties.
	3305.5.2.2 Training. Personnel shall be trained to serve as an on-site fire watch. Training shall include the use of portable fire extinguishers. Fire extinguishers and fire reporting shall be in accordance with Section 3310.		New section detailing fire watch training.
	3305.5.2.3 Means of notification. Fire watch personnel shall be provided with not fewer than one ~~approved~~ means for notifying the fire department.		New section detailing fire watch notification.
	~~3304.5.3~~ 3305.5.3 Fire watch location and records. The fire watch shall include areas specified by the <u>site safety</u> prefire <i>plan</i> established in accordance with <u>Section 3303</u> . The fire watch personnel shall keep a record of all time periods of duty, including a log entry each time the site was patrolled and each time a structure under construction was entered and inspected. The records and log entries shall be made available for review by the ~~fire code official~~ upon request.		Base code renumbering, minor wordsmithing changes.
	3305.5.4 Fire watch records. Fire watch personnel shall keep a record of all time periods of duty, including the log entry for each time the site was patrolled and each time a structure was entered and inspected. Records shall be made available for review by the ~~fire code official~~ upon request.		New requirements for fire watch records.
	~~3304.6~~ 3305.6 Cutting and welding. ~~Operations involving the use of~~ Welding, cutting, welding shall be done in accordance open torches and other hot work operations and equipment shall comply with Chapter 35.		Base code renumbering, minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3304.7~~ 3305.7 Electrical.		Base code renumbering.
	~~3304.8~~ 3305.8 Cooking. Cooking shall be prohibited except in <i>approved</i> designated cooking areas separated from combustible materials by a minimum of 10 feet (3048 mm). Signs with a minimum letter height of 3 inches (76 mm) and a minimum brush stroke of 1/2 inch (13 mm) shall be posted in conspicuous locations in designated cooking areas and state: DESIGNATED COOKING AREA COOKING OUTSIDE OF A DESIGNATED COOKING AREA IS PROHIBITED		Base code renumbering, updates to separation from combustibles requirements.
	3305.9 Separations between construction areas. Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building shall be constructed of materials that comply with one of the following: 1. Noncombustible materials. 2. Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723. 3. Materials exhibiting a peak heat release rate not exceeding 300 kW/m ² when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m ² in the horizontal orientation on specimens at the thickness intended for use.		New section detailing requirements for separation between construction areas.
	SECTION 3306 FLAMMABLE AND COMBUSTIBLE LIQUIDS ~~3305.4~~ 3306.1 Storage of flammable and combustible liquids.		Base code renumbering.
	~~3305.2~~ 3306.2 Class I and Class II liquids.		Base code renumbering.
	~~3305.3~~ 3306.3 Housekeeping.		Base code renumbering.
	~~3305.4~~ 3306.4 Precautions against fire.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3305.5~~ 3306.5 Handling at point of final use.		Base code renumbering.
	~~3305.6~~ 3306.6 Leakage and spills.		Base code renumbering.
	SECTION 3307 FLAMMABLE GASES ~~3306.1~~ 3307.1 Storage and handling.		Base code renumbering.
	~~3306.2~~ 3307.2 Cleaning with flammable gas.		Base code renumbering.
	~~3306.2.1~~ 3307.2.1 Pipe cleaning and purging.		Base code renumbering.
	SECTION 3308 EXPLOSIVE MATERIALS ~~3307.1~~ 3308.1 Storage and handling.		Base code renumbering.
	~~3307.2~~ 3308.2 Supervision.		Base code renumbering.
	~~3307.3~~ 3308.3 Demolition using explosives.		Base code renumbering.
	SECTION 3309 FIRE REPORTING PORTABLE GENERATORS ~~3309.1 General. Portable generators used at construction and demolition sites shall comply with Section 1204.~~		New portable generator requirements for construction/demolition sites.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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SECTION 3310 ACCESS FOR FIRE FIGHTING AND E.M.S. OPERATIONS 3310.1 Required access. <i>Approved</i> vehicle access for fire fighting and emergency medical service shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30,480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading <u>as required by Section D102.1 of this code</u> under all weather conditions up to the foundation of every structure on the site prior to the start of any vertical construction. Vehicle access shall be maintained until permanent fire apparatus access roads are available. Moved to 3311.1	SECTION 3310 FIRE REPORTING ~~3309.1~~ 3310.1 Emergency telephone.		Base code renumbering. Previous Houston amendment moved to Section 3311.
	SECTION 3311 ACCESS FOR FIRE FIGHTING ~~3310.1~~ 3311.1 Required access.	SECTION 3311 ACCESS FOR FIRE FIGHTING AND E.M.S. OPERATIONS 3311.1 Required access. <i>Approved</i> vehicle access for fire fighting and emergency medical service shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30,480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading <u>as required by Section D102.1 of this code</u> under all weather conditions up to the foundation of every structure on the site prior to the start of any vertical construction. Vehicle access shall be maintained until permanent fire apparatus access roads are available.	Base code renumbering. No change to Houston amendment, relocated from Section 3310.
	~~3310.2~~ 3311.2 Key boxes.		Base code renumbering.
	SECTION 3312 MEANS OF EGRESS ~~[BE] 3311.1~~ 3312.1 Stairways required. Where a building has been constructed to a building height of 50 feet (15 240 mm) or four stories, or where an existing building exceeding 50 feet (15 240 mm) in building height is altered, not less than one temporary lighted stairway shall be provided unless one or more of the permanent stairways are erected as the construction progresses building construction exceeds 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access, a temporary or permanent stairway shall be provided. As construction progresses, such stairway shall be extended to within one floor of the highest point of construction having secured decking or flooring.		Base code renumbering. Updates to means of egress stair requirements.
	~~3311.2~~ 3312.2 Maintenance. Required means of egress and required accessible means of egress shall be maintained during construction and demolition, remodeling or alterations and additions to any building. Exception: Approved temporary means of egress and accessible means of egress systems and facilities.		Base code renumbering, minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3312.3 Storage.		Base code renumbering.
	SECTION 3313 WATER SUPPLY FOR FIRE PROTECTION 3312.43313.1 When required. An <i>approved</i> water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building materials arrives on the site: <u>on commencement of vertical combustible construction and on installation of a standpipe system in buildings under construction, in accordance with Sections 3313.2 through 3313.5.</u> Exception: The <i>fire code official</i> 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.		New section and updates for minimum water supply for fire flow during construction.
	3313.2 Combustible building materials. When combustible building materials of the building under construction are delivered to a site, a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used to provide this fire-flow supply shall be within 500 feet (152 m) of the combustible building materials, as measured along an <i>approved</i> fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.		New section and updates for minimum water supply for fire flow during construction.
	3313.3 Vertical construction of Types III, IV and V construction. Prior to commencement of vertical construction of Type III, IV or V buildings that utilize any combustible building materials, the fire flow required by Sections 3313.3.1 through 3313.3.3 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.		New section and updates for minimum water supply for fire flow during construction.
	3313.3.1 Fire separation up to 30 feet. Where a building of Type III, IV or V construction has a <i>fire separation distance</i> of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide either a minimum of 500 gallons per minute (1893 L/m) or the entire fire flow required for the building when constructed, whichever is greater.		New section and updates for minimum water supply for fire flow during construction.
	3313.3.2 Fire separation of 30 feet up to 60 feet. Where a building of Type III, IV or V construction has a fire separation distance of 30 feet (9144 mm) up to 60 feet (18 288 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide a minimum of 500 gallons per minute (1893 L/m) or 50 percent of the fire flow required for the building when constructed, whichever is greater.		New section and updates for minimum water supply for fire flow during construction.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3313.3.3 Fire separation of 60 feet or greater. Where a building of Type III, IV or V construction has a fire separation of 60 feet (18 288 mm) or greater from a property <i>lot line</i> , a water supply of 500 gallons per minute (1893 L/m) shall be provided.		New section and updates for minimum water supply for fire flow during construction.
	3313.4 Vertical construction, Type I and II construction. If combustible building materials are delivered to the construction site, water supply in accordance with Section 3313.2 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.		New section and updates for minimum water supply for fire flow during construction.
	3313.5 Standpipe supply. Regardless of the presence of combustible building materials, the construction type or the <i>fire separation distance</i> , where a standpipe is required in accordance with Section 3314, a water supply providing a minimum flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30 480 mm) of the fire department connection supplying the standpipe.		New section and updates for minimum water supply for fire flow during construction.
	SECTION 3314 STANDPIPES ~~3313.1~~ 3314.1 Where required. In buildings required to have standpipes by Section 905.3.1, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at accessible locations adjacent to usable stairways. complying with Section 3311.1. As construction progresses, such standpipes shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring.		Base code renumbering, minor wordsmithing changes.
	~~3313.2~~ 3314.2 Buildings being demolished.		Base code renumbering.
	~~3313.3~~ 3314.3 Detailed requirements.	3314.3 Detailed requirements. Standpipes shall be installed in accordance with the provisions of Section 905. ~~Exception: Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes comply with the requirements of Section 905 as to capacity, outlets and materials.~~	Base code renumbering. New Houston amendment removing exception.
		3314.3.1 Temporary standpipes. Temporary standpipes may be provided in place of permanent systems if they are designed to furnish a minimum of 500 gallons (1,893 L) of water per minute at 50 pounds per square inch (345 kPa) pressure with a standpipe size of not less than 4 inches (102 mm). All outlets shall be not less than 2½ inches (63.5 mm).	New Houston amendment for temporary standpipes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		3314.3.2 Standpipe water supply. Pumping equipment sufficient to provide this pressure and volume shall be available at all times when the building reaches 150 feet (45,270 mm) above grade.	New Houston amendment for standpipe water supply requirements.
	SECTION 3315 AUTOMATIC SPRINKLER SYSTEM ~~3314.1~~ 3315.1 Completion before occupancy.		Base code renumbering.
	~~3314.2~~ 3315.2 Operation of valves.		Base code renumbering.
	SECTION 3316 PORTABLE FIRE EXTINGUISHERS ~~3315.1~~ 3316.1 Where required.		Base code renumbering.
	SECTION 3317 MOTORIZED CONSTRUCTION EQUIPMENT ~~3316.1~~ 3317.1 Conditions of use.		Base code renumbering.
~~3317.2.1 Permits. Permits are required for the use of asphalt kettles and for torching operations. See Section 105.6.~~ Moved to 3318.2.1			Previous Houston amendment relocated to Section 3318.2.1.
~~3317.4 Torches and other flame-producing devices. Use of torches or other flame-producing devices for application of roofing membranes is prohibited.~~ ~~Exception: When <i>approved</i> by the <i>fire code official</i>, roofing operations shall be conducted in accordance with Houston Fire Department LSB Standard No. 11, "Roofing Operations."~~ Moved to 3318.4			Previous Houston amendment relocated to Section 3318.4.
	SECTION 3318 SAFEGUARDING ROOFING OPERATIONS ~~3317.1~~ 3318.1 General.		Base code renumbering.
	~~3317.2~~ 3318.2 Asphalt and tar kettles.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		3318.2.1 Permits. Permits are required for the use of asphalt kettles and for torching operations. See Section 105.6.	No change to Houston amendment, relocated from Section 3317.2.1.
	~~3347.3~~ 3318.3 Fire extinguishers for roofing operations. Fire extinguishers shall comply with Section 906. There shall be not less than one multiple-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.		Base code renumbering, minor wordsmithing changes.
		3318.4 Torches and other flame-producing devices. Use of torches or other flame-producing devices for application of roofing membranes is prohibited. Exception: When approved by the fire code official, roofing operations shall be conducted in accordance with Houston Fire Department LSB Standard No. 11, "Roofing Operations."	No change to Houston amendment, relocated from Section 3317.4.
2015 Houston IFC – Chapter 34	2021 IFC – Chapter 34 – Tire Rebuilding and Tire Storage	2021 Houston Amendments	Code Change Summary
	SECTION 3405 OUTDOOR STORAGE		
	3405.6 Volume more than 150,000 cubic feet. Where the bulk volume of stored product is more than 150,000 cubic feet (4248 m³), storage arrangement shall be in accordance with the following: 1. Individual storage piles shall comply with size and separation requirements in Sections 3405.1 through 3405.5. 2. Adjacent storage piles shall be considered to be a group, and the aggregate volume of storage piles in a group shall not exceed 150,000 cubic feet (4248 m³). 3. Separation between groups shall be not less than 75 feet (22 860 mm) wide.		Minor wordsmithing changes.
	SECTION 3407 FENCING		
	3407.2 Construction. The fence shall be constructed of approved materials and shall be not less than 6 feet (1829 mm) high and provided with gates at least not less than 20 feet (6096 mm) wide.		Minor wordsmithing changes.
2015 Houston IFC – Chapter 35 Welding and Other Hot Work	2021 IFC – Chapter 35 – Welding and Other Hot Work	2021 Houston Amendments	Code Change Summary
	SECTION 3501 GENERAL		
	3501.3 Restricted areas. Hot work shall only be conducted in areas designed or authorized for that purpose by the personnel responsible for a Hot Work Program. Hot work shall not be conducted in the following areas unless approval has been obtained from the fire code official: 1. Areas where the sprinkler system is impaired.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	2. Areas where there exists the potential of an explosive atmosphere, such as locations where flammable gases, liquids or vapors are present. 3. Areas with readily ignitable materials, such as storage of large quantities of bulk sulfur, baled paper, cotton, lint, dust or loose combustible materials. 4. On board ships at dock or ships under construction or repair. 5. At other locations as specified by the fire code official.		
	SECTION 3502 DEFINITIONS 3502.1 Definitions. The following terms are defined in Chapter 2: HOT WORK. HOT WORK AREA. HOT WORK EQUIPMENT. HOT WORK PERMITS. HOT WORK PROGRAM. RESPONSIBLE PERSON. TORCH-APPLIED ROOF SYSTEM.		Base code definition removed.
	SECTION 3503 GENERAL REQUIREMENTS		
	3503.6 Signage. Visible hazard identification signs shall be provided where required by Chapter 50. Where the hot work area is accessible open to persons other than the operator of the hot work equipment, conspicuous signs shall be posted to warn others before they enter the hot work area. Such signs shall display the following warning: CAUTION HOT WORK IN PROGRESS STAY CLEAR		Minor wordsmithing changes.
3503.7 Roofing operations utilizing flame-producing devices. Use of torches or other flame-producing devices for application of roofing membranes is prohibited. See Section 3317.4. <u>Exception: When approved by the fire code official, roofing operations shall be conducted in accordance with Houston Fire Department LSB Standard No. 11, "Roofing Operations."</u>		3503.7 Roofing operations utilizing flame-producing devices. Use of torches or other flame-producing devices for application of roofing membranes is prohibited. See Section 3317.4. <u>Exception: When approved by the fire code official, roofing operations shall be conducted in accordance with Houston Fire Department LSB Standard No. 11, "Roofing Operations."</u>	No change to Houston amendment.
	SECTION 3504 FIRE SAFETY REQUIREMENTS		
	3504.1.5 Partitions. Partitions segregating hot work areas from other areas of the building shall be noncombustible. In fixed hot work areas, the partitions shall be securely connected to the floor such that no gaps do not exist		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	between the floor and the partition. Partitions shall prevent the passage of sparks, slag, and heat from the hot work area.		
	3504.2.6 Fire extinguisher. Not less than one portable fire extinguisher complying with Section 906 and with a minimum 2-A:20-B:C rating shall be readily provided with ready accessible within 30 feet (9144 mm) of the location where hot work is performed.		Minor wordsmithing changes.
	3504.3.1 Pre-hot-work check. A pre-hot-work check shall be conducted prior to work to ensure that all equipment is safe and hazards are recognized and protected. A report of the check shall be kept at the work site during the work and available upon request. The pre-hot-work check shall determine all of the following: 1. Hot work equipment to be used shall be in satisfactory operating condition and in good repair. 2. Hot work site is clear of combustibles or combustibles are protected. 3. Exposed construction is of noncombustible materials or, if combustible, then protected. 4. Openings are protected. 5. Floors are kept clean. 6. ~~No~~ Exposed combustibles are not located on the opposite side of partitions, walls, ceilings or floors. 7. Fire watches, where required, are assigned. 8. <i>Approved</i> actions have been taken to prevent accidental activation of fire protection system suppression and detection equipment in accordance with Sections 3504.1.8 and 3504.1.9. 9. Fire extinguishers and fire hoses (where provided) are operable and available.		Minor wordsmithing changes.
	SECTION 3508 ACETYLENE GENERATORS 3508.1 Use of acetylene generators. The use of acetylene generators shall comply with this section and Chapter 615 of NFPA 54A5.		No Houston amendment.
2015 Houston IFC – Chapter 36	2021 IFC – Chapter 36 – Marinas	2021 Houston Amendments	Code Change Summary
	SECTION 3603 GENERAL PRECAUTIONS		
	3603.3 Flammable or combustible liquid spills. Spills of flammable or combustible liquids at or up upon the water shall be reported immediately to the fire department or jurisdictional authorities.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2015 Houston IFC – Chapter 37 Combustible Fibers	2021 IFC – Chapter 37 – Combustible Fibers	2021 Houston Amendments	Code Change Summary
	SECTION 3702 DEFINITIONS 3702.1 Definitions. The following terms are defined in Chapter 2: BALED COTTON. BALED COTTON, DENSELY PACKED. COMBUSTIBLE FIBERS. COTTON. SEED COTTON.		New base code definition.
	SECTION 3703 GENERAL PRECAUTIONS		
3703.5 Dust collection. Where located within a building, equipment or machinery that generates or emits <i>combustible fibers</i> shall be provided with an <i>approved</i> dust-collecting and exhaust system. Such systems shall comply with Chapter 22 of this code and Section 544.506.4 of the ~~International Mechanical Code~~ .		3703.5 Dust collection. Where located within a building, equipment or machinery that generates or emits <i>combustible fibers</i> shall be provided with an <i>approved</i> dust-collecting and exhaust system. Such systems shall comply with Chapter 22 of this code and Section 544.506.6 of the ~~International Mechanical Code~~ .	Updated referenced section, no major change to Houston amendment.
2015 Houston IFC – Chapter 38	2021 IFC – Chapter 38 – Higher Education Laboratories	2021 Houston Amendments	Code Change Summary
	SECTION 3801 GENERAL 3801.1 Scope. Higher education laboratories complying with the requirements of this chapter shall be permitted to exceed the maximum allowable quantities of hazardous materials in control areas set forth in Chapter 50 without requiring classification as a Group H occupancy. Except as specified in this chapter, such laboratories shall comply with all applicable provisions of this code and the International Building Code.		New chapter and sections added to base code to address unique needs of laboratories in higher education facilities.
	3801.2 Application. The provisions of this chapter shall be applied as exceptions or additions to applicable requirements of this code. Unless specifically modified by this chapter, the storage, use and handling of hazardous materials shall comply with the provisions in Chapters 50 through 67 and the International Building Code for quantities not exceeding the maximum allowable quantity.		New section provides application of chapter to higher education laboratories.
	SECTION 3802 DEFINITIONS 3802.1 Definitions. The following terms are defined in Chapter 2: CHEMICAL FUME HOOD. GLOVE BOX. HIGHER EDUCATION LABORATORY. LABORATORY SUITE. SPECIAL EXPERT.		New base code definitions.
	SECTION 3803 GENERAL SAFETY PROVISIONS		Provides scope of general safety to higher education laboratories.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3803.1 Scope. Laboratories and laboratory suites applying the requirements of this chapter shall be in accordance with the general safety provisions in Sections 3803.1.1 through 3803.2.2.		
	3803.1.1 Chemical safety reviews. Operating and emergency procedures planning and documentation shall be provided in accordance with Sections 5001.3.3.11 through 5001.3.3.17. Such documentation shall be prepared by laboratory safety personnel or special experts, and shall be made available in the workplace for reference and review by employees. Copies of such documentation shall be made available to the fire code official for review upon request.		New requirements for chemical safety review for operating and emergency procedures.
	3803.1.2 Chemical handling. Receiving, transporting on site, unpacking and dispensing of hazardous materials shall be carried out by persons trained in proper handling of such materials and shall be performed in accordance with Chapters 50 through 67, as applicable.		New requirements for chemical handling.
	3803.1.3 Warning signage. Warning signs shall be provided in accordance with Section 5003.5.		New requirements for warning signage.
	3803.1.4 Maintenance of equipment, machinery and processes. Maintenance of equipment, machinery and processes used with hazardous materials shall comply with Section 5003.2.6.		New requirements for maintenance of equipment.
	3803.1.5 Time-sensitive materials. Containers of materials that have the potential to become hazardous during prolonged storage shall be dated when first opened, and shall be managed in accordance with NFPA 45, Section 8.2.4.4.1.		New requirements for time-sensitive materials in containers
	3803.1.6 Hazardous wastes. Storage, dispensing, use and handling of hazardous waste shall comply with this chapter and Chapters 50 through 67, as applicable.		New requirements for hazardous wastes.
	3803.1.7 Automatic fire-extinguishing systems. New laboratories in new or existing buildings that increase maximum allowable quantities of hazardous materials based on the requirements in this chapter shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.		New requirements for fire-extinguishing systems
	3803.2 Hazardous materials storage and use. Hazardous materials storage, handling and use in laboratories and laboratory suites complying with Chapter 38 shall be in accordance with this chapter and Chapters 50 through 67.		New requirements for hazardous material storage and use.
	3803.2.1 Container size. The maximum container size for all hazardous materials shall be 5.3 gallons (20 L) for liquids, 50 pounds (22.7 kg) for solids, 100 cubic feet (2.83 m³) for health-hazard gases per Table 5003.1.1(2) and 500 cubic feet (14.15 m³) for all other gases in accordance with Table 5003.1.1(1). Exception: Hazardous waste collection containers, for other than Class I flammable liquids and Class II combustible liquids, are permitted to exceed 5.3 gallons (20 L) where approved.		New requirements for hazardous material container sizing.
	3803.2.2 Density. Quantities of Class I flammable liquids in storage and use shall not exceed 8 gallons (30 L) per 100 square feet (9.29 m²) of floor area. Densities shall be		New requirements for hazardous material density.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	reduced by 25 percent on the 4th through 6th floors of the building, and by 50 percent above the 6th floor. Regardless of the density, the maximum allowable quantity per control area or laboratory suite in accordance with this chapter, shall not be exceeded. Exception: Designated hazardous waste collection areas or rooms within a laboratory suite or control area are not limited, but such materials shall not exceed the maximum allowable quantity per laboratory suite or control area.		
	SECTION 3804 LABORATORY SUITE CONSTRUCTION 3804.1 General. Where laboratory suites are provided, they shall be constructed in accordance with this chapter and Section 428 of the International Building Code.		New requirements for laboratory construction.
	3804.1.1 Laboratory suites. The number of laboratory suites and percentage of maximum allowable quantities of hazardous materials in laboratory suites shall be in accordance with Table 3804.1.1.		New requirements for laboratory construction.
	TABLE 3804.1.1 DESIGN AND NUMBER OF LABORATORY SUITES PER FLOOR		New requirements for laboratory construction.
	3804.1.1.1 Separation from other nonlaboratory areas. Laboratory suites shall be separated from other portions of the building in accordance with the most restrictive of the following: 1. Fire barriers and horizontal assemblies as required in Table 3804.1.1. Fire barriers shall be constructed in accordance with Section 707 of the International Building Code and horizontal assemblies shall be constructed in accordance with Section 711 of the International Building Code. Exception: Where an individual laboratory suite occupies more than one story, the fire-resistance rating of intermediate floors contained within the laboratory suite shall comply with the requirements of the International Building Code. 2. Separations as required in Section 508 of the International Building Code.		New requirements for laboratory construction.
	3804.1.1.2 Separation from other laboratory suites. Laboratory suites shall be separated from other laboratory suites in accordance with Table 3804.1.1.		New requirements for laboratory construction.
	3804.1.1.3 Floor assembly fire-resistance. The floor assembly supporting laboratory suites and the construction supporting the floor of laboratory suites shall have a fire-resistance rating of not less than 2 hours. Exception: The floor assembly of laboratory suites and the construction supporting the floor of laboratory suites are permitted to be 1-hour fire-resistance-rated in buildings of Types IIA, IIIA and VA construction, provided that the building is three or fewer stories.		New requirements for laboratory construction.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	3804.1.1.4 Maximum number. The maximum number of laboratory suites shall be in accordance with Table 3804.1.1. Where a building contains both laboratory suites and control areas, the total number of laboratory suites and control areas within a building shall not exceed the maximum number of laboratory suites in accordance with Table 3804.1.1.		New requirements for laboratory construction.
	3804.1.1.5 Means of egress. Means of egress shall be in accordance with Chapter 10.		New requirements for laboratory construction.
	3804.1.1.6 Standby or emergency power. Higher education laboratory suites shall be provided with emergency or standby power in accordance with Section 1203.2.13.		New requirements for laboratory construction.
	3804.1.1.7 Ventilation. Ventilation shall be in accordance with Chapter 7 of NFPA 45, and the International Mechanical Code.		New requirements for laboratory construction.
	3804.1.1.8 Liquid-tight floor. Portions of laboratory suites where hazardous materials are present shall be provided with a liquid-tight floor.		New requirements for laboratory construction.
	3804.1.1.9 Automatic fire-extinguishing systems. Buildings containing laboratory suites shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.		New requirements for laboratory construction.
	3804.1.2 Percentage of maximum allowable quantity in each laboratory suite. The percentage of maximum allowable quantities of hazardous materials in each laboratory suite shall be in accordance with Table 3804.1.1.		New requirements for laboratory construction.
	SECTION 3805 NONSPRINKLERED LABORATORIES 3805.1 Scope. Storage and use of hazardous materials in existing laboratories located within existing buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 is permitted where such use complies with Section 3803, Chapters 50 through 67, as applicable, and Sections 3805.2 through 3805.4.		New requirements for nonsprinklered laboratories.
	3805.2 Nonsprinklered laboratories. The maximum allowable quantities of hazardous materials in storage and use in control areas in laboratories located in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be in accordance with Tables 5003.1.1(1), 5003.1.1(2) and 5003.8.3.2, except as modified by Sections 3805.2.1 and 3805.2.2.		New requirements for nonsprinklered laboratories.
	3805.2.1 Restricted materials storage. Where <i>approved</i> by the <i>fire code official</i> , storage of the following hazardous materials prohibited by Table 5003.1.1(1) in buildings not equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 shall be allowed within a <i>laboratory control area</i> at 25 percent of Table 5003.1.1(1) limits for a building equipped throughout with an <i>automatic sprinkler system</i> . 1. ~~Pyrophorics.~~ Class 4 oxidizers. 2. ~~Class 4 Oxidizers.~~ Pyrophorics.		New requirements for nonsprinklered laboratories.

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	The percentage of the <i>maximum allowable quantity per control area</i> shown in Table 3805.4 shall be applied to 25 percent of Table 5003.1.1(1) limits for Class 4 oxidizers or pyrophoric materials.		
	3805.2.2 Restricted materials use. Where <i>approved</i> by the <i>fire code official</i> , use of the following hazardous materials prohibited by Table 5003.1.1(1) in buildings not equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1, shall be allowed within a laboratory <i>control area</i> at 25 percent of Table 5003.1.1(1) limits for buildings equipped throughout with an <i>automatic sprinkler system</i> . 1. Pyrophorics. Class 4 oxidizers. 2. Class 4 Oxidizers. Pyrophorics. The percentage of the <i>maximum allowable quantity per control area</i> shown in Table 3805.4 shall be applied to 25 percent of Table 5003.1.1(1) limits for Class 4 oxidizers or pyrophoric materials. Additional quantity increases shall be prohibited, and such materials shall be stored in accordance with all of the following: 1. Use shall be within an <i>approved</i> chemical fume hood <i>listed</i> in accordance with UL 1805, or in an inert atmosphere glove box in accordance with NFPA 45, Section 7.11, or other <i>approved</i> equipment designed for the specific hazard of the material. 2. Combustible materials shall be kept not less than 2 feet (610 mm) away from the work area, except for those items directly related to the research. 3. A portable fire extinguisher appropriate for the specific material shall be provided within 20 feet (6096 mm) of the use in accordance with Section 906.		New requirements for nonsprinklered laboratories.
	3805.2.2 Restricted materials use. Where approved by the fire code official, use of the following hazardous materials prohibited by Table 5003.1.1(1) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, shall be allowed within a laboratory control area at 25 percent of Table 5003.1.1(1) limits for buildings equipped throughout with an automatic sprinkler system. 1. Pyrophorics. 2. Class 4 Oxidizers. Additional quantity increases shall be prohibited, and such materials shall be stored in accordance with all of the following: 1. Use shall be within an approved chemical fume hood listed in accordance with UL 1805, or in an inert atmosphere glove box in accordance with NFPA 45, Section 7.11, or other approved equipment designed for the specific hazard of the material. 2. Combustible materials shall be kept not less than 2 feet (610 mm) away from the work area, except for those items directly related to the research.		New requirements for nonsprinklered laboratories.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. A portable fire extinguisher appropriate for the specific material shall be provided within 20 feet (6096 mm) of the use in accordance with Section 906.		
	3805.3 Restricted materials automatic fire detection. An automatic fire detection system shall be installed in all existing laboratories in nonsprinklered buildings in accordance with this section. Detectors shall be connected to the building's fire alarm control unit where a fire alarm system is provided. Detector initiation shall activate the occupant notification system in accordance with Section 907.5 where connected to the building's fire alarm control unit. Activation of the detection system shall sound a local alarm in buildings not equipped with a fire alarm notification system.		New requirements for nonsprinklered laboratories.
	3805.3.1 System supervision and monitoring. Automatic fire detection systems shall be electronically supervised and monitored by an approved supervising station or, where approved, shall initiate an audible and visual signal at a constantly attended, on-site location.		New requirements for nonsprinklered laboratories.
	3805.4 Percentage of maximum allowable quantity per control area. The percentage of <i>maximum allowable quantities per control area</i> of hazardous materials shall be permitted to be increased in accordance comply with Table 3805.4		New requirements for nonsprinklered laboratories.
	TABLE 3805.4 DESIGN AND NUMBER OF CONTROL AREAS IN EXISTING NONSPRINKLERED LABORATORIES		New requirements for nonsprinklered laboratories.
	SECTION 3806 EXISTING SPRINKLERED LABORATORIES 3806.1 Scope. Storage and use of hazardous materials in existing laboratories within buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be in accordance with Section 3803 and with Chapters 50 through 67, as applicable, except as modified by this section.		New requirements for existing laboratories.
	3806.2 Hazardous materials storage and use. Storage and use of hazardous materials within control areas in new and existing laboratories equipped with an automatic sprinkler system shall be in accordance with this section and Chapters 50 through 67, as applicable. Exception: Existing laboratories in buildings equipped throughout with an automatic sprinkler meeting requirements for laboratory suites are permitted to comply with Section 3804.		New requirements for existing laboratories.
	3806.2.1 Percentage of maximum allowable quantities per control area. The percentage of maximum allowable quantities per control area of hazardous materials shall be in accordance with Table 3806.2.1.		New requirements for existing laboratories.
	TABLE 3806.2.1 DESIGN AND NUMBER OF CONTROL AREAS IN EXISTING SPRINKLERED LABORATORIES		New requirements for existing laboratories.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
2015 Houston IFC – Chapter 39 Process and Extraction Facilities	2021 IFC – Chapter 39 – Processing and Extraction Facilities	2021 Houston Amendments	Code Change Summary
	SECTION 3901 GENERAL 3901.1 Scope. Plant processing or extraction facilities shall comply with this chapter and the International Building Code. The extraction process includes the act of extraction of the oils and fats by use of a solvent, desolventizing of the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery. The use, storage, transfilling and handling of hazardous materials in these facilities shall comply with this chapter, other applicable provisions of this code and the International Building Code.		New chapter and section providing requirements for the processing and extraction of oils and fats from various plants.
	3901.2 Existing buildings or facilities. Existing buildings or facilities used for the processing of plants ~~or shall comply with this chapter.~~ Existing extraction processes where the medium of extraction or solvent is changed shall comply with this chapter.		Applicability of chapter to existing buildings/facilities.
	3901.3 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7.		Permit requirements for chapter.
	SECTION 3902 DEFINITIONS 3902.1 Definitions. The following terms are defined in Chapter 2: DESOLVENTIZING. MISCELLA.		New base code definitions for chapter.
	SECTION 3903 PROCESSING AND EXTRACTION 3903.1 Construction. Processing shall be located in a building complying with the International Building Code.		New requirements for processing and extraction processes.
	3903.2 Prohibited occupancies. Extraction processes utilizing flammable gases or flammable cryogenic fluids shall not be located in any building containing a Group A, E, I or R occupancy.		New requirements for processing and extraction processes.
	3903.3 Location. The extraction equipment and extraction processes utilizing hydrocarbon solvents shall be located in a room or area dedicated to extraction.		New requirements for processing and extraction processes.
	3903.4 Post-process purification and winterization. Post-processing and winterization involving the heating or pressurizing of the miscella to other than normal pressure or temperature shall be approved and performed in an appliance listed for such use. Domestic or commercial cooking appliances shall not be used.		New requirements for processing and extraction processes.
	3903.4.1 Industrial ovens. The use of industrial ovens shall comply with Chapter 30.		New requirements for processing and extraction processes.
	3903.5 Use of flammable and combustible liquids. The use of flammable and combustible liquids for liquid extraction processes where the liquid is boiled, distilled or evaporated shall be located within a hazardous exhaust fume hood, rated for exhausting flammable vapors. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in		New requirements for processing and extraction processes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	flammable atmospheres. Heating of flammable or combustible liquids over an open flame is prohibited. Exception: The use of a heating element not rated for flammable atmospheres, where documentation from the manufacture, or approved testing laboratory indicates the element is rated for heating of flammable liquids.		
	3903.6 Liquefied petroleum gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58.		New requirements for processing and extraction processes.
	SECTION 3904 SYSTEMS AND EQUIPMENT 3904.1 General requirements. Systems and equipment used with the processing and extraction of oils and products from plants shall comply with Sections 3904.2 through 3904.4 and 5003.2, and other applicable provisions of this code, the International Building Code and the International Mechanical Code.		New requirements for processing and extraction processes.
	3904.2 Systems and equipment. Systems or equipment used for the extraction of oils from plant material shall be listed or approved for the specific use. If the system used for extraction of oils and products from plant material is not listed, the system shall be reviewed by a registered design professional. The registered design professional shall review and consider any information provided by the system's designer or manufacturer. For systems and equipment not listed for the specific use, a technical report in accordance with Section 3904.3 shall be prepared and submitted to the fire code official for review and approval. The firm or individual preparing the technical report shall be approved by the fire code official prior to performing the analysis.		New requirements for processing and extraction processes.
	3904.2.1 Listings. Systems or equipment used for the extraction of oils from plant material shall be <i>listed</i> and <i>labeled</i> in accordance with UL 1389 and installed in accordance with the listing and the manufacturer's installation instructions.		New requirements for processing and extraction processes.
	3904.2.2 Approvals. Systems or equipment used for the extraction of oils from plant material shall be <i>approved</i> for the specific use. The system shall be reviewed by a <i>registered design professional</i> . The <i>registered design professional</i> shall review and consider any information provided by the system's designer or manufacturer. A technical report in accordance with Section 3904.2.2.1 shall be prepared and submitted to the <i>fire code official</i> for review and approval. The firm or individual preparing the technical report shall be <i>approved</i> by the <i>fire code official</i> prior to performing the analysis.		New requirements for processing and extraction processes.
	~~3904.3~~ 3904.2.2.1 Technical report. A technical report, reviewed and approved by the fire code official as required by Section 3904.2, is required prior to the equipment being located or installed at the facility. The report shall be prepared by a registered design professional or other professional approved by the fire code official.		New requirements for processing and extraction processes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~3904.3.4~~3904.2.2.2 Report content. The technical report shall contain all of the following: 1. Manufacturer information. 2. Preparer of record of the technical report. 3. Date of review and report revision history. 4. Signature page, including all of the following: 4.1. Author of the report. 4.2. Date of report. 4.3. Date and signature of registered design professional of record performing the design or peer review. 5. Model number of the item evaluated. If the equipment is provided with a serial number, the serial number shall be included for verification at the time of site inspection. 6. Methodology of the design or peer review process used to determine minimum safety requirements. Methodology shall consider the basis of design, and shall include a code analysis and code path to demonstrate whether specific codes or standards are applicable. 7. Equipment description. A list of every component and subassembly, such as fittings, hose, quick disconnects, gauges, site glass, gaskets, valves, pumps, vessels, containers and switches, of the system or equipment, indicating the manufacturer, model number, material and solvent compatibility. Manufacturer's data sheets shall be provided. 8. A general flow schematic or general process flow diagram of the process. Post-processing or winterization shall be included in this diagram. Primary components of the process equipment shall be identified and match the equipment list required in Item 7. Operating temperatures, pressures and solvent state of matter shall be identified in each primary step or component. A piping and instrumentation diagram (PID or P&ID) shall be provided. 9. Analysis of the vessel(s) if pressurized beyond standard atmospheric pressure. Analysis shall include purchased and fabricated components. 10. Structural analysis for the frame system supporting the equipment. 11. Process safety analysis of the extraction system, from the introduction of raw product to the end of the extraction process. 12. Comprehensive process hazard analysis considering failure modes and points of failure throughout the process. The process hazard analysis shall include a review of emergency procedure information provided by the manufacturer of the equipment or process and not that of the facility, building or room.		New requirements for processing and extraction processes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	13. Review of the assembly instructions, operational and maintenance manuals provided by the manufacturer. 14. List of references used in the analysis.		
	~~3904.4~~ 3904.2.2.3 Site inspection. Prior to operation of the extraction equipment, where required by the fire code official, the engineer of record or approved professional, as approved in Section 3904.2, shall inspect the site of the extraction process once equipment has been installed for compliance with the technical report and the building analysis. The engineer of record or approved professional shall provide a report of findings and observations of the site inspection to the fire code official prior to the approval of the extraction process. The field inspection report authored by the engineer of record shall include the serial number of the equipment used in the process and shall confirm that the equipment installed is the same model and type of equipment identified in the technical report.		New requirements for processing and extraction processes.
	SECTION 3905 SAFETY SYSTEMS 3905.1 Gas detection. For extraction processes utilizing flammable gases as solvents, a ~~continuous~~ gas detection system complying with Section 916 shall be provided. ~~The gas detection threshold shall be not greater than 25 percent of the lower explosive limit/lower flammability limit (LEL/LFL) of the materials.~~		New requirements for processing and extraction processes.
	~~3905.1.1 System design. The flammable gas detection system shall be <i>listed</i> or <i>approved</i> and shall be calibrated to the types of fuels or gases used for the extraction process. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the LFL.~~		Base code section removed.
	~~3905.1.3~~ 3905.1.1 Operation. Activation of the gas detection system shall result in all the following: 1. Initiation of distinct audible and visual alarm signals in the extraction room. 2. Deactivation of all heating systems located in the extraction room. 3. Activation of the mechanical ventilation system, where the system is interlocked with gas detection. 4. De-energize all light switches and electrical outlets.		New requirements for processing and extraction processes.
	~~3905.1.2 Gas detection system components. Gas detection system control units shall be <i>listed</i> and <i>labeled</i> in accordance with UL 864 or UL 2017. Gas detectors shall be <i>listed</i> and <i>labeled</i> in accordance with 2075—2013 for use with the gases and vapors being detected.~~ ~~3905.1.4~~ 3905.1.2 Failure of the gas detection system. Failure of the gas detection system shall result in the deactivation of the heating system; activation of the mechanical ventilation system where the system is		New requirements for processing and extraction processes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	interlocked with the gas detection system; and initiation of a trouble signal to sound in an <i>approved</i> location.		
	~~3905.1.5 Interlocks.~~ Electrical components within the extraction room shall be interlocked with the gas detection system. Activation of the gas detection system shall disable all light switches and electrical outlets.		Base code section removed.
	3905.2 Emergency shutoff. Extraction processes utilizing gaseous hydrocarbon-based solvents shall be provided with emergency shutoff systems in accordance with Section 5803.1.3.		New requirements for processing and extraction processes.
2015 Houston IFC – Chapter 40 Storage of Distilled Spirits and Wines	2021 IFC – Chapter 40 – Storage of Distilled Spirits and Wines	2021 Houston Amendments	Code Change Summary
	CHAPTER 40 STORAGE OF DISTILLED SPIRITS AND WINES User note: <i>About this chapter: Chapter 40 provides specific requirements for the storage of distilled spirits and wines. In accordance with Section 307.1.1 of the International Building Code®, these occupancies are not classified as a Group H occupancy. Instead, as listed in Sections 311.2 and 311.3 of the International Building Code, the storage of beverages that contain up to and including 16-percent alcohol are classified as a Group S-2 occupancy, and those that contain over 16-percent alcohol content are classified as a Group S-1 occupancy. Note that those that are classified as a Group S-1 occupancy are required to be provided with an automatic sprinkler system throughout the Group S-1 fire area, regardless of size, in accordance with Section 903.</i>		New chapter and sections to provide specific requirements for the storage of distilled spirits and wines.
	SECTION 4001 GENERAL 4001.1 General. The storage of distilled spirits and wines in barrels and casks shall comply with this chapter in addition to other applicable requirements of this code.		New requirements for storage of distilled spirits and wines.
	4001.1.1 Nonapplicability. Chapter 50 and Chapter 57 are not applicable to the storage of distilled spirits and wines in barrels and casks as identified in Section 5001.1, Exception 10, and Section 5701.2, Item 10.		New requirements for storage of distilled spirits and wines.
	SECTION 4002 DEFINITIONS 4002.1 Definitions. Words and terms used in this chapter and defined in Chapter 2 shall have the meanings ascribed to them as defined therein.		New requirements for storage of distilled spirits and wines.
	SECTION 4003 PRECAUTIONS AGAINST FIRE 4003.1 Spill control. Drainage or containment systems shall be provided by means of curbs, scuppers, special drains or other suitable means to prevent the flow of spills throughout the building.		New requirements for storage of distilled spirits and wines.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	4003.2 Ventilation. For rooms and spaces where distilled spirits and wines in barrels and casks are stored, ventilation shall be provided in accordance with the International Mechanical Code and one of the following: 1. The rooms and spaces shall be ventilated at a rate sufficient to maintain the concentration of vapors within the area at or below 25 percent of the <i>lower flammable limit</i> (LFL). This shall be confirmed by sampling the actual vapor concentration under normal operating conditions. The sampling shall be conducted throughout the enclosed storage area, extending to or toward the bottom and the top of the enclosed storage area. The vapor concentration used to determine the required ventilation rate shall be the highest measured concentration during the sampling procedure. The sampling shall be conducted manually or by installation of a continuously monitoring flammable vapor detection system. 2. The rooms and spaces shall be provided exhaust ventilation at a rate of not less than 1 cfm per square foot [0.00508 m ³ /(s × m ²)] of solid floor area. The exhaust ventilation shall be accomplished by natural or mechanical means, with discharge of the exhaust to a safe location outside the building.		New requirements for storage of distilled spirits and wines.
	4003.3 Sources of ignition. Sources of ignition shall be controlled in accordance with Sections 4003.3.1 through 4003.4.		New requirements for storage of distilled spirits and wines.
	4003.3.1 Smoking. Smoking shall be prohibited and “No Smoking” signs provided as follows: 1. In rooms or areas where hazardous materials are stored or dispensed or used in open systems in amounts requiring a permit in accordance with Sections 105.5 and 105.6. 2. Within 25 feet (7620 mm) of outdoor storage, dispensing or open-use areas. 3. Facilities or areas within facilities that have been designated as totally “no smoking” shall have “No Smoking” signs placed at all entrances to the facility or area. Designated areas within such facilities where smoking is permitted either permanently or temporarily shall be identified with signs designating that smoking is permitted in these areas only. 4. In rooms or areas where flammable or combustible hazardous materials are stored, dispensed or used. 5. Signs required by this section shall be in English as a primary language or in symbols allowed by this code and shall comply with Section 310.		New requirements for storage of distilled spirits and wines.
	4003.3.2 Open flame. Open flames and high-temperature devices shall not be used in a manner that creates a hazardous condition and shall be <i>listed</i> for use with the hazardous materials stored or used.		New requirements for storage of distilled spirits and wines.
	4003.3.3 Industrial trucks. Powered industrial trucks used in areas designated as hazardous (classified) locations in accordance with NFPA 70 shall be <i>listed</i> and <i>labeled</i> for use in the environment intended in accordance with NFPA 505.		New requirements for storage of distilled spirits and wines.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	4003.3.4 Electrical. Electrical wiring and equipment shall be installed and maintained in accordance with Section 608 and NFPA 70.		New requirements for storage of distilled spirits and wines.
	4003.4 Lightning. Structures containing barrel storage should be protected from lightning. The lightning protection equipment shall be installed in accordance with NFPA 70 and NFPA 780.		New requirements for storage of distilled spirits and wines.
	SECTION 4004 STORAGE 4004.1 Storage. Storage shall be in accordance with this section and Section 315.		New requirements for storage of distilled spirits and wines.
	4004.2 Empty containers. The storage of empty containers previously used for the storage of <i>flammable</i> or <i>combustible liquids</i> , unless free from explosive vapors, shall be stored as required for filled containers.		New requirements for storage of distilled spirits and wines.
	4004.3 Basement storage. Class I liquids shall be allowed to be stored in <i>basements</i> in amounts not exceeding the <i>maximum allowable quantity per control area</i> for use-open systems in Table 5003.1.1(1), provided that automatic suppression and other fire protection are provided in accordance with Chapter 9. Class II and IIIA liquids shall also be allowed to be stored in <i>basements</i> , provided that automatic suppression and other fire protection are provided in accordance with Chapter 9.		New requirements for storage of distilled spirits and wines.
	4004.4 Bulk beverage storage areas. There shall be no storage of combustible materials in the bulk beverage storage areas not related to the beverage storage activities.		New requirements for storage of distilled spirits and wines.
	SECTION 4005 FIRE PROTECTION 4005.1 Automatic sprinkler system. The storage of distilled spirits and wines shall be protected by an <i>approved automatic sprinkler system</i> as required by Chapter 9.		New requirements for storage of distilled spirits and wines.
	4005.2 Portable fire extinguishers. <i>Approved</i> portable fire extinguishers shall be provided in accordance with Section 906.		New requirements for storage of distilled spirits and wines.
	SECTION 4006 SIGNAGE 4006.1 Hazard identification signs. Unless otherwise exempted by the <i>fire code official</i> , visible hazard identification signs, as specified in NFPA 704 for the specific material contained, shall be placed on stationary containers and above-ground tanks; at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit; and at specific entrances and locations designated by the <i>fire code official</i> .		New requirements for storage of distilled spirits and wines.
	4006.1.1 Maintenance and style. Signs and markings required by Section 4006.1 shall not be obscured or removed; shall be in English as a primary language or in symbols allowed by this code; shall be durable; and the size, color and lettering shall be <i>approved</i> .		New requirements for storage of distilled spirits and wines.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
2015 Houston IFC – Chapter 50 Hazardous Materials—General Provisions	2021 IFC – Chapter 50 – Hazardous Materials— General Provisions	2021 Houston Amendments	Code Change Summary
	SECTION 5001 GENERAL 5001.1 Scope. Prevention, control and mitigation of dangerous conditions related to storage, dispensing, use and handling of hazardous materials shall be in accordance with this chapter. This chapter shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that where specific requirements are provided in other chapters, those specific requirements shall apply in accordance with the applicable chapter. Where a material has multiple hazards, all hazards shall be addressed. Exceptions: 1. In retail or wholesale sales occupancies, the quantities of medicines, foodstuff, cosmetics and commercial or institutional consumer products and ~~cosmetics~~ containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammables~~shall not be limited~~, provided that such materials are packaged in individual containers not exceeding 1.3 gallons (5 L). 2. ~~Quantities of~~ Alcoholic beverages in retail or wholesale sales occupancies, ~~shall not be limited~~ providing provided that the liquids are packaged in individual containers not exceeding 1.3 gallons (5 L). 3. Application and release of pesticide and agricultural products and materials intended for use in weed abatement, erosion control, soil amendment or similar applications where applied in accordance with the manufacturer's instructions and label directions. 4. The off-site transportation of hazardous materials where in accordance with Department of Transportation (DOTn) regulations. 5. Building materials not otherwise regulated by this code. 6. Refrigeration systems (see Section 60658). 7. Stationary storage battery systems regulated by Section 6081206.21207. 8. The display, storage, sale or use of fireworks and <i>explosives</i> in accordance with Chapter 56. 9. <i>Corrosives</i> utilized in personal and household products in the manufacturer's original consumer packaging in Group M occupancies. 10. The storage of beer, distilled spirits and wines in ~~wooden~~ barrels and casks. 11. The use of wall-mounted dispensers containing alcohol-based hand rubs classified as Class I or II liquids where in accordance with Section 5705.5.		Minor wordsmithing and base code renumbering. New exceptions provided for certain storage and materials.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	12. Specific provisions for flammable liquids in motor fuel-dispensing facilities, repair garages, airports and marinas in Chapter 23. 13. Storage and use of fuel oil in tanks and containers connected to oil-burning equipment. Such storage and use shall be in accordance with Section 605. For abandonment of fuel oil tanks, Chapter 57 applies. 14. Storage and display of aerosol products complying with Chapter 51. 15. Storage and use of <i>flammable</i> or <i>combustible liquids</i> that do not have a fire point when tested in accordance with ASTM D92, not otherwise regulated by this code. 16. <i>Flammable</i> or <i>combustible liquids</i> with a flash point 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, which do not sustain combustion, not otherwise regulated by this code. 17. Commercial cooking oil storage tank systems located within a building and designed and installed in accordance with Section 607 and NFPA 30.		
	5001.2.1 Mixtures. Mixtures shall be classified in accordance with hazards of the mixture as a whole. Mixtures of hazardous materials shall be classified in accordance with nationally recognized reference standards; by an <i>approved</i> qualified organization, individual, or ~~Material~~ Safety Data Sheet (MSDS); or by other <i>approved</i> methods.		Minor wordsmithing change.
	5001.3.3.9 Reliable power source. Where a power supply is relied upon to prevent or control an emergency condition that could endanger people or property, the power supply shall be from a reliable source.		Minor wordsmithing change.
	5001.3.3.12 Pre~~start~~up safety review. - Written documentation of pre~~start~~up safety review procedures shall be developed and enforced to ensure that operations are initiated in a safe manner.		Minor wordsmithing change.
	5001.5 Permits. ... When ~~re~~ required by the <i>fire code official</i>, permittees shall apply for approval to permanently close a storage, use or handling facility.		Minor wordsmithing change.
5001.7 Enterprise permit. Businesses and facilities storing or utilizing hazardous materials exceeding the maximum allowable quantity limits per control area identified in Tables 307.1(1) and 307.1(2) of the Building Code shall comply with Chapter 28 of the <i>City Code</i> for a hazardous <i>enterprise</i>.		5001.7 Enterprise permit. Businesses and facilities storing or utilizing hazardous materials exceeding the maximum allowable quantity limits per control area identified in Tables 307.1(1) and 307.1(2) of the <i>Building Code</i> shall comply with Chapter 28, Article VII, of the <i>City Code</i> for a hazardous <i>enterprise</i>.	No change to Houston code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5002.1 Definitions. ... LOWER FLAMMABLE LIMIT (LFL) ~~MATERIAL SAFETY DATA SHEET (MSDS)~~ ... SAFETY CAN SAFETY DATA SHEET (SDS)		New base code definition.
5003.1 Scope. The storage, use and handling of all hazardous materials shall be in accordance with this section <u>and the applicable provisions of the <i>Hazardous Enterprise Ordinance</i> of Chapter 28, Article VII, of the <i>City Code</i> for a hazardous <i>enterprise</i>.</u>		5003.1 Scope. The storage, use and handling of all hazardous materials shall be in accordance with this section <u>and the applicable provisions of the <i>Hazardous Enterprise Ordinance</i> of Chapter 28, Article VII, of the <i>City Code</i> for a hazardous <i>enterprise</i>.</u>	No change to Houston code.
	TABLE 5003.1.1(1) MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD ^{a,j,m,n,p} ... ~~Consumer fireworks (entire row deleted)~~ Explosives – STORAGE ^b – Solid pounds (cubic feet) – 125 ^d ... d. Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e ~~also~~ applies, the increase for both notes shall be applied accumulatively. e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, day boxes, gas cabinets, gas rooms, exhausted enclosures or in listed safety cans in accordance with Section 5003.9.10. Where Note d ~~also~~ applies, the increase for both notes shall be applied accumulatively. ... k. A maximum quantity of ~~200~~ 220 pounds of solid or ~~20~~ 22 gallons of liquid Class 3 oxidizers is allowed where such materials are necessary for maintenance purposes, operation or sanitation of equipment where the storage containers and the manner of storage are approved.		Minor wordsmithing change.
	TABLE 5003.1.1(2) ... e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, gas cabinets or exhausted enclosures. Where Note d ~~also~~ applies, the increase for both notes shall be applied accumulatively.		Minor wordsmithing change.
	TABLE 5003.1.1(4) ... For SI: 1 cubic foot = 0.02832 m ³ , 1 <u>pound</u> = 0.454 kg, 1 gallon = 3.785 L, 1 pound per square inch absolute = 6.895 kPa, °C = [(°F) ~~− 32~~ − 1.8].		Minor wordsmithing change.

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	5003.2 Systems, equipment and processes. Systems, equipment and processes utilized for storage, dispensing, use or handling of hazardous materials shall be in accordance with Sections 5003.2.1 through 5003.2.8.		Minor wordsmithing change.
	5003.2.2.1 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~~ and provided with ready access 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 have access identified and the location shall have access clearly visible and indicated by means of a sign provided with ready access and identified in an approved manner. 5. Backflow prevention or check valves shall be provided where 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 Class 3 or 4~~ ~~Flammability Class 4~~ ~~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:		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	1. Piping for inlet connections designed to prevent backflow. 2. Piping for pressure relief devices.		
	5003.2.9 Testing. The equipment, devices and systems listed in Section 5003.2.9.1 shall be tested at the time of installation and at one of the intervals listed in Section 5003.2.9.2. Records of the tests conducted or maintenance performed shall be maintained in accordance with the provisions of Section ~~407.2.4~~ 108.3	-	Base code renumbering.
	5003.2.9.2 Testing frequency. The equipment, systems and devices listed in Section 5003.2.9.1 shall be tested at one of the following frequencies ~~listed below:~~		Minor wordsmithing change.
	5003.3.1 Unauthorized discharges. ~~Where~~ In the event hazardous materials are released in quantities reportable under state, federal or local regulations, the <i>fire code official</i> shall be notified and the following procedures required in accordance with Sections 5003.3.1.1 through 5003.3.1.4.		Minor wordsmithing change.
	5003.4 Material Safety Data Sheets. ~~Material~~ Safety Data Sheets (MSDS) shall be readily available on the premises for hazardous materials regulated by this chapter. Where a hazardous substance is developed in a laboratory, available information shall be documented.		Minor wordsmithing change.
	5003.7.3 Industrial trucks. Powered industrial trucks used in areas designated as hazardous (classified) locations ~~in accordance with NFPA 70 shall be listed and labeled for use in the environment intended in accordance with NFPA Section 505~~ 309.2 .		Base code renumbering.
	5003.7.4 Respiratory therapy. In Group I-2 and ambulatory care facilities, within areas with respiratory therapy services, sources of ignition shall be regulated in accordance with NFPA 99 .		New section for healthcare facility respiratory therapy regulations in accordance with NFPA 99.
	5003.8 Construction requirements. Buildings, <i>control areas</i> , enclosures and cabinets for hazardous materials shall be in accordance with Sections 5003.8.1 through 5003.8.6 ~~7.32~~ .		Base code renumbering.
	TABLE 5003.8.2 DETACHED BUILDING REQUIRED a. For materials that are detonable, the distance to other buildings or lot lines shall be ~~as specified in~~ accordance with Section 415.6 of the International Building Code. ~~For materials classified as explosives, the required separation distances shall be as specified in Chapter 56 based on the trinitrotoluene (TNT) equivalence of the~~		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~material, whichever is greater.~~		
	5003.8.3 Control areas. <i>Control areas</i> shall comply with Sections 5003.8.3.1 through 5003.8.3.5.3. Exception: Higher education laboratories in accordance with Chapter 38 of this code and Section 428 of the <i>International Building Code</i> .		New exception provided for higher education laboratories.
	5003.8.3.2 Percentage of maximum allowable quantities. The percentage of maximum allowable quantities of hazardous materials per <i>control area</i> allowed at each ~~floor level~~ story within a building shall be in accordance with Table 5003.8.3.2.		Minor wordsmithing change.
	TABLE 5003.8.3.2 DESIGN AND NUMBER OF CONTROL AREAS ... ~~FLOOR LEVEL~~ STORY ... NUMBER OF CONTROL AREAS PER FLOORSTORY		Minor wordsmithing change.
	5003.8.3.3 Number. The maximum number of <i>control areas</i> per floor within a building shall be in accordance with Table 5003.8.3.2. For the purposes of determining the number of <i>control areas</i> within a building, each portion of a building separated by one or more <i>fire walls</i> complying with Section 706 of the <i>International Building Code</i> shall be considered a separate building.		New requirements for determining control areas.
	5003.8.3.4 Fire-resistance-rating requirements. ... Exception: The floor assembly of the <i>control area</i> and the construction supporting the floor of the <i>control area</i> is allowed to be 1-hour <i>fire-resistance</i> rated in buildings of Types IIA, IIIA, IV and VA construction, provided that both of the following conditions exist: ...		Including Type IV construction.
	5003.8.3.5 Hazardous materials in Group M display and storage areas and in Group S storage areas. Hazardous materials located in Group M and Group S occupancies shall be in accordance with Sections 5003.8.3.5.1 through 5003.8.3.5.3.		Updates to requirements of Group M and Group S.
	5003.8.3.5.1 Nonflammable solids and nonflammable and noncombustible liquids. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed within a single <i>control area</i> of a Group M display and storage area or a Group S storage area is allowed to exceed the <i>maximum allowable quantities per control area</i> specified in Tables 5003.1.1(1) and 5003.1.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	displayed and stored in accordance with Section 5003.11.		
	5003.8.3.5.2 Flammable and combustible liquids. In Group M occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the maximum allowable quantities per control area as indicated in Table 5704.3.4.1, provided that the materials are displayed and stored in accordance with Chapter 57.		No Houston amendment.
	5003.8.3.5.3 Aerosols. The maximum quantity of aerosol products in Group M occupancy retail display areas, storage areas adjacent to retail display areas and retail storage areas shall be in accordance with Chapter 51.		No Houston amendment.
	5003.8.5.2 Ventilation. ... Ventilation systems used for highly toxic and toxic gases shall also comply with Items 1, 2 and 3 of Section 6004.1.23. ...		Base code renumbering.
	5003.8.6.1 Construction. Gas cabinets shall be constructed in accordance with the following: ~~Constructed of not less than 0.097-inch (2.5 mm) (No. 12 gage) steel.~~ ~~Be provided with self-closing limited access ports or noncombustible windows to give access to equipment controls.~~ ~~Be provided with self-closing doors.~~ Gas cabinet interiors shall be treated, coated or constructed of materials that are compatible with the hazardous materials stored. Such treatment, coating or construction shall include the entire interior of the cabinet.		Minor wordsmithing change.
	5003.9.1.1 Fire department liaison. Responsible persons shall be designated and trained to be liaison personnel to the fire department. These persons shall aid the fire department in preplanning emergency responses and identifying the locations where hazardous materials are located, and shall have access to Material Safety Data Sheets and be knowledgeable in the site's emergency response procedures.		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary						
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5003.9.2 Security. Storage. ~~When required by the <i>fire code official</i>, storage, dispensing, use and handling areas shall be secured against unauthorized entry and safe-guarded in a manner <i>approved</i> by the <i>fire code official</i>. When security fencing is installed, the fence shall comply with all of the following:~~ ~~1. Substantially built of iron, steel or concrete that is fabricated and installed in accordance with the <i>Building Code</i>.~~ ~~2. A minimum height of not less than 6 feet (1,830 mm) above the surrounding floor or ground surface.~~ ~~3. Topped by three rows of barbed wire, separated 4 inches (100 mm) apart and applied in compliance with Section 28-9 of the <i>City Code</i>.~~ ~~4. Equipped with necessary openings designed and fabricated to provide security equivalent to the fence that includes locks that always remain locked except when in use by authorized personnel, and~~ ~~5. Located 5 feet (1,525 mm) or more from any tank, valves or piping associated with hazardous materials.~~ Note: For LP-gas transfer and storage facilities see Section 3807.4.			Removed Houston amendment to go with base code.						
	5003.9.8 Separation of incompatible materials. <i>Incompatible materials</i> in storage and storage of materials that are incompatible with materials in use shall be separated where the stored materials are in containers having a capacity of more than 5 pounds (2 kg) or 0.5 gallon (2 L) or any amount of compressed gases. Separation shall be accomplished by: ... Materials that are incompatible shall not be stored within the same cabinet or exhausted enclosure.		Updates to requirements for storing incompatible materials						
	5003.9.9 Shelf storage. ... Shelf storage of hazardous materials shall be maintained in an orderly manner. Exceptions: ... ~~Shelf storage of hazardous materials shall be maintained in an orderly manner.~~		New requirements for hazardous material shelf storage.						
	TABLE 5003.11.1 MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES—NONFLAMMABLE SOLIDS, NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS^{d, e, f} MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA <table><tr><th></th><th>Solids (pounds)</th><th>Liquids (gallons)</th></tr><tr><td>1. Oxidizers^{b,c}</td><td>1,435^g</td><td>1435</td></tr></table> b. Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with		Solids (pounds)	Liquids (gallons)	1. Oxidizers ^{b,c}	1,435 ^g	1435		Minor wordsmithing change.
	Solids (pounds)	Liquids (gallons)							
1. Oxidizers ^{b,c}	1,435 ^g	1435							

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Section 903.3.1.1. Where Note c ~~also~~ applies, the increase for both notes shall be applied accumulatively. c. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets in accordance with Section 5003.8. Where Note b ~~also~~ applies, the increase for both notes shall be applied accumulatively.		
	5003.12 Outdoor control areas. <i>Outdoor control areas</i> for hazardous materials ~~in amounts not exceeding the maximum allowable quantity per outdoor control area~~ shall be in accordance with the following general requirements : 1. <i>Outdoor control areas</i> shall be kept free from weeds, debris and common combustible materials not necessary to the storage. The area surrounding an <i>outdoor control area</i> shall be kept clear of such materials for not less than 15 feet (4572 mm). 2. <i>Outdoor control areas</i> shall be located not closer than 20 feet (6096 mm) from a ~~lot line that can be built upon~~ , public street, public alley or ~~public way~~ or lot line that can be built on . Exceptions: 1. For solid and liquid hazardous materials, a 2-hour <i>fire-resistance-rated</i> wall without openings extending not less than 30 inches (762 mm) above and to the sides of the storage area shall be allowed in lieu of such distance. 2. For <i>compressed gas</i> hazardous materials, unless otherwise specified, the minimum required distances shall not apply where <i>fire barriers</i> without openings or penetrations having a minimum <i>fire-resistance rating</i> of 2 hours interrupt the line of sight between the storage and the exposure. The configuration of the <i>fire barrier</i> shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations. 3. Where a property exceeds 10,000 square feet (929 m ²), a group of two <i>outdoor control areas</i> is allowed where <i>approved</i> and where each control area is separated by a minimum distance of 50 feet (15 240 mm). 4. Where a property exceeds 35,000 square feet (3252 m ²), additional groups of <i>outdoor control areas</i> are allowed where <i>approved</i> and where each group is separated by a minimum distance of 300 feet (91 440 mm).		Minor wordsmithing change.
	5004.2.3 Containment pallets. ... A liquid-tight sump with accessible for visual inspection shall be provided.		Minor wordsmithing change, new exception added for medical gas storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5004.3 Ventilation. Indoor storage areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation where natural ventilation can be shown to be acceptable for the materials as stored. Exceptions: 1. Storage areas for flammable solids complying with Chapter 59. 2. Storage areas for medical gases complying with Chapter 53.		No Houston amendment.
	5004.7 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 in accordance with Section 604 1203 .		Base code renumbering.
	5004.7.1 Exempt applications. Storage of Class IB and ~~Class~~ IC flammable liquids and Class II and III combustible liquids in closed containers not exceeding a capacity of 6 ½ gallons (25 L) capacity.		Minor wordsmithing change.
5004.13 Weather protection. Where overhead noncombustible construction is provided for sheltering outdoor hazardous material storage areas, such storage shall not be considered indoor storage where the area is constructed in accordance with the requirements for weather protection as required by the ~~International Building Code~~ . Exception: For the purpose of applying the <i>Hazardous Enterprise Ordinance</i> of Chapter 28, Article VII, of the <i>City Code</i> , and the <i>fire separation distance</i> provisions of the <i>Building Code</i> , ~~Storage of hazardous explosive materials exceeding the maximum allowable quantity limits per control area identified in Section 307 and Tables 307.1(1) and 307.1(2) of the Building Code~~ shall be considered as indoor storage.			Removed Houston amendment to go with base code.
	5004.14 Outdoor storage location. Outdoor storage areas for hazardous materials shall be located as required by Section 5003.12 except where material-specific requirements, including requirements in referenced standards, are provided in other chapters of this code.		New requirements for outdoor storage location for hazardous materials.
	5005.1.5 Standby or emergency power. Where mechanical ventilation, treatment systems, temperature control, manual alarm, detection or other electrically operated systems are required by this code, such systems shall be provided with emergency or standby power in accordance with Section 604 1203 .		Base code renumbering.
	5005.1.8 Fire-extinguishing protection systems. Indoor rooms or areas in which hazardous materials are dispensed or used shall be protected by an automatic sprinkler system or automatic fire-extinguishing system in accordance with Chapter 9. Sprinkler system design shall be not less than that required for Ordinary Hazard, Group 2, with a minimum design area of 3,000 square feet (279 m²). Where the materials or storage arrangement are required by other regulations to be provided with a higher level of sprinkler		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	system protection, the higher level of sprinkler system protection shall be provided.		
	5005.1.12 Emergency isolation. Where gases or liquids having a hazard ranking of Health Class 3 or 4, Flammability Class 4 or 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.		New requirements for emergency isolation and protection where gases or liquids are stored.
	5005.3.3 Outdoor location. Outdoor dispensing and use areas for hazardous materials shall be located as required by Section 5003.12 except where material- specific requirements, including requirements in referenced standards, are provided in other chapters of this code. ~~for outdoor storage in accordance with Section 5004.~~		Updated requirements for outdoor dispensing and use areas.
	5005.4.4 Dispensing, use and handling. ... The signal shall be relayed to an approved central, proprietary or remote station service or constantly attended on-site location and shall ~~also~~ initiate a local audible alarm.		Minor wordsmithing change.
2015 Houston IFC – Chapter 51 Aerosols	2021 IFC – Chapter 51 – Aerosols	2021 Houston Amendments	Code Change Summary
	SECTION 5101 GENERAL		
	5101.1 Scope. The provisions of this chapter, the <i>International Building Code</i> and NFPA 30B shall apply to the manufacturing, storage and display of aerosol products, aerosol cooking spray products and plastic aerosol 3 products. Manufacturing of aerosol products, aerosol cooking spray products and plastic aerosol 3 products using hazardous materials shall also comply with Chapter 50.		Updates to scope of aerosol chapter.
	5101.3 Material Safety Data Sheets. Material Safety Data Sheet (MSDS) information for aerosol products displayed shall be kept on the premises at an <i>approved</i> location.		Minor wordsmithing change.
	5101.4 Containers. Metal aerosol containers shall be limited to a maximum size of 33.8 fluid ounces (1000 ml). Plastic aerosol containers shall be limited to a maximum of 4 fluid ounces (118 ml) except as provided in Sections 5104.1.1 and 5104.1.2. Glass		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	aerosol containers shall be limited to a maximum of 4 fluid ounces (118 ml).		
	SECTION 5102 DEFINITIONS 5102.1 Definitions. The following terms are defined in Chapter 2: AEROSOL CONTAINER. AEROSOL PRODUCT. Level 1 aerosol products. Level 2 aerosol products. Level 3 aerosol products. ~~AEROSOL CONTAINER.~~ AEROPSOL PRODUCT WAREHOUSE.		Changes to chapter definitions.
	SECTION 5103 CLASSIFICATION OF AEROSOL PRODUCTS		No Houston amendment.
	5103.2 Identification. Cartons or outer packaging shall be identified on not ~~less~~ fewer than one exterior side with the classification level of the aerosol products contained within the carton ~~as follows:~~	=	Minor wordsmithing change.
	5103.2.1 Aerosol products. Cartons or outer packaging containing aerosol products in metal containers or glass and plastic containers 4 fluid ounces. (118 ml) or less shall be clearly marked as follows: LEVEL AEROSOLS		New requirements for aerosol product packaging.
	5103.2.2 Aerosol cooking spray products. Cartons or outer packaging containing aerosol cooking spray products in metal containers shall be clearly marked as follows: AEROSOL COOKING SPRAY		New requirements for aerosol cooking spray products
	5103.2.3 Plastic aerosol products. Cartons or outer packaging containing aerosol products in plastic containers greater than 4 fluid ounces (118 ml) shall be clearly marked as follows: PLASTIC AEROSOL 1 (or X)		New requirements for plastic aerosol products
	SECTION 5104 INSIDE STORAGE OF AEROSOL PRODUCTS 5104.1 General. The inside storage of Level 2 and 3 aerosol products shall comply with Sections 5104.2 through 5104.7 8 and NFPA 30B. Level 1 aerosol products and those aerosol products covered by Section 5104.1.1 shall be considered to be equivalent to a Class III commodity and shall comply with the requirements for palletized or rack storage in NFPA 13.	=	Minor wordsmithing change.
	~~5104.1.1 Plastic containers.~~ Level 1 aerosol products. Aerosol products in plastic containers larger than 4 fluid ounces (118 ml), but not to exceed 33.8 fluid ounces (1000 ml), shall be allowed only where in accordance with this section. The commodity classification shall be Class III commodities, as defined in NFPA 13 where any of the following conditions are met: 1. Base product ~~has no~~ does not have a fire point where tested in accordance with ASTM ~~D—92~~ D92, and nonflammable propellant.		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. Base product ~~has not~~does not sustained combustion as tested in accordance with DOTn 49 CFR Part 173, Appendix H, and nonflammable propellant. 3. Base product contains up to 20 percent by volume (15.8 percent by weight) of ethanol ~~and/or~~ isopropyl alcohol or a combination thereof in an aqueous mix, and nonflammable propellant. 4. Base product contains 4 percent by weight or less of an emulsified flammable liquefied gas propellant within an aqueous base. The propellant shall remain emulsified for the life of the product. Where such propellant is not permanently emulsified, the propellant shall be nonflammable.		
	5104.1.2 Plastic aerosol 3 products. Plastic aerosol 3 products shall be defined as those that meet one of the following criteria: 1. Base product does not have a fire point where tested in accordance with ASTM D92, and there is not more than 10 percent by weight flammable propellant. 2. Base product does not sustain combustion as tested in accordance with DOTn 49 CFR 173, Appendix H, and there is not more than 10 percent by weight flammable propellant. 3. Base product contains 50 percent by volume or less of flammable or combustible water-miscible alcohols in an aqueous mix, and there is not more than 10 percent by weight of flammable propellant.		New section and requirements for plastic aerosol 3 products
	~~5104.1.2~~ 5104.1.3 Plastic aerosol X products. Plastic aerosol X products are those products, in containers larger than 4 fluid ounces (118 ml), that do not meet the criteria provided in Section 5104.1.1 or 5104.1.2.		Base code renumbering, new requirements for plastic aerosol X products
	~~5104.1.2.1~~ 5104.1.3.1 Storage, use or handling. The storage, use or handling of plastic aerosol X products shall be prohibited.		Base code renumbering, new requirements for storage and use of plastic aerosol X products.
	5104.2.2 Aerosol cooking spray products. Storage of aerosol cooking spray products in A, B, E, F and R occupancies shall not be more than 1,000 pounds (454 kg) net weight.		New requirements for aerosol cooking spray products.
	5104.3 Storage in general purpose warehouses. Aerosol product storage in general purpose warehouses utilized only for warehousing-type operations involving mixed commodities shall comply with Section 5104.3.1 ~~or 5104.3.2.~~ or 5104.3.3.	=	Minor wordsmithing change.
	5104.3.1 Nonsegregated storage. Storage consisting of solid pile, palletized or rack storage of Level 2 and 3 aerosol products not segregated into areas utilized exclusively for the storage of aerosols products shall comply with Table 5104.3.1.		Minor wordsmithing change.
	5104.3.2 Segregated storage. Storage of Level 2 and 3 aerosol products segregated into areas utilized exclusively for the storage of aerosols products shall comply with Table 5104.3.2 and Sections 5104.3.2.1 and 5104.3.2.2.		Minor wordsmithing change.
	TABLE 5104.3.2		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	SEGREGATED STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS AND PLASTIC AEROSOL 3 PRODUCTS IN GENERAL PURPOSE WAREHOUSES		
	5104.3.2.1 Chain-link fence enclosures. Chain-link fence enclosures required by Table 5104.3.2 shall comply with the following: The fence shall not be not less than No. 9 gage steel wire, woven into a maximum 2-inch (51 mm) diamond mesh.		Minor wordsmithing change.
	5104.3.3 Aerosol cooking spray products. Solid pile, palletized or rack storage of aerosol cooking spray products in a general purpose warehouse shall not be more than 2,500 pounds (1135 kg) net weight, unless protected in accordance with NFPA 30B.		New requirements for aerosol cooking spray products.
	5104.4 Storage in aerosol product warehouses. The total quantity of Level 2 and 3 aerosol products in a warehouse utilized for the storage, shipping and receiving of aerosol products shall not be restricted in structures complying with Sections 5104.4.1 through 5104.4.4.		Minor wordsmithing change.
	5104.4.1 Automatic sprinkler system. Aerosol product warehouses shall be protected by an <i>approved</i> wet-pipe <i>automatic sprinkler system</i> in accordance with NFPA 30B. Sprinkler protection shall be designed based on the highest classification level of aerosol product present.		Minor wordsmithing change.
	5104.4.4 Combustible commodities. Combustible commodities other than flammable and <i>combustible liquids</i> shall be permitted to be stored in an aerosol product warehouse. Exception: Flammable and <i>combustible liquids</i> in 1-quart (946 mL) metal containers and smaller shall be permitted to be stored in an aerosol product warehouse.		Minor wordsmithing change.
	5104.7 Storage in Group M occupancies. Storage of Level 2 and 3 aerosol products, and aerosol cooking spray products and plastic aerosol 3 products in occupancies in Group M shall comply with Table 5104.7. Retail display shall comply with Section 5106.		Minor wordsmithing change.
	TABLE 5104.7 MAXIMUM QUANTITIES OF LEVEL 2 AND 3 AEROSOL PRODUCTS, AND AEROSOL COOKING SPRAY PRODUCTS AND PLASTIC AEROSOL 3 PRODUCTS IN RETAIL STORAGE AREAS Ground floor Upper floor		Minor wordsmithing change.
	5104.8 Storage of aerosol cooking spray products. Aerosol cooking spray products shall be permitted to be stored in a general purpose warehouse.		New requirements for storage of aerosol cooking spray products.
	5104.8.1 Mixed storage. Where aerosol cooking spray products are mixed with other higher-hazard aerosol products, the provided isolation, storage height restrictions and protection shall be based on the highest-hazard aerosol product present.		New requirements for mixed aerosol storage.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5104.8.2 Storage conditions. The storage and handling of aerosol cooking spray products shall comply with this chapter and NFPA 30B.		New requirements for aerosol storage coniditions.
	SECTION 5105 OUTSIDE STORAGE 5105.1 General. The outside storage of Level 2 and 3 aerosol products and plastic aerosol 3 products, including storage in temporary storage trailers, shall be separated from exposures in accordance with Table 5105.1.		Minor wordsmithing change.
	TABLE 5105.1 DISTANCE TO EXPOSURES FOR OUTSIDE STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS AND PLASTIC AEROSOL 3 PRODUCTS EXPOSUREMINIMUM DISTANCE FROM AERSOL STORAGE (feet)^a Public alleys, public ways, public streets20 ... Public alleys, public ways, public streets20		Minor wordsmithing change.
	SECTION 5106 RETAIL DISPLAY 5106.1 General. This section shall apply to the retail display of 500 pounds (227 kg) or more of Level 2 and 3 aerosol products, and aerosol cooking spray products and plastic aerosol 3 products.		Minor wordsmithing change.
	5106.2 Aerosol display and normal merchandising not exceeding 8 feet (2438 mm) high. Aerosol display and normal merchandising not exceeding 8 feet (2438 mm) in height shall be in accordance with Sections 5106.2.1 through 5106.2.45.		Minor wordsmithing change.
	5106.2.1 Maximum quantities in retail display areas. Aerosol products, and aerosol cooking spray products and plastic aerosol 3 products in retail display areas shall not exceed quantities needed for display and normal merchandising and shall not exceed the quantities in Table 5106.2.1.		Minor wordsmithing change.
	TABLE 5106.2.1 MAXIMUM QUANTITIES OF LEVEL 2 AND 3 AEROSOL PRODUCTS, AND AEROSOL COOKING SPRAY PRODUCTS AND PLASTIC AEROSOL 3 PRODUCTS IN RETAIL DISPLAY AREAS FloorUnprotected...Protected in accordance with Section 5106.3^c BasementNot aAllowed ... UpperNot aAllowed		Minor wordsmithing change.
	5106.2.2 Aerosol cooking spray product and plastic aerosol 3 product storage and fire protection. The storage and handling of aerosol cooking spray products and		New requirements for aerosol products.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~plastic aerosol 3 products shall comply with this chapter and NFPA 30B.~~ 5106.2.23 Display of containers aerosol products. Level 2 and 3 aerosol ~~containers~~ products shall not be stacked more than 6 feet (1829 mm) high from the base of the aerosol ~~product~~ array to the top of the aerosol ~~product~~ array unless the ~~containers~~ products are placed on fixed shelving or otherwise secured in an <i>approved</i> manner. Where storage or retail display is on shelves, the height of such storage or retail display to the top of aerosol ~~containers~~ products shall not exceed 8 feet (2438 mm).		Base code renumbering, minor wordsmithing change.
	5106.2.34 Combustible cartons. Aerosol products located in retail display areas shall be removed from combustible cartons. Exceptions: 1. Display areas that use a portion of combustible cartons that consist of only the bottom panel and not more than 2 inches (51 mm) of the side panel are allowed. 2. ~~When~~ Where the display area is protected in accordance with Tables 6.3.2.7(a) through 6.3.2.7(l) of NFPA 30B, storage of aerosol products in combustible cartons is allowed.		Base code renumbering, minor wordsmithing change.
	5106.2.45 Retail display automatic sprinkler system.		Base code renumbering.
	5106.3 Aerosol ~~product~~ display and normal merchandising exceeding 8 feet (2438 mm) high. Aerosol ~~product~~ display and merchandising exceeding 8 feet (2438 mm) in height shall be in accordance with Sections 5106.3.1 through 5106.3.3.		Minor wordsmithing change.
	5106.3.2 Automatic sprinkler protection. Aerosol ~~product~~ and plastic aerosol 3 product display and merchandising areas shall be protected by an <i>automatic sprinkler system</i> based on the requirements set forth in Tables 6.34.2.7(a) through 6.34.2.7(l) of NFPA 30B and the following: 1. Protection shall be based on the highest level of aerosol product in the array and the packaging method of the storage located more than 6 feet (1829 mm) above the finished floor. 2. Where using the cartoned aerosol ~~products~~ tables of NFPA 30B, uncartoned or display-cut Level 2 and 3 aerosols ~~products~~ and plastic aerosol 3 products shall ~~not~~ not be permitted ~~not~~ more than 6 feet (1829 mm) above the finished floor. 3. The design area for Level 2 and 3 aerosols ~~products~~ and plastic aerosol 3 products shall extend not less than 20 feet (6096 mm) beyond the Level 2 and 3 aerosol ~~product~~ and plastic aerosol 3 product display and merchandising areas. 4. Where ordinary and high-temperature ceiling sprinkler systems are adjacent to each other, noncombustible draft curtains shall be installed at the interface.		Minor wordsmithing change.
	5106.3.3 Separation of Level 2 and 3 aerosol ~~product~~ and plastic aerosol 3 product areas. Separation of Level 2 and		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary						
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	3 aerosol product areas or plastic aerosol 3 product areas shall comply with the following: 1. Level 2 and 3 aerosol product or plastic aerosol 3 product display and merchandising areas shall be separated from each other by not less than 25 feet (7620 mm). See Table 5106.2.1. 2. Level 2 and 3 aerosol product or plastic aerosol 3 product display and merchandising areas shall be separated from <i>flammable</i> and <i>combustible liquids</i> storage and display areas by one or a combination of the following: 2.1 Segregating areas from each other by horizontal distance of not less than 25 feet (7620 mm). 2.2 Isolating areas from each other by a noncombustible partition extending not less than 18 inches (457 mm) above the merchandise. 2.3 In accordance with Section 5106.5. 3. Where Item 2.2 is used to separate Level 2 or 3 aerosols products or plastic aerosol 3 products from <i>flammable</i> or <i>combustible liquids</i> , and the aerosol products are located within 25 feet (7620 mm) of <i>flammable</i> or <i>combustible liquids</i> , the area below the noncombustible partition shall be liquid tight at the floor to prevent spilled liquids from flowing beneath the aerosol products.								
	TABLE 5106.4 MAXIMUM STORAGE QUANTITIES FOR STORAGE AREAS ADJACENT TO RETAIL DISPLAY OF LEVEL 2 AND 3 AEROSOLS PRODUCTS AND PLASTIC AEROSOL 3 PRODUCTS <table><tr><td>Floor</td><td>Separated 1-hour Occupancy Separation</td></tr><tr><td>Ground</td><td>In accordance with Sections 6.34.4.3 and 6.34.4.4 of NFPA 30B</td></tr><tr><td>Upper</td><td>In accordance with Sections 6.34.4.3 and 6.34.4.4 of NFPA 30B</td></tr></table>	Floor	Separated 1-hour Occupancy Separation	Ground	In accordance with Sections 6.34.4.3 and 6.34.4.4 of NFPA 30B	Upper	In accordance with Sections 6.34.4.3 and 6.34.4.4 of NFPA 30B		Minor wordsmithing change.
Floor	Separated 1-hour Occupancy Separation								
Ground	In accordance with Sections 6.34.4.3 and 6.34.4.4 of NFPA 30B								
Upper	In accordance with Sections 6.34.4.3 and 6.34.4.4 of NFPA 30B								
	5106.5 Special protection design for Level 2 and 3 aerosols products adjacent to flammable and combustible liquids in double-row racks. The display and merchandising of Level 2 and 3 aerosols products adjacent to flammable and <i>combustible liquids</i> in double-row racks shall be in accordance with Section 5106.3.3 or Sections 5106.5.1 through 5106.5.8 ~~or Section 5106.3.3.~~		Minor wordsmithing change.						
	5106.5.1 Fire protection. Fire protection for the display and merchandising of Level 2 and 3 aerosols in double-row racks shall be in accordance with Table 7.45.1 and Figure 7.45.1 of NFPA 30B.		Minor wordsmithing change.						
	5106.5.2 Cartoned aerosol products. Level 2 and 3 aerosols products displayed or merchandised more than 8 feet (2438 mm) above the finished floor shall be in cartons.		Minor wordsmithing change.						

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5106.5.7 Class I, II, III, IV and plastic commodities. Class I, II, III, IV and plastic commodities located adjacent to Level 2 and 3 aerosols products and plastic aerosol 3 products shall be protected in accordance with NFPA 13.		Minor wordsmithing change.
2015 Houston IFC – Chapter 53 Compressed Gases	2021 IFC – Chapter 53 – Compressed Gases	2021 Houston Amendments	Code Change Summary
	SECTION 5301 GENERAL 5301.1 Scope. Storage, use and handling of compressed gases in compressed gas containers, cylinders, tanks and systems shall comply with this chapter and NFPA 55, including those gases regulated elsewhere in this code. Partially full compressed gas containers, cylinders or tanks containing residual gases shall be considered as full for the purposes of the controls required. Liquefied natural gas for use as a vehicular fuel shall also comply with NFPA 52 and NFPA 59A. Compressed gases classified as hazardous materials shall also comply with Chapter 50 for general requirements and chapters addressing specific hazards, including Chapters 58 (Flammable Gases), 60 (Highly Toxic and Toxic Materials), 63 (Oxidizers, Oxidizing Gases and Oxidizing Cryogenic Fluids) and 64 (Pyrophoric Materials). Compressed hydrogen (CH₂) ~~for use as a vehicular fuel~~ shall also comply with the applicable portions of Chapters 23 and 58 of this code, the <i>International Fuel Gas Code</i> and NFPA 2. Cutting and welding gases shall also comply with Chapter 35. ~~LP-gas shall also comply with Chapter 61 and the International Fuel Gas Code.~~ Exceptions: 1. Gases used as refrigerants in refrigeration systems (see Section 606). 2. Compressed natural gas (CNG) for use as a vehicular fuel shall comply with Chapter 23, NFPA 52 and the International Fuel Gas Code. 3. Cryogenic fluids shall comply with Chapter 55. 4. LP-gas shall comply with Chapter 61 and the International Fuel Gas Code.		Minor wordsmithing change, new exception provided for LP-gas.
	SECTION 5303 GENERAL REQUIREMENTS 5303.5.3 Securing compressed gas containers, cylinders and tanks. Compressed gas containers, cylinders and tanks shall be secured to prevent falling caused by contact, vibration or seismic activity. Securing of compressed gas containers, cylinders and tanks shall be by one of the following methods: 1. Securing containers, cylinders and tanks to a fixed object with one or more restraints. 2. Securing containers, cylinders and tanks on a cart or other mobile device designed for the movement of compressed gas containers, cylinders or tanks. 3. Nesting of <i>compressed gas</i> containers, cylinders and tanks at container filling or servicing facilities or in sellers'		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	warehouses not ~~accessible~~ open to the public. Nesting shall be allowed provided ~~that~~ the nested containers, cylinders or tanks, if dislodged, do not obstruct the required <i>means of egress</i> . 4. Securing of compressed gas containers, cylinders and tanks to or within a rack, framework, cabinet or similar assembly designed for such use. Exception: Compressed gas containers, cylinders and tanks in the process of examination, filling, transport or servicing.		
	5303.16.10 Monitoring and detection. Vaults shall be provided with approved vapor and liquid detection systems and equipped with on-site audible and visual warning devices with battery backup. Vapor detection systems shall sound an alarm when the system detects vapors that reach or exceed 25 percent of the lower explosive limit (LEL) or one-half the immediately dangerous to life and health (IDLH) concentration for the gas in the vault. Vapor detectors shall be located not higher than 12 inches (305 mm) above the lowest point in the vault for heavier-than-air gases and not lower than 12 inches (305 mm) below the highest point in the vault for lighter-than-airgases. Liquid detection systems shall sound an alarm upon detection of any liquid, including water. Liquid detectors shall be located in accordance with the manufacturers' instructions. Activation of vapor detection systems shall ~~also~~ shut off gas- handling equipment in the vault and dispensers.		Minor wordsmithing change.
	SECTION 5305 USE AND HANDLING OF COMPRESSED GASES		
	5305.4 Valves. Valves utilized on <i>compressed gas</i> systems shall be suitable for the use intended. ~~Access to such valves and shall be accessible provided and maintained.~~ Valve handles or operators for required shutoff valves shall not be removed or otherwise altered to prevent access.	=	Minor wordsmithing change.
	SECTION 5306 MEDICAL GASES 5306.1 General. Medical gases at health care-related facilities intended for patient care, ~~inhalation or sedation including, but not limited to, analgesia systems for dentistry, podiatry, veterinary and similar uses~~ care shall comply with Sections 5306.2 through 5306.45 in addition to other requirements of this chapter ~~and Section 427 of the International Building Code.~~	—	Minor wordsmithing change.
	5306.1.1 Training. Personnel who handle medical gases and associated equipment and cylinders shall be trained on the use, safe handling and associated hazards.		New section for training of personnel.
	5306.2 Interior supply location. Medical gases shall be ~~stored~~ located in areas dedicated to the storage of such gases without other storage or uses. Where containers of medical gases in quantities greater than the permit amount are located inside buildings, they shall be in a 1-hour exterior room, a 1-hour interior room or a gas cabinet in accordance with Section		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5306.2.1, 5306.2.2 or 5306.2.3, respectively. Rooms or areas where medical gases are stored or used in quantities exceeding the maximum allowable quantity per control area as set forth in Section 5003.1 shall be in accordance with the International Building Code for high-hazard Group H occupancies.		
	5306.2.1 One-hour exterior rooms. A 1-hour exterior room shall be a room or enclosure separated from the remainder of the building by fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both, with a fire-resistance rating of not less than 1 hour. Openings between the room or enclosure and interior spaces shall be self-closing smoke- and draft-control assemblies having a fire protection rating of not less than 1 hour. Rooms shall have not less than one exterior wall that is provided with not less than two ~~nonclosable louvered~~ vents. Each vent shall have a minimum free opening area of 2436 square inches (~~455~~ 232 cm ²) for each 1,000 cubic feet (28 m ³) at normal temperature and pressure (NTP) of gas stored in the room and shall be not less than 72 square inches (465 cm ²) in aggregate free opening area. One vent shall be within 6 inches (152 mm) of the floor and one shall be within 6 inches (152 mm) of the ceiling. Rooms shall be provided with not less than one automatic sprinkler to provide container cooling in case of fire.		Minor change to opening area requirements.
	5306.2.2 One-hour interior room. Where an exterior wall cannot be provided for the room, ~~automatic sprinklers~~ a 1-hour interior room shall be provided and shall be a room or enclosure separated from the remainder of the building by <i>fire barriers</i> constructed in accordance with Section 707 of the <i>International Building Code</i> or <i>horizontal assemblies</i> constructed in accordance with Section 711 of the <i>International Building Code</i> , or both, with a <i>fire-resistance rating</i> of not less than 1 hour. Openings between the room or enclosure and interior spaces shall be provided with self-closing, smoke- and draft-control assemblies having a <i>fire protection rating</i> of not less than 1 hour. ~~An automatic sprinkler system~~ shall be installed within the room. The room shall be exhausted through a duct to the exterior. Supply and exhaust ducts shall be enclosed in a 1-hour-rated shaft enclosure from the room to the exterior. <i>Approved</i> mechanical ventilation shall comply with the <i>International Mechanical Code</i> and be provided at a minimum rate of 1 cubic foot per minute cfm per square foot [0.00508 m ³ /(s • m ²)] of the area of the room.		New requirements for interior room construction.
	5306.2.3 Gas cabinets. Gas cabinets shall be constructed in accordance with Section 5003.8.6 and shall comply with the following: - Exhausted to the exterior through dedicated exhaust duct system installed in accordance with Chapter 5 of the <i>International Mechanical Code</i>. - Supply and exhaust ducts shall be enclosed in a 1-hour <i>fire-resistance-rated</i> shaft enclosure from the		New requirements for gas cabinet construction.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	~~cabinet to the exterior.~~ The average velocity of ventilation at the face of access ports or windows shall be not less than 200 feet per minute (1.02 m/s) with not less than 150 feet per minute (0.76 m/s) at any point of the access port or window. ~~3. They shall be internally sprinklered.~~ Provided with an automatic sprinkler system internal to the cabinet.		
	5306.5 Medical gas systems and equipment. Medical gas systems including, but not limited to, distribution piping, supply manifolds, connections, pressure regulators and relief devices and valves, and equipment shall be installed, tested and labeled in accordance with NFPA 99 and the general provisions of this chapter. Existing medical gas systems and equipment shall be used and maintained in accordance with the use, maintenance, inspection and testing provisions of NFPA 99 for medical gas systems and equipment.		Minor wordsmithing change.
	SECTION 5307 CARBON DIOXIDE (CO₂) SYSTEMS USED IN BEVERAGE DISPENSING APPLICATIONS COMPRESSED GASES NOT OTHERWISE REGULATED		
	~~5307.1 General. Carbon dioxide systems with more than 100 pounds (45.4 kg) of carbon dioxide used in beverage dispensing applications shall comply with Sections 5307.2 through 5307.5.2.~~		Base code section removed.
	5307.1 General. Compressed gases in storage or use not regulated by the material-specific provisions of Chapters 6, 54, 55, and 60 through 67, including asphyxiant, irritant and radioactive gases, shall comply with this section in addition to other requirements of this chapter.		New requirements for compressed gases in storage or use.
	~~5307.2 Permits. Permits shall be required as set forth in Section 405.6.~~		Base code section removed.
	5307.2 Ventilation. Indoor storage and use areas and storage buildings shall be provided with ventilation in accordance with Section 5004.3. Where mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied. Exceptions: 1. A gas detection system complying with Section 5307.2.1 shall be permitted in lieu of mechanical ventilation. 2. Areas containing insulated liquid carbon dioxide systems used in beverage dispensing applications shall comply with Section 5307.3.		New requirements for indoor ventilation for storage/use of compressed gases.
	5307.2.1 Gas detection system. In rooms or areas not provided with ventilation in accordance with Section 5307.2, a gas detection system complying with Section 916 or, where approved, an oxygen depletion alarm system, either of which initiates audible and visible alarm signals in the room or area where sensors are installed, shall be provided.		New requirements for gas detection system.
	~~5307.3 Equipment. The storage, use, and handling of liquid carbon dioxide shall be in accordance with Chapter 53 and the applicable requirements of NFPA 55, Chapter 13. Insulated liquid carbon dioxide systems shall have pressure relief devices vented in accordance with NFPA 55.~~		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5307.3 Insulated liquid carbon dioxide systems used in beverage dispensing applications. Insulated liquid carbon dioxide systems with more than 100 pounds (45.4 kg) of carbon dioxide used in beverage dispensing applications shall comply with Section 5307.3.1.		New requirement for CO ₂ used in beverage dispensing.
	5307.3.1 Ventilation. Where insulated liquid carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing storage tanks, cylinders, piping and equipment, and other areas where a leak of carbon dioxide is expected to accumulate, shall be provided with mechanical ventilation in accordance with Section 5004.3 and designed to maintain the room containing carbon dioxide at a negative pressure in relation to the surrounding area. Exception: A gas detection system complying with Section 5307.3.2 shall be permitted in lieu of mechanical ventilation.		New requirement for CO ₂ used in beverage dispensing.
	5307.3.2 Gas detection system. Where ventilation is not provided in accordance with Section 5307.3.1, a gas detection system shall be provided in rooms or indoor areas and in below-grade outdoor locations with insulated carbon dioxide systems. Carbon dioxide sensors shall be provided within 12 inches (305 mm) of the floor in the area where the gas is expected to accumulate or other <i>approved</i> locations. The system shall be designed as follows: 1. Activates an audible and visible supervisory alarm at a normally attended location upon detection of a carbon dioxide concentration of 5,000 ppm (9000 mg/m). 2. Activates an audible and visible alarm within the room or immediate area where the system is installed upon detection of a carbon dioxide concentration of 30,000 ppm (54 000 mg/m).		New requirement for CO ₂ used in beverage dispensing.
	5307.4 Protection from damage. Carbon dioxide systems shall be installed so the storage tanks, cylinders, piping and fittings are protected from damage by occupants or equipment during normal facility operations.		Base code section removed.
	5307.4 Carbon dioxide enrichment systems. The design, installation and maintenance of carbon dioxide enrichment systems with more than 100 pounds (45.4 kg) of carbon dioxide, and carbon dioxide enrichment systems with any quantity of carbon dioxide having a remote fill connection, shall comply with Sections 5307.4.1 through 5307.4.7.		New requirements for CO ₂ enrichment systems.
	5307.4.1 Documentation. The following information shall be provided with the application for permit: 1. Total aggregate quantity of liquid carbon dioxide in pounds or cubic feet at <i>normal temperature and pressure</i> . 2. Location and total volume of the room where the carbon dioxide enrichment operation will be conducted. Identify whether the room is at grade or below grade. 3. Location of containers relative to equipment.		New requirements for CO ₂ enrichment systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	building openings and means of egress. 4. Manufacturer's specifications and pressure rating, including cut sheets, of all piping and tubing to be used. 5. A piping and instrumentation diagram that shows piping support and remote fill connections. 6. Details of container venting, including but not limited to vent line size, material and termination location. 7. Alarm and detection system and equipment, if applicable. 8. Seismic support for containers.		
	5307.4.2 Equipment. Pressure relief, vent piping, fill indicators, fill connections, vent terminations, piping systems and the storage, use and handling of the carbon dioxide shall be in accordance with Chapter 53 and NFPA 55.		New requirements for CO ₂ enrichment systems.
	5307.4.3 Gas detection system. A gas detection system complying with Section 916 shall be provided in rooms or indoor areas in which the carbon dioxide enrichment process is located, in rooms or indoor areas in which container systems are located, and in other areas where carbon dioxide is expected to accumulate. Carbon dioxide sensors shall be provided within 12 inches (305 mm) of the floor in the area where the gas is expected to accumulate or leaks are most likely to occur. The system shall be designed as follows: 1. Activates a low-level alarm upon detection of a carbon dioxide concentration of 5,000 ppm (9000 mg/m ³). 2. Activates a high-level alarm upon detection of a carbon dioxide concentration of 30,000 ppm (54 000 mg/m ³).		New requirements for CO ₂ enrichment systems.
	5307.4.3.1 System activation. Activation of the low-level gas detection system alarm shall automatically: 1. Stop the flow of carbon dioxide to the piping system. 2. Activate the mechanical exhaust ventilation system. 3. Activate an audible and visible supervisory alarm signal at an <i>approved</i> location within the building. Activation of the high-level gas detection system alarm shall automatically: 1. Stop the flow of carbon dioxide to the piping system. 2. Activate the mechanical exhaust ventilation system. Activate an audible and visible evacuation alarm both inside and outside of the carbon dioxide enrichment area, and the area in which the carbon dioxide containers are located.		New requirements for CO ₂ enrichment systems.
	5307.4.4 Pressurization and ventilation. Rooms or indoor areas in which carbon dioxide enrichment is provided shall be maintained at a negative pressure in relation to the surrounding areas in the building. A mechanical ventilation system shall be provided in accordance with the <i>International Mechanical Code</i> that complies with all of the following: 1. Mechanical ventilation in the room or area shall be at a rate of not less than 1 cfm per square foot [0.00508 m ³ /(s • m ²)].		New requirements for CO ₂ enrichment systems.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2. When activated by the gas detection system, the mechanical ventilation system shall remain on until manually reset. 3. The exhaust system intakes shall be taken from points within 12 inches (305 mm) of the floor. The ventilation system shall discharge to the outdoors in an <i>approved</i> location.		
	5307.4.5 Signage. Hazard identification signs shall be posted at the entrance to the room and indoor areas where the carbon dioxide enrichment process is located, and at the entrance to the room or indoor area where the carbon dioxide containers are located. The sign shall be not less than 8 inches (200 mm) in width and 6 inches (150 mm) in height and indicate: CAUTION – CARBON DIOXIDE GAS VENTILATE THE AREA BEFORE ENTERING. A HIGH CARBON DIOXIDE (CO₂) GAS CONCENTRATION IN THIS AREA CAN CAUSE ASPHYXIATION.	=	New requirements for CO ₂ enrichment systems.
	5307.4.6 Seismic and structural design. Carbon dioxide system containers and piping shall comply with the seismic design requirements in Chapter 16 of the <i>International Building Code</i> and shall not exceed the floor loading limitation of the building.		New requirements for CO ₂ enrichment systems.
	5307.4.7 Container refilling. Carbon dioxide containers located indoors shall not be refilled unless filled from a remote connection located outdoors.		New requirements for CO ₂ enrichment systems.
	~~5307.5 Required protection. Where carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing carbon dioxide storage tanks, cylinders, piping and fittings and other areas where a leak of carbon dioxide can collect shall be provided with either ventilation in accordance with Section 5307.5.1 or an emergency alarm system in accordance with Section 5307.5.2.~~		Base code section removed.
	~~5307.5.1 Ventilation. Mechanical ventilation shall be in accordance with the <i>International Mechanical Code</i> and shall comply with all of the following:~~ ~~1. Mechanical ventilation in the room or area shall be at a rate of not less than 1 cubic foot per minute per square foot [0.00508 m³/(s • m²)].~~ 2. Exhaust shall be taken from a point within 12 inches (305 mm) of the floor. The ventilation system shall be designed to operate at a negative pressure in relation to the surrounding area.		Base code section removed.
	~~5307.5.2 Emergency alarm system. An emergency alarm system shall comply with all of the following:~~ ~~1. Continuous gas detection shall be provided to monitor areas where carbon dioxide can accumulate.~~ ~~2. The threshold for activation of an alarm shall not exceed 5,000 parts per million (9,000 mg/m³).~~		Base code section removed.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~Activation of the emergency alarm system shall initiate a local alarm within the room or area in which the system is installed.~~		
	SECTION 5308 COMPRESSED GASES NOT OTHERWISE REGULATED		Base code section removed.
	~~5308.1 General. Compressed gases in storage or use not regulated by the material specific provisions of Chapters 6, 54, 55 and 60 through 67, including asphyxiant, irritant and radioactive gases, shall comply with this section in addition to other requirements of this chapter.~~		Base code section removed.
	~~5308.2 Ventilation. Indoor storage and use areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation in accordance with the requirements of Section 5004.3 or 5005.1.9. Where mechanical ventilation is provided, the systems shall be operational during such time as the building or space is occupied.~~		Base code section removed.
2015 Houston IFC – Chapter 54 Corrosive Materials	2021 IFC – Chapter 54 – Corrosive Materials	2021 Houston Amendments	Code Change Summary
	SECTION 5401 GENERAL 5401.1 Scope. The storage and use of corrosive materials shall be in accordance with this chapter. Compressed gases shall also comply with Chapter 53. Exceptions: 1. Display and storage in Group M and storage in Group S occupancies complying with Section 5003.11. 2. Stationary storage battery systems in accordance with Section ~~608~~ 1206.2 . 3. This chapter shall not apply to R-717 (ammonia) where used as a refrigerant in a refrigeration system (see Section ~~6065~~ 6065).		Base code renumbering.
2015 Houston IFC – Chapter 55 Cryogenic Fluids	2021 IFC – Chapter 55 – Cryogenic Fluids	2021 Houston Amendments	Code Change Summary
	SECTION 5501 GENERAL 5501.1 Scope. Storage, use and handling of cryogenic fluids shall comply with this chapter and NFPA 55. Cryogenic fluids classified as hazardous materials shall also comply with the general requirements of Chapter 50. 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 ~~6065~~ 6065). 2. Liquefied natural gas (LNG), which shall comply with NFPA 59A. 3. Oxidizing cryogenic fluids, including oxygen, shall comply with Chapter 63, as applicable.		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	4. Flammable cryogenic fluids, including hydrogen, methane and carbon monoxide, shall comply with Chapters 23 and 58, as applicable. 5. Inert cryogenic fluids, including argon, helium and nitrogen, shall comply with ANSI/CGA P-18.		
	SECTION 5503 GENERAL REQUIREMENTS		
	5503.4.3 Identification of containers. Stationary containers shall be identified with the manufacturing specification and maximum allowable working pressure with a permanent nameplate. The nameplate shall be installed on the container in an accessible location provided with ready access. The nameplate shall be marked in accordance with the ASME Boiler and Pressure Vessel Code or DOTn 49 CFR Parts 100-185.		Minor wordsmithing changes.
	5503.4.4 Identification of container connections. Container inlet and outlet connections, liquid-level limit controls, valves and pressure gauges shall be identified in accordance with one of the following: 1. Marked with A permanent tag or label identifying the function. 2. Identified by A schematic drawing that portrays the function and designates whether the connected connection is to the vapor or liquid space of the container. Where a schematic drawing is provided, it shall be attached to the container and maintained in a legible condition.		Minor wordsmithing changes.
	SECTION 5504 STORAGE		
5504.3.1.1.2 Surfaces beneath containers. Containers shall be placed on surfaces that are compatible with the fluid in the container. For liquid oxygen stationary containers, surfacing of noncombustible material shall be provided at ground level under liquid delivery connections for the storage container and the delivery vehicle. Asphaltic and bitumastic paving or organic material (wood, wood byproducts or similar materials) shall not be used as paving materials. The area below the liquid delivery connections shall be at least 3 feet (910 mm) in diameter from points at ground level upon which leakage of liquid oxygen might occur during unloading and normal operation of the system. The area under the mobile supply equipment shall be at least the full width of the vehicle and at least 8 feet (2.4 m) in the direction of the vehicle axis. The layout of the slope, if any, of such areas shall consider possible flow of spilled liquid oxygen to adjacent combustible materials. The area around the stationary containers, fill connections and delivery pad shall be kept clear of all trash and organic matter.			Houston amendment removed to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
2015 Houston IFC – Chapter 56 Explosives and Fireworks	2021 IFC – Chapter 56 – Explosives and Fireworks	2021 Houston Amendments	Code Change Summary
	SECTION 5601 GENERAL		
5601.1.3 Fireworks. The possession, manufacture, storage, sale, handling ~~or and~~ use of fireworks is prohibited. Exceptions: 1. Storage and handling of fireworks as allowed in Section 5604. ~~2. Manufacture, assembly and testing of fireworks as allowed in Section 5605.~~ ~~32.~~ The use of fireworks for firework displays as allowed in Section 5608. ~~4. The possession, storage, sale, handling and use of specific types of Division 1.4G fireworks where allowed by applicable laws, ordinances and regulations, provided such fireworks and facilities comply with NFPA 1124, CPSC 16 CFR Parts 1500 and 1507, and DOTn 49 CFR Parts 100-185, for consumer fireworks.~~ ~~53. Fireworks being transported in international, intrastate, or interstate commerce through the jurisdiction between points of origin and destination outside of the jurisdiction in accordance with all applicable municipal or state laws, ordinances, and regulations, provided the fireworks comply with federal regulations CPSC 16 CFR Parts 1500-1507, and DOTn 49 CFR Parts 100-185, for consumer fireworks. The provisions of this exception shall extend only to bona fide commercial transportation and distribution of fireworks in commercial quantities among manufacturers, wholesalers and dealers. Transportation shall be by way of established hazardous materials transportation routes through and around the jurisdiction.~~	5601.1.3 Fireworks. The possession, manufacture, storage, sale, handling and use of fireworks are prohibited. Exceptions: 1. Storage and handling of fireworks as allowed in Section 5604. 2. Manufacture, assembly and testing of fireworks as allowed in Section 5605. 3. The use of fireworks for fireworks displays as allowed in Section 5608. 4. The possession, storage, sale, handling and use of specific types of Division 1.4G fireworks where allowed by applicable laws, ordinances and regulations, provided that such fireworks and facilities comply with the 2006 edition of NFPA 1124, CPSC 16 CFR Parts 1500 and 1507, and DOTn 49 CFR Parts 100– 185, as applicable for consumer fireworks.	5601.1.3 Fireworks. The possession, manufacture, storage, sale, handling <u>or and</u> use of fireworks is prohibited. Exceptions: 1. Storage and handling of fireworks as allowed in Section 5604. 2. Manufacture, assembly and testing of fireworks as allowed in Section 5605. 32. The use of fireworks for firework displays as allowed in Section 5608. ~~4. The possession, storage, sale, handling and use of specific types of Division 1.4G fireworks where allowed by applicable laws, ordinances and regulations, provided such fireworks and facilities comply with 2006 edition of NFPA 1124, CPSC 16 CFR Parts 1500 and 1507, and DOTn 49 CFR Parts 100-185, as applicable for consumer fireworks.~~ ~~3. Fireworks being transported in international, intrastate, or interstate commerce through the jurisdiction between points of origin and destination outside of the jurisdiction in accordance with all applicable municipal or state laws, ordinances, and regulations, provided the fireworks comply with federal regulations CPSC 16 CFR Parts 1500-1507, and DOTn 49 CFR Parts 100-185, for consumer fireworks. The provisions of this exception shall extend only to bona fide commercial transportation and distribution of fireworks in commercial quantities among manufacturers, wholesalers and dealers. Transportation shall be by way of established hazardous materials transportation routes through and around the jurisdiction.~~	Minor changes to base code. No change to Houston amendment.
5601.1.3.1 Seizure of fireworks. The presence of any fireworks within this jurisdiction in violation of this chapter is hereby declared to be a common and public nuisance. The <i>fire code official</i> is directed and required to seize and cause to be safely destroyed any fireworks found in violation of this code. Any member of the Life Safety and Fire Prevention Bureau of the Houston Fire Department or any police officer of the jurisdiction is empowered to stop the transportation of and detain any fireworks found being transported illegally.		5601.1.3.1 Seizure of fireworks. The presence of any fireworks within this jurisdiction in violation of this chapter is hereby declared to be a common and public nuisance. The <i>fire code official</i> is directed and required to seize and cause to be safely destroyed any fireworks found in violation of this code. Any member of the Life Safety and Fire Prevention Bureau of the Houston Fire Department or any police officer of the jurisdiction is empowered to stop the transportation of and detain any fireworks found being transported illegally.	No change to Houston amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5601.2.2 Sale and retail display. Persons shall not construct a retail display nor offer for sale explosives, explosive materials or fireworks ~~upon~~ highways, sidewalks, public property or in Group A or E occupancies.		Minor wordsmithing changes.
	5601.8 Establishment of quantity of explosives and distances. The quantity of explosives and distances shall be in accordance with Sections 5601.8.1 ~~and through~~ 5601.8.1. ~~14~~ .		Minor wordsmithing changes.
	TABLE 5601.8.1(1) APPLICATION OF ~~SEPARATION QUANTITY-DISTANCE (Q-D) TABLES-DIVISION 1.1, 1.2 AND 1.5 EXPLOSIVES~~^{a, b, c}		Minor wordsmithing changes.
	TABLE 5601.8.1(2) APPLICATION OF ~~SEPARATION QUANTITY-DISTANCE (Q-D) TABLES-DIVISION 1.1, 1.2 AND 1.5 EXPLOSIVES~~^{a, b, c}		Minor wordsmithing changes.
	TABLE 5601.8.1(3) APPLICATION OF ~~SEPARATION QUANTITY-DISTANCE (Q-D) TABLES-DIVISION 1.1, 1.2 AND 1.5 EXPLOSIVES~~^{a, b, c}		Minor wordsmithing changes.
	5601.8.1.3 Combinations of mass-detonating and nonmass-detonating explosives (excluding Division 1.4). Combination of mass-detonating and nonmass-detonating explosives (excluding Division 1.4) shall be as follows: 1. Where Division 1.1 and 1.2 explosives are located in the same site, determine the distance for the total quantity considered first as 1.1 and then as 1.2. The required distance is the greater of the two. Where the Division 1.1 requirements are controlling and the TNT equivalence of the 1.2 is known, the TNT equivalent weight of the 1.2 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table 5604.5.2(2) or Table 5605.3, as appropriate. 2. Where Division 1.1 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1 and then as 1.3. The required distance is the greater of the two. Where the Division 1.1 requirements are controlling and the TNT equivalence of the 1.3 is known, the TNT equivalent weight of the 1.3 items shall be allowed to be added to the total explosive weight of Division 1.1 items to determine the net explosive weight for Division 1.1 distance determination. See Table 5604.5.2(1), 5604.5.2(2) or 5605.3, as appropriate.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Where Division 1.1, 1.2 and 1.3 explosives are located in the same site, determine the distances for the total quantity considered first as 1.1, next as 1.2 and finally as 1.3. The required distance is the greatest of the three. As allowed by ~~paragraphs~~ Items 1 and 2 above, TNT equivalent weights for 1.2 and 1.3 items are allowed to be used to determine the net weight of explosives for Division 1.1 distance determination. Table 5604.5.2(1) or 5605.3 shall be used where TNT equivalency is used to establish the net explosive weight. 4. For composite pyrotechnic items Division 1.1 and Division 1.3, the sum of the net weights of the pyrotechnic composition and the explosives involved shall be used. See Tables 5604.5.2(1) and 5604.5.2(2).		
	SECTION 5602 DEFINITIONS 5602.1 Definitions. The following terms are defined in Chapter 2: AMMONIUM NITRATE. BARRICADE. Artificial barricade. Natural barricade. BARRICADED. BLAST AREA. BLAST SITE. BLASTER. BLASTING AGENT. BULLET RESISTANT. DETONATING CORD. DETONATION. DETONATOR. DISCHARGE SITE. DISPLAY SITE. EXPLOSIVE. High explosive. Low explosive. Mass-detonating explosives. UN/DOTn Class 1 explosives. Division 1.1. Division 1.2. Division 1.3. Division 1.4. Division 1.5. Division 1.6. EXPLOSIVE MATERIAL. FALLOUT AREA. FIREWORKS. Fireworks, 1.43G. Fireworks, 1.34G. FIREWORKS DISPLAY. HIGHWAY. INHABITED BUILDING.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	MAGAZINE. Indoor. Type 1. Type 2. Type 3. Type 4. Type 5. MORTAR. NET EXPLOSIVE WEIGHT (net weight). OPERATING BUILDING. OPERATING LINE. PLOSOPHORIC MATERIAL. PROXIMATE AUDIENCE. PUBLIC TRAFFIC ROUTE (PTR). PYROTECHNIC ARTICLE. PYROTECHNIC COMPOSITION. PYROTECHNIC SPECIAL EFFECT. PYROTECHNIC SPECIAL-EFFECT MATERIAL. PYROTECHNICS. QUANTITY-DISTANCE (Q-D). Inhabited building distance (IBD). Intermagazine distance (IMD). Intraline distance (ILD) or Intraplant distance (IPD). Minimum separation distance (Do). RAILWAY. READY BOX. SMALL ARMS AMMUNITION. SMALL ARMS PRIMERS. SMOKELESS PROPELLANTS. SPECIAL INDUSTRIAL EXPLOSIVE DEVICE. THEFT RESISTANT.		
	SECTION 5604 EXPLOSIVE MATERIALS STORAGE AND HANDLING		
	5604.6.5 Signs and placards. Property upon which Type 1 magazines and outdoor magazines of Types 2, 4 and 5 are located shall be posted with signs stating: “NO SMOKING” and “EXPLOSIVES—KEEP OFF.” These signs shall be of contrasting colors with a minimum letter height of 3 inches (76 mm) with a minimum brush stroke of 1/2 inch (12.7 mm). The signs shall be located to minimize the possibility of a bullet shot at the sign hitting the magazine.		Minor wordsmithing changes.
	SECTION 5605 MANUFACTURE, ASSEMBLY AND TESTING OF EXPLOSIVES, EXPLOSIVE MATERIALS AND FIREWORKS		No Houston amendment.
5605.1.1 <u>Manufacturing of fireworks prohibited.</u> The manufacturing of fireworks is prohibited, and no provision of this section shall be construed to authorize the manufacturing of fireworks within the jurisdiction.		5605.1.1 <u>Manufacturing of fireworks prohibited.</u> The manufacturing of fireworks is prohibited, and no provision of this section shall be construed to authorize the manufacturing of fireworks within the jurisdiction.	No change to Houston amendment

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5605.3 Intraplant separation of operating buildings. Explosives manufacturing buildings and fireworks manufacturing buildings, including those where explosive charges are assembled, manufactured, prepared or loaded utilizing Division 1.1, 1.2, 1.3, 1.4 or 1.5 explosives, shall be separated from all other buildings, including magazines, within the confines of the manufacturing plant, at a distance not less than those shown in Table 5605.3 or 5604.5.2(3), as appropriate. ~~Exception: Fireworks manufacturing buildings separated in accordance with NFPA 1124.~~ The quantity of explosives in an operating building shall be the net weight of all explosives contained therein. Distances shall be based on the hazard division requiring the greatest separation, unless the aggregate explosive weight is divided by approved walls or shields designed for that purpose. Where dividing a quantity of explosives into smaller stacks, a suitable barrier or adequate separation distance shall be provided to prevent propagation from one stack to another. Where distance is used as the sole means of separation within a building, such distance shall be established by testing. Testing shall demonstrate that propagation between stacks will not result. Barriers provided to protect against explosive effects shall be designed and installed in accordance with approved standards. Exception: Fireworks manufacturing buildings separated in accordance with NFPA 1124.		Base code exception relocated.
	5605.5.1.1 Wet collector. When collecting explosives dust, a wet collector system shall be used. Wetting agents shall be compatible with the explosives. Collector systems shall be interlocked with process power supplies so that the process cannot continue without the collector systems ~~also~~ operating.		Minor wordsmithing changes.
	SECTION 5606 SMALL ARMS AMMUNITION AND SMALL ARMS AMMUNITION COMPONENTS 5606.1 General. Indoor storage and display of black powder, smokeless propellants, small arms primers, ~~and~~ small arms ammunition and commercial reloading shall comply with this section and NFPA 495.		Minor wordsmithing changes.
	5606.5.2.1 Smokeless propellant. Commercial stocks of smokeless propellants shall be stored as follows: - Quantities exceeding 20 pounds (9 kg), but not exceeding 100 pounds (45 kg) shall be stored in portable wooden boxes having walls of not less than 1 inch (25 mm) nominal thickness. - Quantities exceeding 100 pounds (45 kg), but not exceeding 800 pounds (363 kg), shall be stored in nonportable storage cabinets having walls not less than 1 inch (25 mm) nominal thickness. Not more than 400 pounds (182 kg) shall be stored in any one cabinet, and cabinets shall be separated by a distance of not less than 25 feet (7620 mm) or by a fire partition having a fire-resistance rating of not less than 1 hour.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Storage of quantities exceeding 800 pounds (363 kg), but not exceeding 5,000 pounds (2270 kg) in a building shall comply with all of the following: 3.1. The warehouse or storage room is ~~unaccessible~~ not open to unauthorized personnel. 3.2. Smokeless propellant shall be stored in nonportable storage cabinets having wood walls not less than 1 inch (25 mm) nominal thickness and having shelves with not more than 3 feet (914 mm) of separation between shelves. 3.3. Not more than 400 pounds (182 kg) is stored in any one cabinet. 3.4. Cabinets shall be located against walls of the storage room or warehouse with not less than 40 feet (12 192 mm) between cabinets. 3.5. The minimum required separation between cabinets shall be 20 feet (6096 mm) provided that barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades must extend not less than 10 feet (3048 mm) outward, be firmly attached to the wall and be constructed of steel not less than 1/4 inch thick (6.4 mm), 2-inch (51 mm) nominal thickness wood, brick or concrete block. 3.6. Smokeless propellant shall be separated from materials classified as combustible liquids, flammable liquids, flammable solids or oxidizing materials by a distance of 25 feet (7620 mm) or by a fire partition having a fire-resistance rating of 1 hour. 3.7. The building shall be equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1. 4. Smokeless propellants not stored in accordance with Item 1, 2, or 3 ~~above~~ shall be stored in a Type 2 or 4 magazine in accordance with Section 5604 and NFPA 495.		
	5606.5.2.3 Small arms primers. Commercial stocks of small arms primers shall be stored as follows: 1. Quantities not to exceed 750,000 small arms primers stored in a building shall be arranged such that not more than 100,000 small arms primers are stored in any one pile and piles are not less than 15 feet (4572 mm) apart. 2. Quantities exceeding 750,000 small arms primers stored in a building shall comply with all of the following: 2.1. The warehouse or storage building ~~shall not be accessible~~ is not open to unauthorized personnel. 2.2. Small arms primers shall be stored in cabinets. Not more than 200,000 small arms primers shall be stored in any one cabinet. 2.3. Shelves in cabinets shall have vertical separation of not less than 2 feet (610 mm).		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	2.4. Cabinets shall be located against walls of the warehouse or storage room with not less than 40 feet (12 192 mm) between cabinets. The minimum required separation between cabinets shall be allowed to be reduced to 20 feet (6096 mm) provided that barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades shall be firmly attached to the wall and shall be constructed of steel not less than 1/4 inch thick(6.4 mm), 2-inch (51 mm) nominal thickness wood, brick or concrete block. 2.5. Small arms primers shall be separated from materials classified as combustible liquids, flammable liquids, flammable solids or oxidizing materials by a distance of 25 feet (7620 mm) by a fire partition having a fire-resistance rating of 1 hour. 2.6. The building shall be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1. 3. Small arms primers not stored in accordance with Item 1 or 2 of this section shall be stored in a magazine meeting the requirements of Section 5604 and NFPA 495.		
	5606.6 Commercial reloading. Commercial reloading of small arms ammunition shall comply with Sections 5606.6.1 through 5606.6.8.		New requirements for commercial reloading of ammunition.
	5606.6.1 Electrical. Areas within 3 feet (914 mm) of reloading equipment shall be Class I, Division 2, Group A type.		New requirements for commercial reloading of ammunition.
	5606.6.2 Exhaust fans. Squirrel cage blowers shall not be used for exhausting hazardous fumes, vapors or gases. Only nonferrous fan blades shall be used for fans located within the ductwork and through which hazardous materials are exhausted. Motors shall be located outside the duct.		New requirements for commercial reloading of ammunition.
	5606.6.3 Work stations. Work stations shall be separated by distance, barrier or other <i>approved</i> alternatives so that fire in one station will not ignite material in another work station.		New requirements for commercial reloading of ammunition.
	5606.6.4 Personnel limits. The number of occupants in each process building and in each magazine shall not exceed the number necessary for proper conduct of production operations.		New requirements for commercial reloading of ammunition.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5606.6.5 Approved containers. Smokeless powder shall be kept in its original container. 5606.6.6 Static controls. The work area shall be provided with <i>approved</i> static controls.		New requirements for commercial reloading of ammunition.
	5606.6.7 Waste disposal. <i>Approved</i> receptacles with covers shall be provided for each location for disposing of waste material and debris. These waste receptacles shall be emptied and cleaned as often as necessary but not less than once each day or at the end of each shift.		New requirements for commercial reloading of ammunition.
	5606.6.8 Safety rules. General safety rules and operating instructions governing the particular operation or process conducted at that location shall be available at each location.		New requirements for commercial reloading of ammunition.
	SECTION 5607 BLASTING		
	5607.14 Post-blast procedures. After the blast, the following procedures shall be observed. 1. ~~No Persons~~ shall ~~not~~ return to the blast area until allowed to do so by the blaster in charge. 2. The blaster shall allow sufficient time for smoke and fumes to dissipate and for dust to settle before returning to or approaching the blast area. 3. The blaster shall inspect the entire blast site for misfires before allowing other personnel to return to the blast area.		Minor wordsmithing changes.
	SECTION 5608 FIREWORKS DISPLAY		
	5608.5.4 Sorting and separation. After delivery to the display site and prior to the fireworks display, all shells shall be separated according to their size and their designation as salutes. Exception: For electrically fired displays, or displays where all shells are loaded into mortars prior to the show, ~~there is no requirement for~~ separation of shells according to their size or their designation as salutes ~~is not required~~ .		Minor wordsmithing changes.
	5608.5.5 Ready boxes. Display fireworks, 1.3G, that will be temporarily stored at the site during the fireworks display shall be stored in ready boxes located upwind and not less than 25 feet (7620 mm) from themortar placement and separated according to their size and their designation as salutes. Exception: For electrically fired fireworks displays, or fireworks displays where all shells are loaded into mortars prior to the show, ~~there is no requirement for~~ separation of shells according to their size, their		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	designation as salutes or for the use of ready boxes is not required.		
	5608.6 Installation of mortars. Mortars for firing fireworks shells shall be installed in accordance with NFPA 1123 and shall be positioned so that shells are propelled away from spectators and over the fallout area. ~~Under no circumstances~~ Mortars shall ~~mortars not~~ be angled toward the spectator viewing area. Prior to placement, mortars shall be inspected for defects, such as dents, bent ends, damaged interiors and damaged plugs. Defective mortars shall not be used.		Minor wordsmithing changes.
	SECTION 5609 TEMPORARY STORAGE OF CONSUMER FIREWORKS 5609.1 General. Where the display or temporary storage of ~~consumer~~ fireworks, 1.4G (consumer fireworks) is allowed by Section 5601.1.3, Exception 4, such ~~display or~~ storage shall comply with the applicable requirements of NFPA 1124.		Minor wordsmithing changes.
2015 Houston IFC – Chapter 57 Flammable and Combustible Liquids	2021 IFC – Chapter 57 – Flammable and Combustible Liquids	2021 Houston Amendments	Code Change Summary
	SECTION 5701 GENERAL		
	5701.2 Nonapplicability. This chapter shall not apply to liquids as otherwise provided in other laws or regulations or chapters of this code, including: 1. Specific provisions for <i>flammable liquids</i> in motor fuel-dispensing facilities, repair garages, airports and marinas in Chapter 23. 2. Medicines, foodstuffs, cosmetics and commercial or institutional products containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solution not being flammable, provided that such materials are packaged in individual containers not exceeding 1.3 gallons (5 L). 3. Quantities of alcoholic beverages in retail or wholesale sales or storage occupancies, provided that the liquids are packaged in individual containers not exceeding 1.3 gallons (5 L). 4. Storage and use of fuel oil in tanks and containers connected to oil-burning equipment. Such storage and use shall be in accordance with Section 605. For abandonment of fuel oil tanks, this chapter applies. ~~5. Refrigerant liquids and oils in~~ Refrigeration systems (see Section 608). 6. Storage and display of aerosol products complying with Chapter 51. 7. Storage and use of liquids that do not have a fire point when tested in accordance with ASTM D92. 8. Liquids with a <i>flash point</i> greater than 95°F (35°C) in a water-miscible solution or dispersion with a water and inert		Minor wordsmithing changes, new provisions for applicability of chapter.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	(noncombustible) solids content of more than 80 percent by weight, which do not sustain combustion. 9. Liquids without <i>flash points</i> that can be flammable under some conditions, such as certain halogenated hydrocarbons and mixtures containing halogenated hydrocarbons. 10. The storage of beer , distilled spirits and wines in ~~wooden barrels~~ and casks. 11. Commercial cooking oil storage tank systems located within a building and designed and installed in accordance with Section 607 and NFPA 30. 12. Application and release of pesticide and agricultural products and materials intended for use in weed abatement, erosion control, soil amendment or similar applications where applied in accordance with the manufacturer's instructions and label directions. 13. The off-site transportation of <i>flammable or combustible liquids</i> where in accordance with Department of Transportation (DOTn) regulation		
	SECTION 5703 GENERAL REQUIREMENTS 5703.1 Electrical. Electrical wiring and equipment shall be installed and maintained in accordance with Section 60 54 and NFPA 70.		No Houston amendment.
5703.5.5 Security. When required by the <i>fire code official</i> , storage areas, tanks, piping, valves, regulating equipment and accessories shall be protected against tampering or trespassers by fencing or other control measures in accordance with Section 5003.9.2.		5703.5.5 Security. When required by the <i>fire code official</i> , storage areas, tanks, piping, valves, regulating equipment and accessories shall be protected against tampering or trespassers by fencing or other control measures in accordance with Section 5003.9.2.	No change to Houston amendment.
	TABLE 5703.6.2 PIPING STANDARDS		No Houston amendment.
	5703.6.2.1 Special materials. Low-melting-point materials (such as aluminum, copper or 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 5703.6.2. Where 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 5703.6.2 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 a location provided with ready access. In all cases, nonmetallic piping shall be used in accordance with Section 27.4.6 of NFPA 30.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5703.6.6.1 Backflow protections. Connections to pipelines or piping by which equipment (such as tank cars, tank vehicles or marine vessels) discharges liquids into storage tanks shall be provided with check valves or block valves for automatic protection against back flow where the piping arrangement is such that backflow from the system is possible. Where loading and unloading is done through a common pipe system, a check valve is not required. However, a block valve, located ~~so as to be readily accessible in an area where it is provided with ready access~~ or remotely operable, shall be provided.		Minor wordsmithing changes.
5703.6.9.2 Swing joints. <u>Approved swing joints shall be installed on all underground liquid, vapor and vent piping where the piping leaves the dispensing island or location and just before where the pipe connects to any underground tank fittings. Swing joints shall also be installed on piping that is rigidly supported or connected between fixed points and that is subject to thermal expansion or differential movements. No pipe nipple used in connection with a double swing joint or where piping joins tanks shall exceed 12 inches (300 mm) in length.</u> <u>Exception:</u> Listed flexible connectors are allowed in lieu of swing joints when <i>approved by the fire code official.</i>		5703.6.9.2 Swing joints. <u>Approved swing joints shall be installed on all underground liquid, vapor and vent piping where the piping leaves the dispensing island or location and just before where the pipe connects to any underground tank fittings. Swing joints shall also be installed on piping that is rigidly supported or connected between fixed points and that is subject to thermal expansion or differential movements. No pipe nipple used in connection with a double swing joint or where piping joins tanks shall exceed 12 inches (300 mm) in length.</u> <u>Exception:</u> Listed flexible connectors are allowed in lieu of swing joints when <i>approved by the fire code official.</i>	No change to Houston amendment.
5704.1 General. The storage of flammable and <i>combustible liquids</i> in containers and tanks shall be in accordance with this section, <u>API 653 for steel tanks</u> , and the applicable section of Chapter 50.		5704.1 General. The storage of flammable and <i>combustible liquids</i> in containers and tanks shall be in accordance with this section, <u>API 653 for steel tanks</u> , and the applicable section of Chapter 50.	No change to Houston amendment.
	5704.2.7.3.2 Vent-line flame arresters and pressure-vacuum vents. Listed or approved flame arresters or pressure-vacuum (PV) vents that remain closed unless venting under pressure or vacuum conditions shall be installed in normal vents of tanks containing Class IB and IC liquids. ~~Exception: Where determined by the fire code official that the use of such devices can result in damage to the tank.~~ Vent-line flame arresters shall be installed in accordance with their listing or API 2000 and maintained in accordance with Section 21.8.6 of NFPA 30 or API 2000. In-line flame arresters in piping systems shall be installed and maintained in accordance with their listing or API 2028. Pressure-vacuum vents shall be installed in accordance with Section 21.4.3 of NFPA 30 or API 2000 and maintained in accordance with Section 21.8.6 of NFPA 30 or API 2000. Exception: Where determined by the fire code official that the use of these devices can result in damage to the tank.		Base code exception relocated.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5704.2.7.5.7 Protection against vapor release. Tank openings provided for purposes of vapor recovery shall be protected against possible vapor release by means of a spring-loaded check valve or dry-break connections, or other approved device, unless the opening is a pipe connected to a vapor processing system. Openings designed for combined fill and vapor recovery shall also be protected against vapor release unless connection of the liquid delivery line to the fill pipe simultaneously connects the vapor recovery line. Connections shall be vapor tight.		Minor wordsmithing change.
	5704.2.8.11 Monitoring and detection. Vaults shall be provided with approved vapor and liquid detection systems and equipped with on-site audible and visual warning devices with battery backup. Vapor detection systems shall sound an alarm when the system detects vapors that reach or exceed 25 percent of the lower explosive limit (LEL) of the liquid stored. Vapor detectors shall be located not higher than 12 inches (305 mm) above the lowest point in the vault. Liquid detection systems shall sound an alarm upon detection of any liquid, including water. Liquid detectors shall be located in accordance with the manufacturer's instructions. Activation of either vapor or liquid detection systems shall cause a signal to be sounded at an approved, constantly attended location within the facility serving the tanks or at an approved location. Activation of vapor detection systems shall also shut off dispenser pumps.		Minor wordsmithing change.
	5704.2.9.2.3 Fire protection of supports. Supports or pilings for above-ground tanks storing Class I, II or IIIA liquids elevated more than 12 inches (305 mm) above grade shall have a fire-resistance rating of not less than 2 hours in accordance with the fire exposure criteria specified in ASTM ~~E 1529~~ E1529 . Exceptions: 1. Structural supports tested as part of a protected above-ground tank in accordance with UL 2085. 2. Stationary tanks located outside of buildings where protected by an approved water-spray system designed in accordance with Chapter 9 and NFPA 15. 3. Stationary tanks located inside of buildings equipped throughout with an approved automatic sprinkler system designed in accordance with Section 903.3.1.1.		Minor wordsmithing change.
5704.2.9.6.1 Locations where above-ground tanks are prohibited. Storage of Class I and II liquids in above-ground tanks outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited (~~see Section 3 of the Sample Legislation for Adoption of the~~	5704.2.9.6.1 Locations where above-ground tanks are prohibited. Storage of Class I and II liquids in above-ground tanks outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited (~~see Section 3 of the Sample Legislation for~~	5704.2.9.6.1 Locations where above-ground tanks are prohibited. Storage of Class I and II liquids in above-ground tanks outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited [JURISDICTION TO SPECIFY] in accordance with Section 203, unless <i>approved by the fire code</i>	Minor wordsmithing change. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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~~International Fire Code on page xxi)~~ in accordance with Section 203, unless <i>approved</i> by the <i>fire code official</i> . See Houston Fire Department LSB Standard No. 13, "Outside Protected Aboveground Tanks for Generators and Fire Pumps."	Adoption of the International Fire Code on page xxi) [JURISDICTION TO SPECIFY].	<i>official</i> . See Houston Fire Department LSB Standard No. 13, "Outside Protected Aboveground Tanks for Generators and Fire Pumps".	
	5704.2.9.6.1.1 Location of tanks with pressures 2.5 psig or less. Above-ground tanks operating at pressures not exceeding 2.5 psig (17.2 kPa) for storage of Class I, II or IIIA liquids, which are designed with a floating roof, a weak roof-to-shell seam or equipped with emergency venting devices limiting pressure to 2.5 psig (17.2 kPa), shall be located in accordance with Table 22.4.1.1(a) of NFPA 30. Exceptions: 1. Vertical tanks having a weak roof-to-shell seam and storing Class IIIA liquids are allowed to be located at one-half the distances specified in Table 22.4.1.1(a) of NFPA 30, provided that the tanks are not within a diked area or drainage path for a tank storing Class I or II liquids. 2. Liquids with boilover characteristics and unstable liquids in accordance with Sections 5704.2.9.6.1.3 and 5704.2.9.6.1.4. 3. For protected above-ground tanks in accordance with Section 5704.2.9.7 and tanks in at-grade or above-grade vaults in accordance with Section 5704.2.8, the distances in Table 22.4.1.1(b) of NFPA 30 shall apply and shall be reduced by one-half, but not to less than 5 feet (1524 mm).		Minor wordsmithing change.
	5704.2.9.6.2 Separation between adjacent stable or unstable liquid tanks. The separation between tanks containing stable liquids shall be in accordance with Table 22.4.2.1 of NFPA 30. Where tanks are in a diked area containing Class I or II liquids, or in the drainage path of Class I or II liquids, and are compacted in three or more rows or in an irregular pattern, the fire code official is authorized to require greater separation than specified in Table 22.4.2.1 of NFPA 30 or other means to make tanks in the interior of the pattern accessible open for fire-fighting purposes. ~~Exception: Tanks used for storing Class IIIB liquids are allowed to be spaced 3 feet (914 mm) apart unless within a diked area or drainage path for a tank storing Class I or II liquids.~~ The separation between tanks containing unstable liquids shall be not less than one-half the sum of their diameters.		Base code exception relocated.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	Exception: Tanks used for storing Class IIIB liquids are allowed to be spaced 3 feet (914 mm) apart unless within a diked area or drainage path for a tank storing Class I or II liquids.		
	5704.2.9.7.5 Overfill prevention. Protected above-ground tanks shall not be filled in excess of 95 percent of their capacity. An overfill prevention system shall be provided for each tank. During tank-filling operations, the system shall comply with one of the following: 1. The overfill prevention system shall include the following: 1.1. ~~Provide~~ An independent means of notifying the person filling the tank that the fluid level has reached 90 percent of tank capacity by providing an audible or visual alarm signal, providing a tank level gauge marked at 90 percent of tank capacity, or other approved means; and 1.2. Automatically shut off of the flow of fuel to the tank when the quantity of liquid in the tank reaches 95 percent of tank capacity. For rigid hose fuel-delivery systems, an approved means shall be provided to empty the fill hose into the tank after the automatic shutoff device is activated. 2. The system shall reduce the flow rate to not more than 15 gallons per minute (0.95 L/s) so that at the reduced flow rate, the tank will not overfill for 30 minutes, and automatically shut off flow into the tank so that none of the fittings on the top of the tank are exposed to product because of overfilling.		Minor wordsmithing change.
	5704.2.9.7.5.1 Information signs. A permanent sign shall be provided at the fill point for the tank, documenting the filling procedure and the tank calibration chart. Exception: Where climatic conditions are such that the sign may be obscured by ice or snow, or weathered beyond readability or otherwise impaired, said procedures and chart shall be located in the office window, lock box or other area accessible available to the person filling the tank.		Minor wordsmithing change.
	5704.2.11.4.2.1 Location. The leak detection panel status shall be annunciated at an approved on-site location.		New requirements for leak detection status.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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5704.2.12.3 Existing tanks and testing. The <i>fire code official</i> is authorized to require leak-testing for existing underground storage tanks and piping when there is reasonable cause to believe that a leak exists. The method of testing shall be <i>approved by the fire code official</i> .		5704.2.12.3 Existing tanks and testing. The <i>fire code official</i> is authorized to require leak-testing for existing underground storage tanks and piping when there is reasonable cause to believe that a leak exists. The method of testing shall be <i>approved by the fire code official</i> .	No change to Houston amendment.
	5704.2.13.1.5 Reinstallation of underground tanks. Tanks that are to be reinstalled for <i>flammable</i> or <i>combustible liquid</i> service shall be in accordance with this chapter, <i>ASME Boiler and Pressure Vessel Code</i> (Section VIII), API-42-P, API 1615 , UL 58 and UL 1316.		Updated reference standard.
	5704.3.3.7 Pile or palletized storage. Solid pile and palletized storage in liquid warehouses shall be arranged so that piles are separated from each other by not less than 4 feet (1219 mm). Aisles shall be provided and arranged so that no containers or portable tanks is are not more than 20 feet (6096 mm) from an aisle. Main aisles shall be not less than 8 feet (2438 mm) wide.		Minor wordsmithing change.
5704.3.4.4 Special provisions for liquids used Liquids for maintenance and operation of equipment. In all occupancies, quantities of flammable and <i>combustible liquids</i> in excess of 10 gallons (38 L) used for maintenance purposes and the operation of equipment shall be stored in liquid storage cabinets in accordance with Section 5704.3.2. Quantities not exceeding 10 gallons (38 L) are allowed to be stored outside of a cabinet where in <i>approved containers safety cans</i> located in ~~private garages or other~~ approved locations. In other than Group H occupancies, quantities of flammable and <i>combustible liquids</i> used for demonstration, treatment and laboratory work exceeding 10 gallons (38 L) shall be stored in storage cabinets in accordance with Section 5704.3.2. Quantities not exceeding 10 gallons (38 L) shall be stored in <i>approved</i> safety cans located in <i>approved</i> locations.		5704.3.4.4 Special provisions for Liquids used for maintenance and operation of equipment. In all occupancies, quantities of <i>flammable</i> and <i>combustible liquids</i> in excess of 10 gallons (38 L) used for maintenance purposes and the operation of equipment shall be stored in liquid storage cabinets in accordance with Section 5704.3.2. Quantities not exceeding 10 gallons (38 L) are allowed to be stored outside of a cabinet where in <i>approved containers safety cans</i> located in ~~private garages or other~~ approved locations. In other than Group H occupancies, quantities of <i>flammable</i> and <i>combustible liquids</i> used for demonstration, treatment and laboratory work exceeding 10 gallons (38 L) shall be stored in storage cabinets in accordance with Section 5704.3.2. Quantities not exceeding 10 gallons (38 L) shall be stored in <i>approved</i> safety cans located in <i>approved</i> locations.	No change to Houston amendment
	5704.3.5.1 Basement storage. Class I liquids shall be allowed to be stored in basements in amounts not exceeding the maximum allowable quantity per control area for use-open systems in Table 5003.1.1(1), provided that automatic suppression and other fire protection are provided in accordance with Chapter 9. Class II and IIIA liquids shall also be allowed to be stored in basements, provided that automatic suppression and other fire protection are provided in accordance with Chapter 9.		Minor wordsmithing change.
	5704.3.5.4 Combustible materials. In areas that are inaccessible not open to the public, Class I, II and IIIA liquids shall not be stored in the same pile or rack section as ordinary combustible commodities unless such materials are packaged together as kits.		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5704.3.6.2 Container capacity. Containers for Class I liquids shall not exceed a capacity of 5 gallons (19 L). Exception: Metal containers not exceeding 55 gallons (208 L) are allowed to store up to 240 gallons (908 L) of the maximum allowable quantity per control area of Class IB and IC liquids in a control area. The building shall be equipped throughout with an approved automatic sprinkler system in accordance with Table 5704.3.4.1. The containers shall be provided with plastic caps without cap seals and shall be stored upright. Containers shall not be stacked or stored in racks and shall not be located in areas accessible open to the public.		Minor wordsmithing change.
	5704.3.7.5.1 Fire-extinguishing protection systems. Liquid storage rooms shall be protected by ~~automatic sprinkler systems~~ installed in accordance with Chapter 9 and Tables 5704.3.6.3(4) through 5704.3.6.3(7) and Table 5704.3.7.5.1. In-rack sprinklers shall also comply with NFPA 13. Automatic foam-water systems and automatic aqueous film-forming foam (AFFF) water sprinkler systems shall not be used except where <i>approved</i> . Protection criteria developed from fire modeling or full-scale fire testing conducted at an <i>approved</i> testing laboratory are allowed in lieu of the protection as shown in Tables 5704.3.6.3(2) through 5704.3.6.3(7) and Table 5704.3.7.5.1 where <i>approved</i> .		Minor wordsmithing change.
	5704.4.2.4 Storage adjacent to buildings. Not more than 1,100 gallons (4163 L) of liquids stored in closed containers and portable tanks is allowed adjacent to a building located on the same premises and under the same management, provided that one of the following requirements is met: 1. The building does not exceed one story in height. Such building shall be of fire-resistance-rated construction with noncombustible exterior surfaces or noncombustible construction and shall be used principally for the storage of liquids ~~or~~ . 2. The exterior building wall adjacent to the storage area shall have a fire-resistance rating of not less than 2 hours, having no openings to above-grade areas within 10 feet (3048 mm) horizontally of such storage and no openings to below-grade areas within 50 feet (15 240 mm) horizontally of such storage. The quantity of liquids stored adjacent to a building protected in accordance with Item 2 is allowed to exceed 1,100 gallons (4163 L), provided that the maximum quantity per pile does not exceed 1,100 gallons (4163 L) and each pile is separated by a 10-foot-minimum(3048 mm) clear space along the common wall. Where the quantity stored exceeds 1,100 gallons (4163 L) adjacent to a building complying with Item 1, or the		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: Text Underlined = New Language Added Text Strikethrough = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 Yellow Strikethrough = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	provisions of Item 1 cannot be met, a minimum distance in accordance with Table 5704.4.2, column 7 ("Minimum Distance to Lot Line of Property That Can Be Built Upon") shall be maintained between buildings and the nearest container or portable tank.		
5704.4.8 Empty containers and tank storage. ~~The storage of empty tanks and containers previously used for the storage of flammable or combustible liquids, unless free from explosive vapors, shall be stored as required for filled containers and tanks. Tanks and containers when emptied shall have the covers or plugs immediately replaced in openings. Empty tanks and containers that have been rendered free of explosive vapors shall be visibly marked as EMPTY, or the area where containers are stored shall be marked with an approved sign indicating EMPTY CONTAINERS. Containers marked as EMPTY shall be separated from filled containers.~~		5704.4.8 Empty containers and tank storage. ~~The storage of empty tanks and containers previously used for the storage of flammable or combustible liquids, unless free from explosive vapors, shall be stored as required for filled containers and tanks. Tanks and containers when emptied shall have the covers or plugs immediately replaced in openings. Empty tanks and containers that have been rendered free of explosive vapors shall be visibly marked as EMPTY, or the area where containers are stored shall be marked with an approved sign indicating EMPTY CONTAINERS. Containers marked as EMPTY shall be separated from filled containers.~~	No change to Houston amendment
	SECTION 5705 DISPENSING, USE, MIXING AND HANDLING		
	5705.2.1 Pumps. ~~Where positive-displacement pumps are used, they shall be provided with pressure relief discharging back to the tank, pump suction or other approved location, or shall be provided with interlocks to prevent over-pressure.~~		Minor wordsmithing change.
	5705.3.5.1 Maximum allowable quantity per control area. Indoor use, dispensing and mixing of flammable and combustible liquids shall not exceed the maximum allowable quantity per control area indicated in Table 5003.1.1(1) and shall not exceed the additional limitations set forth in Section 5705.3.5. ~~Exception: Cleaning with Class I, II and IIIA liquids shall be in accordance with Section 5705.3.6.~~ Use of hazardous production material flammable and combustible liquids in Group H-5 occupancies shall be in accordance with Chapter 27. ~~Exception: Cleaning with Class I, II and IIIA liquids shall be in accordance with Section 5705.3.6.~~		Base code exception relocated.
5706.2.4.4 Locations where above-ground tanks are prohibited. The storage of Class I and II liquids in above-ground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited ~~(see Section 3 of the Sample Legislation for Adoption of the International Fire Code on page xxi)~~ in accordance with Section 203, unless approved by the fire code official. See Houston Fire Department LSB Standard No. 13, "Outside Protected Aboveground Tanks for Generators and Fire Pumps."	5706.2.4.4 Locations where above-ground tanks are prohibited. The storage of Class I and II liquids in above-ground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited [JURISDICTION TO SPECIFY] .	5706.2.4.4 Locations where above-ground tanks are prohibited. The storage of Class I and II liquids in above-ground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited [JURISDICTION TO SPECIFY] in accordance with Section 203, unless approved by the fire code official. See Houston Fire Department LSB Standard No. 13, "Outside Protected Aboveground Tanks for Generators and Fire Pumps".	Minor wordsmithing change. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5705.3.6.1 Cleaning operations. Class IA liquids shall not be used for cleaning. Cleaning with Class IB, IC or II liquids shall be conducted as follows: 1. In a room or building in accordance with , Section 5705.3.7; or 2. In a parts cleaner listed, labeled and approved for the purpose in accordance with , Section 5705.3.6.2. Exception: Materials used in commercial and industrial process-related cleaning operations in accordance with other provisions of this code and not involving facilities maintenance cleaning operations.		Minor wordsmithing change.
	5705.4.3 Prohibited processing. Class I, II and IIIA liquids that are also classified as unstable (reactive) shall not be processed in solvent distillation units. Exception: Appliances listed for the distillation of unstable (reactive) solvents.		Minor wordsmithing change.
	SECTION 5706 SPECIAL OPERATIONS		
	5706.2.4.4 Locations where above-ground tanks are prohibited. The storage of Class I and II liquids in above-ground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited ~~(see Section 3 of the Sample Legislation for Adoption of the International Fire Code on page xxi)~~ [JURISDICTION TO SPECIFY] .		Minor wordsmithing change.
	5706.2.8 Dispensing from tank vehicles. Where approved, liquids used as fuels are allowed to be transferred from tank vehicles into the tanks of motor vehicles or special equipment, provided that : 1. The tank vehicle's specific function is that of supplying fuel to motor vehicle fuel tanks. 2. The dispensing hose does not exceed 100 feet (30 480 mm) in length. 3. The dispensing nozzle is an approved type. 4. The dispensing hose is properly placed on an approved reel or in a compartment provided before the tank vehicle is moved. 5. Signs prohibiting smoking or open flames within 25 feet (7620 mm) of the vehicle or the point of refueling are prominently posted on the tank vehicle. 6. Electrical devices and wiring in areas where fuel dispensing is conducted are in accordance with NFPA 70. 7. Tank vehicle-dispensing equipment is operated only by designated personnel who are trained to handle and dispense motor fuels. 8. Provisions are made for controlling and mitigating unauthorized discharges.		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5706.4.7.6 Piping, valves and fittings. Piping valves and fittings shall be in accordance with Section 5703.6 except as modified by the following: 1. Flexibility of piping shall be ensured by appropriate layout and arrangement of piping supports so that motion of the wharf structure resulting from wave action, currents, tides or the mooring of vessels will not subject the pipe to repeated excessive strain. 2. Pipe joints that depend on the friction characteristics of combustible materials or on the grooving of pipe ends for mechanical continuity of piping shall not be used. 3. Swivel joints are allowed in piping to which hoses are connected and for articulated, swivel-joint transfer systems, provided that the design is such that the mechanical strength of the joint will not be impaired if the packing materials fail such as by exposure to fire. 4. Each line conveying Class I or II liquids leading to a wharf shall be provided with a ~~readily accessible~~ block valve ~~located that has ready access and that is on shore,~~ near the approach to the wharf and outside of any diked area. Where more than one line is involved, the valves shall be grouped in one location. 5. Means shall be provided for easy access to cargo line valves located below the wharf deck. 6. Piping systems shall contain a sufficient number of valves to operate the system properly and to control the flow of liquid in normal operation and in the event of physical damage. 7. Piping on wharves shall be bonded and grounded where Class I and II liquids are transported. Where excessive stray currents are encountered, insulating joints shall be installed. Bonding and grounding connections on piping shall be located on the wharf side of hose riser insulating flanges, where used, and shall be in a location provided with ready accessible for inspection. 8. Hose or articulated swivel-joint pipe connections used for cargo transfer shall be capable of accommodating the combined effects of change in draft and maximum tidal range, and mooring lines shall be kept adjusted to prevent surge of the vessel from placing stress on the cargo transfer system. 9. Hoses shall be supported to avoid kinking and damage from chafing.		Minor wordsmithing change.
	5706.4.10.4 Fire apparatus access. Where the wharf is ~~accessible to~~ designed for vehicular traffic, an unobstructed fire apparatus access road to the shore end of the wharf shall be maintained in accordance with Chapter 5.		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5706.5.1.1 Location. Bulk transfer and process transfer operations shall be conducted in approved locations. Tank cars shall be unloaded only on private sidings or railroad-siding facilities equipped for transferring flammable or combustible liquids. Tank vehicles and tank cars engaged in bulk transfer or process transfer facilities operations shall be separated from buildings, above-ground tanks, combustible materials, lot lines, public streets, public alleys or public ways by a distance of 25 feet (7620 mm) for Class I liquids and 15 feet (4572 mm) for Class II and IIIA liquids measured from the nearest position of any loading or unloading valve. Buildings for pumps or shelters for personnel shall be considered part of on the transfer facility tank vehicle or tank car. Exception: Buildings for pumps and shelters for personnel supporting transfer operations shall not be required to be separated from tank vehicles and tank cars engaged in bulk transfer or process transfer operations.		Minor wordsmithing change, new exception added.
	5706.5.1.7 Static protection. Static protection shall be provided to prevent the accumulation of static charges during transfer operations. Bonding facilities shall be provided during the transfer through open domes where Class I liquids are transferred, or where Class II and III liquids are transferred into tank vehicles or tank cars that could contain vapors from previous cargoes of Class I liquids. Protection shall consist of a metallic bond wire permanently electrically connected to the fill stem. The fill pipe assembly shall form a continuous electrically conductive path downstream from the point of bonding. The free end of such bond wire shall be provided with a clamp or equivalent device for convenient attachment to a metallic part in electrical contact with the cargo tank of the tank vehicle or tank car. For tank vehicles, protection shall consist of a flexible bond wire of adequate strength for the intended service and the electrical resistance shall not exceed 1 megohm. For tank cars, bonding shall be provided where the resistance of a tank car to ground through the rails is 25 ohms or greater. Such bonding connection shall be fastened to the vehicle, car or tank before dome covers are raised and shall remain in place until filling is complete and all dome covers have been closed and secured. Exceptions: 1. Where vehicles and cars are loaded exclusively with products not having a static-accumulating tendency, such as asphalt, cutback asphalt, most crude oils, residual oils and water-miscible liquids. 2. Where Class I liquids are not handled at the transfer facility and the tank vehicles are used exclusively for Class II and III liquids.		Minor wordsmithing change.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	3. Where vehicles and cars are loaded or unloaded through closed top or bottom connections whether the hose is conductive or nonconductive. Filling through open domes into the tanks of tank vehicles or tank cars that contain vapor-air mixtures within the flammable range, or where the liquid being filled can form such a mixture, shall be by means of a downspout ~~which that~~ extends to near the bottom of the tank.		
	5706.5.3.1.1 Shutoff valves. Approved automatically or manually activated shutoff valves shall be provided where the transfer hose connects to the process piping, and on both sides of any exterior fire-resistance-rated wall through which the piping passes. Manual shutoff valves shall be arranged so that they are ~~accessible~~ able to be accessed from grade. Valves shall not be locked in the open position.		Minor wordsmithing change.
5706.5.4.5 Commercial, industrial, governmental or manufacturing. Dispensing of Class <u>I</u>, <u>II</u>, 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: <u>{EDITORIAL NOTE: REMAINDER OF SECTION REMAINS AS SET FORTH IN 2015 IFC.}</u>	5706.5.4.5 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 ~~that~~ 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 that~~ 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 lot 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 is allowed to take place, and specific locations on a site where fueling is permitted.	5706.5.4.5 Commercial, industrial, governmental or manufacturing. Dispensing of Class <u>I</u>, <u>II</u>, 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 that such dispensing operations are conducted in accordance with the following: <u>{EDITORIAL NOTE: REMAINDER OF SECTION REMAINS AS SET FORTH IN 2021 IFC.}</u>	Minor wordsmithing change. No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5. Mobile fueling operations shall be conducted in areas not ~~accessible open~~ 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 buildings, property lines, 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 (4572 mm) 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 (4572 mm) 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 not more than 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 that~~, when activated, immediately causes flow of fuel from the tank vehicle to cease.		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	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. 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. Fuel dispensing shall be prohibited within 25 feet (7620 mm) 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 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 (11.36 L). 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 fuel 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.		
	SECTION 5707 ON-DEMAND MOBILE FUELING OPERATIONS 5707.1 General. On-demand mobile fueling operations that dispense Class I, II and III liquids into the fuel tanks of motor vehicles shall comply with Sections 5707.1 through 5707.6.3. Exception: Fueling from an approved portable container in cases of an emergency or for personal use.		New requirements for on-demand fueling operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	5707.1.1 Approval required. Mobile fueling operations shall not be conducted without first obtaining a <i>permit</i> and approval from the <i>fire code official</i> . Mobile fueling operations shall occur only at <i>approved</i> locations. The <i>fire code official</i> is authorized to approve individual locations or geographic areas where mobile fueling is allowed.		New requirements for mobile fueling operations.
	5707.2 Mobile fueling vehicle. An on-demand mobile fueling vehicle shall be one of the following: that which is utilized in on-demand fueling operations for the dispensing of Class I, II or III liquids into the fuel tanks of motor vehicles. ~~A vehicle that has chassis-mounted tanks or containers where the aggregate cargo capacity does not exceed 1200 gallons (4592 L). A mobile fueling vehicle with a mounted tank in excess of 110 gallons (415 L) shall comply with the requirements of Section 5706.6, Section 5707 and NFPA 385. A vehicle that carries a maximum of 60 gallons (227 L) of motor fuel in metal safety cans listed in accordance with UL 30 or other approved metal containers, each not to exceed 5 gallons (19 L) in capacity. Containers shall be secured to the mobile fueling vehicle except when in use.~~ The mobile fueling vehicle shall comply with all local, state and federal requirements. The mobile fueling vehicle and its equipment shall be maintained in good repair.		New requirements for mobile fueling operations.
	5707.2.1 Mobile fueling vehicle classifications. An on-demand mobile fueling vehicle shall be characterized as one of the following: 1. Tier 1 mobile fueling vehicle. A tank vehicle that complies with NFPA 385 and that has chassis-mounted tanks where the aggregate capacity does not exceed 1,600 gallons (6057 L). 2. Tier 2 mobile fueling vehicle. A vehicle with one or more chassis-mounted tanks or containers that do not exceed 110 gallons (416 L) in capacity with an aggregate capacity that does not exceed 800 gallons (3028 L) or the weight capacity of the vehicle in accordance with DOTn. 3. Tier 3 mobile fueling vehicle. A vehicle that carries a maximum aggregate capacity of 60 gallons (227 L) of motor fuel in metal safety cans <i>listed</i> in accordance with UL 30 or other <i>approved</i> metal containers, each not to exceed 5 gallons (19 L) in capacity.		New requirements for mobile fueling operations.
	5707.2.2 Mobile fueling vehicle requirements. Each mobile fueling vehicle shall comply with all local, state and federal requirements, as well as the following: 1. Mobile fueling vehicles with a chassis-mounted tank in excess of 110 gallons (416 L) shall also comply with the requirements of Section 5706.6 and NFPA 385. 2. The mobile fueling vehicle and its equipment shall be maintained in good repair. 3. Safety cans and <i>approved</i> metal containers shall be secured to the mobile fueling vehicle except when in use.		New requirements for mobile fueling operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	4. Fueling a motor vehicle from tanks or containers mounted in a trailer connected to a mobile fueling vehicle shall be prohibited.		
	5707.3 Required documents. Documents developed to comply with Sections 5707.3.1 through 5707.3.3 shall be updated as necessary by the owner of the mobile fueling operation and shall be maintained in compliance with Section 108.3.		New requirements for mobile fueling operations.
	5707.3.1 Safety and emergency response plan. Mobile fueling operators shall have an approved written safety and emergency response plan that establishes policies and procedures for fire safety, spill prevention and control, personnel training and compliance with other applicable requirements of this code.		New requirements for mobile fueling operations.
	5707.3.2 Training records. Mobile fueling vehicles shall be operated only by designated personnel who are trained on proper fueling procedures and the safety and emergency response plan. Training records of operators shall be maintained.		New requirements for mobile fueling operations.
	5707.3.3 Site plan. Where required by the <i>fire code official</i> , a site plan shall be developed for each location or area at which mobile fueling occurs. The site plan shall be in sufficient detail to indicate the following: 1. All buildings and structures. 2. Lot lines or property lines. 3. Electric car chargers. 4. Solar photovoltaic parking lot canopies. 5. Appurtenances on-site and their use or function. 6. All uses adjacent to the <i>lot lines</i> of the site. 7. Fueling locations. 8. Locations of all storm drain openings and adjacent waterways or wetlands. 9. Information regarding slope, natural drainage, curbing and impounding. 10. How a spill will be kept on the site property. 11. Scale of the site plan.		New requirements for mobile fueling operations.
	5707.4 Mobile fueling areas. ~~Mobile fueling~~ During fueling, the mobile fueling vehicle and point of connection to the vehicle shall not be located ~~shall not occur~~ on public streets, <i>public ways</i> or inside <i>buildings</i> . Fueling on the roof level of parking structures or other <i>buildings</i> is prohibited.		New requirements for mobile fueling operations.
	5707.4.1 Separation. ~~Mobile fueling~~ During fueling, the point of connection to the vehicle being fueled shall not take place within 25 feet (7620 mm) of buildings, lot lines , property lines or combustible storage. Mobile fueling vehicles shall not park within 10 feet (3048 mm) of buildings, lot lines , property lines or combustible storage. Exceptions: 1. The <i>fire code official</i> shall be authorized to decrease the separation distance for dispensing from metal safety		New requirements for mobile fueling operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	cans or other <i>approved</i> metal containers in accordance with Section 5707.2. 2. The point of fueling shall not take place within 10 feet (3048 mm) of buildings, <i>lot lines</i>, property lines or combustible storage where the mobile fueling vehicle has an <i>approved</i> vapor recovery system or is servicing vehicles with onboard refueling vapor recovery. Where dispensing operations occur within 15 feet (4572 mm) of a storm drain, an <i>approved</i> storm drain cover or an <i>approved</i> equivalent method that will prevent any fuel from reaching the drain shall be used.		
	5707.4.2 Sources of ignition. Smoking, open flames and other sources of ignition shall be prohibited within 25 feet (7620 mm) of fuel dispensing activities. Signs prohibiting smoking or open flames within 25 feet (7620 mm) of the vehicle or the point of fueling shall be prominently posted on the mobile fueling vehicle. The engines of vehicles being fueled shall be shut off during fueling.		New requirements for mobile fueling operations.
	5707.4.3 Electrical equipment. Mobile fueling shall not occur within 20 feet (6096 mm) of electrical equipment located within 18 inches (457 mm) of the ground unless such electrical equipment is rated for Class I, Division 2, hazardous locations in accordance with NFPA 70.		New requirements for mobile fueling operations.
	5707.5 Equipment. Mobile fueling equipment shall comply with Sections 5707.5.1 through 5707.5.4.		New requirements for mobile fueling operations.
	5707.5.1 Dispensing hoses and nozzles. Where equipped, the dispensing hose shall not exceed 50 feet (15 240 mm) in length. The dispensing nozzles and hoses shall be of an <i>approved</i> and <i>listed</i> type. Where metal-to-metal contact cannot be made between the nozzle and the fuel fill opening, a means for bonding the mobile fueling vehicle to the motor vehicle shall be provided and employed during fueling operations.		New requirements for mobile fueling operations.
	5707.5.2 Breakaway device. A <i>listed</i> breakaway device shall be provided at the nozzle. Exception: Mobile fueling vehicles equipped with an <i>approved</i> brake interlock tied to the nozzle holder that prohibits movement of the mobile fueling vehicle when the nozzle is removed from its holder or tied to the delivery of fuel that prevents activation of the pumping system.		New requirements for mobile fueling operations.
	~~5707.5.2~~ 5707.5.3 Fuel Shutoff valve and fuel limit. Mobile fueling vehicles shall be equipped with a <i>listed</i> shutoff valve assembly and a fuel limit switch set to a maximum of 30 gallons (116 L) and a nozzle or other <i>approved</i> device that, when activated, immediately causes flow of fuel from the mobile fueling vehicle to cease.		New requirements for mobile fueling operations.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	~~5707.5.3~~ 5707.5.4 Fire extinguisher. An <i>approved</i> portable fire extinguisher complying with Section 906 with a minimum rating of ~~40-4-A:80~~ B:C shall be provided on the mobile fueling vehicle with signage clearly indicating its location.		New requirements for mobile fueling operations.
	~~5707.5.4~~ 5707.5.5 Spill kit. Mobile fueling vehicles shall contain a minimum 5-gallon (19 L) spill kit of an approved type.		New requirements for mobile fueling operations.
	5707.6 Operations. Mobile fueling vehicles shall be constantly attended during fueling operations with brakes set and warning lights in operation. Mobile fueling vehicles shall not obstruct emergency vehicle access roads.		New requirements for mobile fueling operations.
	5707.6.1 Dispensing hose. Where equipped, mobile fueling vehicles shall be positioned in a manner to preclude traffic from driving over the dispensing hose. The dispensing hose shall be properly placed on an approved reel or in an approved compartment prior to moving the mobile fueling vehicle.		New requirements for mobile fueling operations.
	5707.6.2 Drip control. Operators shall place a drip pan or an absorbent pillow under the nozzle and each fuel fill opening prior to and during dispensing operations to catch drips.		New requirements for mobile fueling operations.
	5707.6.3 Safety cones. Safety cones or other visual barriers shall be employed as warning devices to highlight the vehicle fueling area. 5707.6.4 Vehicle lights. The mobile fueling vehicle flasher lights shall be in operation while dispensing operations are in progress.		New requirements for mobile fueling operations.
	5707.6.5 Nighttime deliveries. Nighttime deliveries shall be made only in areas deemed adequately lighted by the <i>fire code official</i> .		New requirements for mobile fueling operations.
	~~5707.6.3~~ 5707.6.6 Spill reporting. Spills shall be reported in accordance with Section 5003.3.1.		New requirements for mobile fueling operations.
2015 Houston IFC – Chapter 58 Flammable Gases and Flammable Cryogenic Fluids	2021 IFC – Chapter 58 – Flammable Gases and Flammable Cryogenic Fluids	2021 Houston Amendments	Code Change Summary
	SECTION 5801 GENERAL 5801.1 Scope. The storage and use of flammable gases and flammable cryogenic fluids shall be in accordance with this chapter, NFPA 2 and NFPA 55. Compressed gases shall also comply with Chapter 53 and cryogenic fluids shall also comply		Minor changes and updated referenced standard.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	with Chapter 55. Flammable cryogenic fluids shall comply with Section 5806. Hydrogen motor fuel-dispensing stations and repair garages and their associated above-ground hydrogen storage systems shall also be designed, constructed and maintained in accordance with Chapter 23 ~~and NFPA 2.~~ Exceptions: 1. Gases used as refrigerants in refrigeration systems (see Section 60~~65~~). 2. Liquefied petroleum gases and natural gases regulated by Chapter 61. 3. Fuel-gas systems and appliances regulated under the International Fuel Gas Code other than gaseous hydrogen systems and appliances. 4. Pyrophoric gases in accordance with Chapter 64.		
	SECTION 5802 DEFINITIONS 5802.1 Definitions. The following terms are defined in Chapter 2: FLAMMABLE GAS. FLAMMABLE LIQUEFIED GAS. GAS DETECTION SYSTEM. GASEOUS HYDROGEN SYSTEM. HYDROGEN FUEL GAS ROOM. METAL HYDRIDE. METAL HYDRIDE STORAGE SYSTEM.		New definition added for chapter.
	SECTION 5803 GENERAL REQUIREMENTS		
	5803.1.5 Electrical. Electrical wiring and equipment shall be installed and maintained in accordance with Section 60~~54~~ and NFPA 70.		Base code renumbering.
	SECTION 5806 FLAMMABLE CRYOGENIC FLUIDS		
	5806.2 Limitations. Storage of flammable cryogenic fluids in stationary containers outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited ~~(see Section 3 of the Sample Legislation for Adoption of the International Fire Code on page xxi)~~ [JURISDICTION TO SPECIFY].		Minor wordsmithing changes.
	5806.3 Above-ground tanks for liquid hydrogen. Above-ground tanks for the storage of liquid hydrogen shall be in accordance with Sections 5806.3.~~1~~ through 5806.3.2.1.		Base code renumbering.
	SECTION 5808 HYDROGEN FUEL GAS ROOMS		No Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
	5808.4 Exhaust ventilation. Hydrogen fuel gas rooms shall be provided with mechanical exhaust ventilation in accordance with the applicable provisions of Section 2311 ~~7.1.4.8.2.~~		Base code renumbering.
	5808.5 Gas detection system. Hydrogen fuel gas rooms shall be provided with ~~an approved flammable~~ a gas detection system in accordance that complies with Sections 916, 5808.5.1 through ~~5808.5.4~~ and 5808.5.2.		Minor wordsmithing changes.
	~~5808.5.1 System design. The flammable gas detection system shall be listed for use with hydrogen and any other flammable gases used in the hydrogen fuel gas room. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL) for the gas or mixtures present at their anticipated temperature and pressure.~~		Base code section removed.
	~~5808.5.2 Gas detection system components. Gas detection system control units shall be listed and labeled in accordance with UL 864 or UL 2017. Gas detectors shall be listed and labeled in accordance with UL 2075 for use with the gases and vapors being detected.~~		Base code section removed.
	~~5808.5.31 Operation System activation. Activation of the gas detection system alarm shall result in both of the following:~~ 1. Initiation of distinct audible and ~~visual~~ visible alarm signals both inside and outside of the hydrogen fuel gas room. 2. ~~Automatic~~ activation of the mechanical exhaust ventilation system.		Minor wordsmithing changes.
	~~5808.5.42 Failure of the gas detection system. Failure of the gas detection system shall result in activation of automatically activate the mechanical exhaust ventilation system, cessation of stop hydrogen generation and the sounding of cause a trouble signal into sound at an approved location.~~		Minor wordsmithing changes.
5808.7 Standby power. Mechanical ventilation and gas detection systems shall be connected to a standby power system in accordance with Sections <u>604</u> and <u>1203</u> , most restrictive provisions <u>prevail</u> .	5808.7 Standby power. Mechanical ventilation and gas detection systems shall be connected to a standby power system in accordance with Section ~~604~~ 1203 .		Base code renumbering. Removed Houston amendment to go with base code.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2015 Houston IFC – Chapter 59 Flammable Solids	2021 IFC – Chapter 59 – Flammable Solids	2021 Houston Amendments	Code Change Summary
	SECTION 5904 STORAGE		
	5904.1.2 Aisles. Aisle widths between piles shall ~~not~~ be ~~not~~ less than the height of the piles or 4 feet (1219 mm), whichever is greater.		Minor wordsmithing change.
2015 Houston IFC – Chapter 60 Highly Toxic and Toxic Materials	2021 IFC – Chapter 60 – Highly Toxic and Toxic Materials	2021 Houston Amendments	Code Change Summary
	SECTION 6004 HIGHLY TOXIC AND TOXIC COMPRESSED GASES		
	6004.2 Indoor storage and use. The indoor storage and use of highly toxic or toxic compressed gases shall be in accordance with Sections 6004.2.1 through 6004.2.2.10 43 .		Base code renumbering.
6004.2.2.7 Treatment systems. The exhaust ventilation from gas cabinets, exhausted enclosures and gas rooms, and local exhaust systems required in Sections 6004.2.2.4 and 6004.2.2.5 shall be directed to a treatment system. The treatment system shall be utilized to handle the accidental release of gas and to process exhaust ventilation. The treatment system shall be designed in accordance with Sections 6004.2.2.7.1 through 6004.2.2.7.5 and Section ~~540~~ 505 and 506 of the ~~International~~ Mechanical Code. <u>{EDITORIAL NOTE: REMAINDER OF SECTION 6004.2.2.7 REMAINS AS SET FORTH IN 2015 IFC.}</u>	6004.2.2.7 Treatment systems. The exhaust ventilation from gas cabinets, exhausted enclosures and gas rooms, and local exhaust systems required in Sections 6004.2.2.4 and 6004.2.2.5 shall be directed to a treatment system. The treatment system shall be utilized to handle the accidental release of gas and to process exhaust ventilation. The treatment system shall be designed in accordance with Sections 6004.2.2.7.1 through 6004.2.2.7.5 and Section 510 of the ~~International~~ Mechanical Code. Exceptions: 1. Highly toxic and toxic gases-storage. A treatment system is not required for cylinders, containers and tanks in storage where all of the following controls are provided: 1.1. Valve outlets are equipped with gas-tight outlet plugs or caps. 1.2. Handwheel-operated valves have handles secured to prevent movement. 1.3. Approved containment vessels or containment systems are provided in accordance with Section 6004.2.2.3. 2. Toxic gases-use. Treatment systems are not required for toxic gases supplied by cylinders or portable tanks not exceeding 1,700 pounds (772 kg) water capacity where ~~the following are provided:~~ a gas detection system complying with Section 6004.2.2.10 and listed or approved automatic-closing fail-safe valves are provided. The gas detection system shall have a sensing interval not exceeding 5 minutes. Automatic-closing fail-safe valves shall be located	6004.2.2.7 Treatment systems. The exhaust ventilation from gas cabinets, exhausted enclosures and gas rooms, and local exhaust systems required in Sections 6004.2.2.4 and 6004.2.2.5 shall be directed to a treatment system. The treatment system shall be utilized to handle the accidental release of gas and to process exhaust ventilation. The treatment system shall be designed in accordance with Sections 6004.2.2.7.1 through 6004.2.2.7.5 and Section 510 ~~505 and 506~~ of the ~~International~~ Mechanical Code. <u>{EDITORIAL NOTE: REMAINDER OF SECTION 6004.2.2.7 REMAINS AS SET FORTH IN 2021 IFC.}</u>	New requirements for toxic gas treatment systems. No change to Houston amendment.

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	immediately adjacent to cylinder valves and shall close when gas is detected at the permissible exposure limit (PEL) by a gas sensor monitoring the exhaust system at the point of discharge from the gas cabinet, exhausted enclosure, ventilated enclosure or gas room. ~~2.1. A listed or approved gas detection system with a sensing interval not exceeding 5 minutes.~~ ~~2.2. A listed or approved automatic closing fail-safe valve located immediately adjacent to cylinder valves. The fail-safe valve shall close when gas is detected at the permissible exposure limit (PEL) by a gas detection system monitoring the exhaust system at the point of discharge from the gas cabinet, exhausted enclosure, ventilated enclosure or gas room. The gas detection system shall comply with Section 6004.2.2.10.~~		
6004.2.2.10 Gas detection system. A gas detection system <u>complying with Section 916</u> shall be provided to detect the presence of gas at or below the PEL or ceiling limit of the gas for which detection is provided. The system shall be capable of monitoring the discharge from the treatment system at or below one-half the IDLH limit <u>and shall initiate a response in accordance with sections 6004.2.2.10.1 through 6004.2.2.10.4 if the gas detection alarm is activated.</u> Exception: A gas detection system is not required for toxic gases when the physiological warning threshold level for the gas is at a level below the accepted PEL for the gas.	6004.2.2.10 Gas detection system. A gas detection system complying with Section 916 shall be provided to detect the presence of gas at or below the PEL or ceiling limit of the gas for which detection is provided. The system shall be capable of monitoring the discharge from the treatment system at or below one-half the IDLH limit and shall initiate a response in accordance with Sections 6004.2.2.10.1 through 6004.2.2.10.3 if the gas detection alarm is activated. Exception: A gas detection system is not required for toxic gases when the physiological warning threshold level for the gas is at a level below the accepted PEL for the gas.		Removed Houston amendment as provisions are now part of base code.
	~~6004.2.2.10.1 Gas detection system components. Gas detection system control units shall be listed and labeled in accordance with UL 864 or UL 2017, or approved. Gas detectors shall be listed and labeled in accordance with UL 2075 for use with the gases and vapors being detected, or approved.~~		Base code section removed.
	6004.2.2.10.21 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to a constantly attended control station when a short-term hazard condition is detected. The alarm shall be both visual and audible and visible and shall provide warning both inside and outside the area where gas is detected. The audible alarm shall be distinct from all other alarms. Exception: Signal transmission to a constantly attended control station is not required where not more than one cylinder of highly toxic or toxic gas is stored.		Base code renumbering, minor wordsmithing changes.

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	6004.2.2.10.32 Shut off of gas supply. The gas-detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for whichever gas is detected. Exception: Automatic shutdown is not required for reactors utilized for the production of highly toxic or toxic compressed gases where such reactors are: 1. Operated at pressures less than 15 pounds per square inch gauge (psig) (103.4 kPa). 2. Constantly attended. 3. Provided with ~~readily accessible~~ emergency shutoff valves that have ready access.		Base code renumbering, minor wordsmithing changes.
	6004.2.2.10.43 Valve closure.		Base code renumbering.
	6004.3.3 Outdoor storage weather protection for portable tanks and cylinders. Weather protection in accordance with Section 5004.13 shall be provided for portable tanks and cylinders located outdoors and not within gas cabinets or exhausted enclosures. The storage area shall be equipped with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Exception: An automatic sprinkler system is not required ~~when where~~: 1. All materials under the weather protection structure, including hazardous materials and the containers in which they are stored, are non-combustible. 2. The weather protection structure is located not less than 30 feet (9144 mm) from combustible materials or structures or is separated from such materials or structures using a fire barrier complying with Section 6004.3.2.1.1.		Minor wordsmithing changes.
	SECTION 6005 OZONE GAS GENERATORS		
	6005.3.2 Ozone gas generator rooms. Ozone gas generator rooms shall be mechanically ventilated in accordance with the International Mechanical Code with not less than six air changes per hour. Ozone gas generator rooms shall be equipped with a ~~continuous~~ gas detection system complying with Section 916 that will shut off the generator and sound a local alarm when concentrations above the permissible exposure limit (PEL) occur. Ozone gas generator rooms shall not be normally occupied, and such rooms shall be kept free of combustible and hazardous material storage. Room access doors shall display an approved sign stating: OZONE GAS GENERATOR-HIGHLY TOXIC-OXIDIZER.		Minor wordsmithing changes.

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	6005.5 Automatic shutdown. Ozone gas generators shall be designed to shut down automatically under the following conditions: 1. When the dissolved ozone concentration in the water being treated is above saturation when measured at the point where the water is exposed to the atmosphere. 2. When the process using generated ozone is shut down. 3. When the gas detection system detects ozone. 43. Failure of the ventilation system for the cabinet or ozone-generator room. 54. Failure of the gas detection system in an ozone gas generator room.		Minor wordsmithing changes.
2015 Houston IFC – Chapter 61 Liquefied Petroleum Gases	2021 IFC – Chapter 61 – Liquefied Petroleum Gases	2021 Houston Amendments	Code Change Summary
	SECTION 6101 GENERAL		
6101.2 Permits. Permits shall be required as set forth in Sections 105.6 ~~and 105.7.~~ to store, use, handle or dispense LP-gas, or to install or maintain any LP-gas container in excess of 125 gallons (473 L) aggregate water capacity. A permit is required to use any amount of LP-gas for demonstrations, public exhibitions, portable heating (excluding R occupancies) or temporary commercial cooking or on mobile food units. As used in this chapter, the term mobile food unit has the meaning set forth in Chapter 20 of the <i>City Code</i> . Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the <i>fire code official</i> .		6101.2 Permits. Permits shall be required as set forth in Sections 105.5 and 105.6 to store, use, handle or dispense LP-gas, or to install or maintain any LP-gas container in excess of 125 gallons (473 L) aggregate water capacity. A permit is required to use any amount of LP-gas for demonstrations, public exhibitions, portable heating (excluding R occupancies) or temporary commercial cooking or on mobile food units. As used in this chapter, the term mobile food unit has the meaning set forth in Chapter 20 of the <i>City Code</i> . Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the <i>fire code official</i> .	No change to Houston amendment.
6101.3 Construction documents. Where a single LP-gas container is more than 2,000 500 gallons (~~7570~~ 1893 L) in water capacity or the aggregate water capacity of LP-gas containers is more than 4,000 2,000 gallons (~~15 140~~ 7570 L), the installer shall submit <i>construction documents</i> for such installation.		6101.3 Construction documents. Where a single LP-gas container is more than 2,000 500 gallons (~~7570~~ 1893 L) in water capacity or the aggregate water capacity of LP-gas containers is more than 4,000 2000 gallons (~~15 140~~ 7570 L), the installer shall submit <i>construction documents</i> for such installation.	No change to Houston amendment.
	SECTION 6103 INSTALLATION OF EQUIPMENT		
6103.2.1 Portable containers. Portable LP-gas containers, as defined in NFPA 58, shall not be used in buildings except as specified in NFPA 58, ~~and~~ Sections 6103.2.1.1 through 6103.2.1.78, and Houston Fire Department LSB Standards No. 10, “LP-Gas and Open Flame Use” and No. 11, “Roofing Operations.”		6103.2.1 Portable containers. Portable LP-gas containers, as defined in NFPA 58, shall not be used in buildings except as specified in NFPA 58, and Sections 6103.2.1.1 through 6103.2.1.79, and Houston Fire Department LSB Standards No. 10, “LP-Gas and Open Flame Use” and No. 11, “Roofing Operations.”	No change to Houston amendment.
	6103.2.1.1 Use in basement, pit or similar location. LP-gas containers shall not be used in a basement , pit, above-grade underfloor space or similar location where heavier-than-air gas might collect LP-gas containers shall not be used in an above-grade underfloor space or basement unless such location is provided with an approved means of ventilation.		Minor wordsmithing changes.

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	Exception: Use with self-contained torch assemblies in accordance with Section 6103.2.1.		
6103.2.1.2 Construction and temporary heating. Portable LP-gas containers are allowed to be used in buildings or areas of buildings undergoing construction ~~or for temporary heating as set forth in Sections 6.19.4, 6.19.5 and 6.19.8 of NFPA 58~~ when attached to <u>approved torches</u> . The aggregate capacity of LP-gas containers inside a building shall not exceed 250 pounds (113 kg) water capacity. Containers connected for use shall be promptly removed from the building when the torch is not in use. Containers not connected for use shall be stored outside the building in accordance with Table 6104.3. Portable LP-gas containers shall not be attached to temporary or portable heating appliances as set forth in Sections 6.20.4, 6.20.5 and 6.20.8 of NFPA 58.	6103.2.1.2 Construction and temporary heating. Portable LP-gas containers are allowed to be used in buildings or areas of buildings undergoing construction or for temporary heating as set forth in Sections 6.19.4, 6.19.5 and 6.19.8 of NFPA 58.	6103.2.1.2 Construction and temporary heating. Portable LP-gas containers are allowed to be used in buildings or areas of buildings undergoing construction or for temporary heating as set forth in Sections 6.22.4, 6.22.5, and 6.22.8 of NFPA 58 when attached to <u>approved torches</u> . The aggregate capacity of LP-gas containers inside a building shall not exceed 250 pounds (113 kg) water capacity. Containers connected for use shall be promptly removed from the building when the torch is not in use. Containers not connected for use shall be stored outside the building in accordance with Table 6104.3. Portable LP-gas containers shall not be attached to temporary or portable heating appliances as set forth in Sections 6.20.4, 6.20.5 and 6.20.8 of NFPA 58.	Base code renumbering. No change to Houston amendment.
6103.2.1.3 Group F occupancies. In Group F occupancies, portable LP-gas containers are allowed to be used to supply quantities necessary for processing, research or experimentation. Where manifolded, the aggregate water capacity of such containers shall not exceed 735 pounds (334 kg) per manifold. Where multiple manifolds of such containers are present in the same room, each manifold shall be separated from other manifolds by a distance of not less than 20 feet (6,096 mm). <u>The aggregate capacity of LP-gas containers inside a building shall not exceed 250 pounds (113 kg) water capacity.</u> Containers connected for use shall not be stored inside a building or structure unless stored within a room constructed in accordance with the requirements of Section 6109.10. Containers not connected for use shall be stored outside the building in accordance with Table 6104.3.		6103.2.1.3 Group F occupancies. In Group F occupancies, portable LP-gas containers are allowed to be used to supply quantities necessary for processing, research or experimentation. Where manifolded, the aggregate water capacity of such containers shall not exceed 735 pounds (334 kg) per manifold. Where multiple manifolds of such containers are present in the same room, each manifold shall be separated from other manifolds by a distance of not less than 20 feet (6,096 mm). <u>The aggregate capacity of LP-gas containers inside a building shall not exceed 250 pounds (113 kg) water capacity.</u> Containers connected for use shall not be stored inside a building or structure unless stored within a room constructed in accordance with the requirements of Section 6109.10. Containers not connected for use shall be stored outside the building in accordance with Table 6104.3.	No change to Houston amendment.
	6103.2.1.4 Group E and I occupancies Research and experimentation. In Group E and I occupancies and laboratories for educational use in Group B and E occupancies, portable LP-gas containers are allowed to be used for research and experimentation. Such containers shall not be used in classrooms. Such containers shall not exceed a 50-pound (23 kg) water capacity in occupancies used for educational purposes and shall not exceed a 12-pound (5 kg) water capacity in occupancies used for institutional purposes. Where more than one such container is present in the same room, each container shall be separated from other containers by a distance of not less than 20 feet (6096 mm).		Minor wordsmithing changes.
	6103.2.1.6 Use with self-contained torch assemblies. Portable LP-gas containers are allowed to be used to supply approved self-contained torch assemblies or similar appliances. Such containers shall not exceed a water capacity of 24/2.7 pounds (1.2 kg).		Minor wordsmithing changes.

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6103.2.1.7 Use for food preparation inside buildings. ~~Where approved, listed LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food-catering operations in accordance with the <i>International Fuel Gas Code</i>, the <i>International Mechanical Code</i> and NFPA 58. LP-gas containers shall not be used for residential or commercial food preparation inside of a building or structure.~~ Exception: When <u>approved, listed</u> LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food catering operations, provided that an individual appliance shall not have more than two 10-oz (0.3 L), non-refillable LP-gas containers connected directly to the appliance any time. Containers shall comply with nationally recognized standards, have a maximum water capacity of 1.08 pounds (0.5 kg) per container and shall not be manifolded. The appliance's fuel containers shall be an integral part of the listed commercial food service device and shall be connected without the use of a rubber hose. The aggregate amount of LP-gas used or stored shall not exceed 60 pounds (27 kg) LP-gas capacity. In educational occupancies, portable LP-gas containers shall not be used or stored except as permitted by Sections 6103.2.1.5 and 6103.2.1.6.		6103.2.1.7 Use for food preparation inside buildings. <u>Where approved, listed LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food-catering operations in accordance with the <i>International Fuel Gas Code</i>, the <i>International Mechanical Code</i> and NFPA 58. LP-gas containers shall not be used for residential or commercial food preparation inside of a building or structure.</u> Exception: When <u>approved, listed</u> LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food catering operations, provided that an individual appliance shall not have more than two 10-oz (0.3 L), non-refillable LP-gas containers connected directly to the appliance any time. Containers shall comply with nationally recognized standards, have a maximum water capacity of 1.08 pounds (0.5 kg) per container and shall not be manifolded. The appliance's fuel containers shall be an integral part of the listed commercial food service device and shall be connected without the use of a rubber hose. The aggregate amount of LP-gas used or stored shall not exceed 60 pounds (27 kg) LP-gas capacity. In educational occupancies, portable LP-gas containers shall not be used or stored except as permitted by Sections 6103.2.1.5 and 6103.2.1.6.	No change to Houston amendment.
6103.2.1.8 Use for food preparation outside buildings. When <u>approved</u>, LP-gas containers may be used for commercial cooking outside buildings or in the operation of a mobile food unit in accordance with Houston Fire Department LSB Standard No. 10, "LP-Gas and Open Flame Use." For permits, see Section 105.6.		6103.2.1.8 Use for food preparation outside buildings. When <u>approved</u>, LP-gas containers may be used for commercial cooking outside buildings or in the operation of a mobile food unit in accordance with Houston Fire Department LSB Standard No. 10, "LP-Gas and Open Flame Use." For permits, see Section 105.5.	No change to Houston amendment.
6103.2.1.9 Group B and M occupancies. In Group B and M occupancies, portable LP-gas containers are allowed to be used to supply quantities necessary for minor repairs or minor fabrication work, when connected to an <u>approved</u> appliance. The containers shall not exceed a 12-pound water capacity. When more than one container is present in the same room, each container shall be separated from the others by a distance of not less than 20 feet. Containers not connected for use shall be stored outside the building in accordance with Table 6104.3.		6103.2.1.9 Group B and M occupancies. In Group B and M occupancies, portable LP-gas containers are allowed to be used to supply quantities necessary for minor repairs or minor fabrication work, when connected to an <u>approved</u> appliance. The containers shall not exceed a 2.7 pounds (1.2 kg) water capacity or as approved by NFPA 58. Containers not connected for use shall be stored outside the building in accordance with Table 6104.3.	No change to Houston amendment.
6103.2.2 Industrial vehicles and floor maintenance machines. LP-gas containers on industrial vehicles and floor maintenance machines shall comply with Sections 11.13 and 11.14 of NFPA 58. Industrial lift trucks stored inside of buildings shall be kept in an <u>approved</u> area. LP-gas containers not attached for use shall be stored outside of the building in accordance with Table 6104.3.		6103.2.2 Industrial vehicles and floor maintenance machines. LP-gas containers on industrial vehicles and floor maintenance machines shall comply with Sections 11.11 and 11.12 of NFPA 58. Industrial lift trucks stored inside of buildings shall be kept in an <u>approved</u> area. LP-gas containers not attached for use shall be stored outside of the building in accordance with Table 6104.3.	No change to Houston amendment.
	SECTION 6104 LOCATION OF LP-GAS CONTAINERS		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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6104.2 Maximum capacity within established limits. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons (7570 L) ~~(see Section 3 of the Sample Legislation for Adoption of the International Fire Code on page xxi).~~ Exception: In particular installations, this capacity limit shall be determined by the <i>fire code official</i> , after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed LP-gas containers, degree of fire protection to be provided and capabilities of the local fire department. See also Houston Fire Department LSB Standard No. 10, "LP-Gas and Open Flame Use."	6104.2 Maximum capacity within established limits. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons (7570 L) ~~(see Section 3 of the Sample Legislation for Adoption of the International Fire Code on page xxi)~~ [JURISDICTION TO SPECIFY] . Exception: In particular installations, this capacity limit shall be determined by the fire code official, after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed LP-gas containers, degree of fire protection to be provided and capabilities of the local fire department.	6104.2 Maximum capacity within established limits. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons (7570 L) [JURISDICTION TO SPECIFY] . Exception: In particular installations, this capacity limit shall be determined by the <i>fire code official</i> , after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed LP-gas containers, degree of fire protection to be provided and capabilities of the local fire department. See also Houston Fire Department LSB Standard No. 10, "LP-Gas and Open Flame Use."	Minor wordsmithing changes. No change to Houston amendment.
	6104.3 Container location. LP-gas containers shall be located with respect to buildings, public ways and lot lines of adjoining property that can be built upon, in accordance with Table 6104.3.		Minor wordsmithing changes.
	6104.3.2 Special hazards. LP-gas containers shall be located with respect to special hazards including, but not limited to, above-ground flammable or combustible liquid tanks, oxygen or gaseous hydrogen containers, flooding or electric power lines as specified in Section 6.4.46.5.3 of NFPA 58.		Base code renumbering.
	6104.4 Multiple LP-gas container installations. Multiple LP-gas container installations with a total water storage capacity of more than 180,000 gallons (681 300 L) [150,000-gallon (567 750 L) LP-gas capacity] shall be subdivided into groups containing not more than 180,000 gallons (681 300 L) in each group. Such groups shall be separated by a distance of not less than 50 feet (15 240 mm), unless the containers are protected in accordance with one of the following: 1. Mounded in an approved manner. 2. Protected with approved insulation on areas that are subject to impingement of ignited gas from pipelines or other leakage. 3. Protected by fire walls of approved construction. 4. Protected by an approved system for application of water as specified in Table 6.4.26.5.1.2 of NFPA 58. 5. Protected by other approved means. Where one of these forms of protection is provided, the separation shall be not less than 25 feet (7620 mm) between LP-gas container groups.		Base code renumbering.
	SECTION 6106 DISPENSING AND OVERFILLING		
	6106.2 Overfilling. LP-gas containers shall not be filled or maintained with LP-gas in excess of either the volume determined using the fixed liquid-level gauge installed in accordance with the manufacturer's specifications and in accordance with Section 5.7.55.9.5 of NFPA 58 or the weight determined by the required percentage of the water capacity marked on the container. Portable LP-gas containers shall not		Base code renumbering.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	be refilled unless equipped with an overfilling prevention device (OPD) where required by Section ~~5.7.35.9.3~~ of NFPA 58.		
	SECTION 6107 SAFETY PRECAUTIONS AND DEVICES		No Houston amendment.
	6107.2 Smoking and other sources of ignition. "No Smoking" signs complying with Section 310 shall be posted where required by the fire code official. Smoking within 25 feet (7620 mm) of a point of transfer, while filling operations are in progress at LP-gas containers or vehicles, shall be prohibited. Control of other sources of ignition shall comply with Chapter 3 of this code and Section 6.2 ~~25~~ of NFPA 58.		Base code renumbering.
	SECTION 6108 FIRE PROTECTION 6108.1 General. Fire protection shall be provided for installations having LP-gas storage containers with a water capacity of more than 4,000 gallons (15 140 L), as required by Section 6.2 ~~59~~ of NFPA 58.		Base code renumbering.
	SECTION 6109 STORAGE OF PORTABLE LP-GAS CONTAINERS AWAITING USE OR RESALE		
	6109.3 Position. LP-gas containers in storage having individual water capacity greater than ~~24~~ ~~2.7~~ pounds (1 ~~2~~ kg) [nominal 1-pound (0.454 kg) LP-gas capacity] shall be positioned with the pressure relief valve in direct communication with the vapor space of the container.		Minor wordsmithing changes for clarification.
	6109.7 Storage in basement, pit or similar location. LP-gas containers shall not be stored in a basement, pit or similar location where heavier-than-air gas might collect. LP-gas containers shall not be stored in above-grade underfloor spaces or basements unless such location is provided with an approved means of ventilation. Exception: Department of Transportation (DOTn) specification cylinders with a maximum water capacity of ~~24~~ ~~2.7~~ pounds (1 ~~2~~ kg) for use in completely self-contained hand torches and similar applications. The quantity of LP-gas shall not exceed 20 pounds (9 kg).		Minor wordsmithing changes for clarification.
	6109.8 Protection of valves on LP-gas containers in storage. LP-gas ~~DOT container cylinder~~ valves shall be protected by screw-on-type caps or collars that shall be securely in place on all containers stored regardless of whether they are full, partially full or empty. Container ~~and tank~~ outlet valves shall be closed or plugged.		Minor wordsmithing changes for clarification.
	6109.9 Storage within buildings ~~accessible open to the public~~. Department of Transportation (DOTn) specification cylinders with maximum water capacity of ~~24~~ ~~2.7~~ pounds (1 ~~2~~ kg) used in completely self-contained hand torches and similar applications are allowed to be stored or displayed in a building ~~accessible open~~ to the public. The quantity of LP-gas shall not exceed 200 pounds (91 kg) except as provided in Section 6109.11.		Minor wordsmithing changes for clarification.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	6109.10 Storage within buildings not accessible open to the public. The maximum quantity allowed in one storage location in buildings not accessible open to the public, such as industrial buildings, shall not exceed a water capacity of 735 pounds (334 kg) [nominal 300 pounds (136 kg) of LP-gas]. Where additional storage locations are required on the same floor within the same building, they shall be separated by not less than 300 feet (91 440 mm). Storage beyond these limitations shall comply with Section 6109.11.		Minor wordsmithing changes for clarification.
	6109.10.1 Quantities on equipment and vehicles. LP-gas containers carried as part of service equipment on highway mobile vehicles need not be considered in the total storage capacity in Section 6109.10, provided that such vehicles are stored in private garages and do not carry more than three LP-gas containers with a total aggregate LP-gas capacity not exceeding 100 pounds (45.4 kg) per vehicle. LP-gas container valves shall be closed.		Minor wordsmithing changes for clarification.
	6109.11.2 Construction. The construction of such buildings and rooms shall comply with requirements for Group H occupancies in the International Building Code, Chapter 10 of NFPA 58 and both of the following: 1. Adequate vents shall be provided to the outside at both top and bottom, located not less than 5 feet (1524 mm) from building openings. 2. The entire area shall be classified for the purposes of ignition source control in accordance with Section 6.2.25 of NFPA 58.		Base code renumbering.
	6109.15 LP-gas cylinder exchange for resale. In addition to other applicable requirements of this chapter, facilities operating LP-gas cylinder exchange stations that are accessible open to the public shall comply with the following requirements. 1. Cylinders shall be secured in a lockable, ventilated metal cabinet or other approved enclosure. 2. Cylinders shall be accessible available only by authorized personnel or by use of an automated exchange system in accordance with Section 6109.15.1. 3. A sign shall be posted on the entry door of the business operating the cylinder exchange stating "DO NOT BRING LP-GAS CYLINDERS INTO THE BUILDING" or similar approved wording. 4. An emergency contact information sign shall be posted within 10 feet (3048 mm) of the cylinder storage cabinet. The content, lettering, size, color and location of the required sign shall be as required by the fire code official.		Minor wordsmithing changes for clarification.
	SECTION 6110 LP-GAS CONTAINERS NOT IN SERVICE		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	6110.1 Temporarily out of service. Removed from service. LP-gas containers whose use has been temporarily discontinued shall comply with all of the following: 1. Be disconnected from appliance piping. 2. Have LP-gas container outlets, except relief valves, closed or plugged. 3. Be positioned with the relief valve in direct communication with the LP-gas container vapor space.		Minor wordsmithing changes for clarification.
	6110.2 Permanently out of service. Removal from site. LP-gas containers to be placed permanently out of discontinued from service shall be removed from the site.		Minor wordsmithing changes for clarification.
SECTION 6112 MOBILE FOOD UNITS 6112.1 General. No permit for the use of LP-gas in connection with a mobile food unit shall be issued unless the operator provides to the fire department a detailed description of the means and methods by which the operator will secure the LP-gas container against shifting (bracing) and will protect the LP-gas container against damage (blocking) by third parties, which means and methods are <i>approved</i> by the <i>fire code official</i>, and pays the administrative and permit fees required in Section 113. In addition to complying with the applicable requirements of this chapter, the operator of a mobile food unit in, on, or in conjunction with which LP-gas is used to cook or otherwise prepare food shall obtain from the fire department a permit for the use of LP-gas and LP-gas equipment for each mobile food unit and shall make the permit available for inspection and/or copying upon the request of any peace officer, <i>fire code official</i>, or health officer.			Previous Houston amendment has been relocated to Section 319 and incorporated into base code provisions.
6112.2 Filling. Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the <i>fire code official</i>.			Previous Houston amendment relocated to Section 319.
6112.3 Spacing. The operator of a mobile food unit in, on, or in conjunction with which any amount of LP-gas is used to prepare food shall not operate such unit within 60 feet of another mobile food unit.			Previous Houston amendment relocated to Section 319.
6112.4 Transport. The <i>fire code official</i> is authorized and directed to take action as may be reasonably necessary to protect the public health, safety and welfare where any operator of a mobile food unit engaged in the transportation of LP-gas within the city is suspected of violating any state or federal laws, rules and regulations, as amended from time to time, specifically Title 49, Part 173.6 of the Federal Code of Regulations.			Previous Houston amendment relocated to Section 319.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2015 Houston IFC – Chapter 62 Organic Peroxides	2021 IFC – Chapter 62 – Organic Peroxides	2021 Houston Amendments	Code Change Summary
	SECTION 6204 STORAGE		
	6204.1.11 Standby power. Standby power shall be provided in accordance with Section ~~604.1203~~ for the following systems used to protect Class I and unclassified detonable organic peroxide: 1. Exhaust ventilation system. 2. Treatment system. ~~3. Gas detection system.~~ 43. Smoke detection system. 54. Temperature control system. 65. Fire alarm system. 76. Emergency alarm system.		Base code renumbering.
2015 Houston IFC – Chapter 63 Oxidizers, Oxidizing Gases and Oxidizing Cryogenic Fluids	2021 IFC – Chapter 63 – Oxidizers, Oxidizing Gases and Oxidizing Cryogenic Fluids	2021 Houston Amendments	Code Change Summary
	SECTION 6303 GENERAL REQUIREMENTS		
	~~6303.1.1.3~~ 6303.1.1.2 Oxidizing gases.		Base code renumbering.
	~~6303.2~~ 6303.1.4 Class 1 oxidizer storage configuration. The storage configuration of Class 1, 2 and 3 liquid and solid oxidizers shall be as set forth in Table 6303.1.4.		Base code renumbering, minor wordsmithing changes.
	~~TABLE 6303.2~~ TABLE 6303.1.4 STORAGE OF CLASS 1, 2 AND 3 OXIDIZER LIQUIDS AND SOLIDS		Base code renumbering, minor wordsmithing changes.
	~~6303.1.1.2~~ 6303.1.5 Class 3 liquid and solid oxidizers.		Base code renumbering.
	SECTION 6306 LIQUID OXYGEN IN HOME HEALTH CARE		
	6306.3 Liquid oxygen home care containers. Containers of liquid oxygen in home health care shall be in accordance with Sections 6306.3.1 through 6306.3.6. ~~3.~~		Base code renumbering.
2015 Houston IFC – Chapter 65	2021 IFC – Chapter 65 – Pyroxylin (Cellulose Nitrate) Plastics	2021 Houston Amendments	Code Change Summary
	SECTION 6503 GENERAL REQUIREMENTS 6503.1 Displays. Cellulose nitrate (pyroxylin) plastic articles are allowed to be placed on tables not more than 3 feet (914 mm) wide and 10 feet (3048 mm) long. Tables shall be spaced ~~at least~~ not less than 3 feet (914 mm) apart. Where articles are displayed on counters, they shall be arranged in a like manner.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2015 Houston IFC – Chapter 66	2021 IFC – Chapter 66 – Unstable (Reactive) Materials	2021 Houston Amendments	Code Change Summary
	SECTION 6604 STORAGE		
	6604.1.1 Detached storage. Storage of unstable (reactive) materials shall be in detached buildings ~~when~~ where required in Section 5003.8.2.		Minor wordsmithing changes.
	6604.1.4 Storage configuration. Unstable (reactive) materials stored in quantities greater than 500 cubic feet (14 m³) shall be separated into piles, each not larger than 500 cubic feet (14 m³). Aisle width shall ~~not~~ be ~~not~~ less than the height of the piles or 4 feet (1219 mm), whichever is greater. Exception: Materials stored in tanks.		Minor wordsmithing changes.
	6604.2.3 Distance from storage to exposures Class 2 and 1 materials. Outdoor storage of Class 2 or 1 unstable (reactive) materials shall not be located within 20 feet (6096 mm) of buildings not associated with the manufacture or distribution of such materials, lot lines, public streets, public alleys, public ways or means of egress. The minimum required distance shall not apply ~~when~~ where 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 fire barrier shall either be an independent structure or the exterior wall of the building adjacent to the storage area.		Minor wordsmithing changes.
	6604.2.5 Aisle widths. Aisle widths between piles shall ~~not~~ be ~~not~~ less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.		Minor wordsmithing changes.
2015 Houston IFC – Chapter 66	2021 IFC – Chapter 67 – Water-Reactive Solids and Liquids	2021 Houston Amendments	Code Change Summary
	SECTION 6704 STORAGE		
	6704.1.3 Waterproof room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner ~~which that~~ resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic sprinkler systems shall not be within such rooms or areas.		Minor wordsmithing changes.
	6704.1.5 Storage configuration. Water-reactive solids and liquids stored in quantities greater than 500 cubic feet (14 m³) shall be separated into piles, each not larger than 500 cubic feet (14 m³). Aisle widths between piles shall ~~not~~ be ~~not~~ less than the height of the pile or 4 feet (1219 mm), whichever is greater. Exception: Water-reactive solids and liquids stored in tanks. Class 2 water-reactive solids and liquids shall not be stored in basements unless such materials are stored in closed water-tight containers or tanks.		Minor wordsmithing changes.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	Class 3 water-reactive solids and liquids shall not be stored in basements. Class 2 or 3 water-reactive solids and liquids shall not be stored with flammable liquids.		
	6704.2.4 Storage conditions. Class 3 water-reactive solids and liquids shall be limited to piles not greater than 500 cubic feet (14 m³). Class 2 water-reactive solids and liquids shall be limited to piles not greater than 1,000 cubic feet (28 m³). Aisle widths between piles shall ~~not be~~ not less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.		Minor wordsmithing changes.
2015 Houston IFC – Chapter 80 Referenced Standards	2021 IFC – Chapter 80 – Referenced Standards	2021 Houston Proposed	Code Analysis
	ANSI ~~ANSI Z21.69/CSA 6.16—2015 Connectors for Movable Gas Appliances 3, 6~~		
	API Publ 2201 5th Edition—(2003, R2010)Procedures for Welding or Hot Tapping on Equipment in Service5706.7 RP 651— 4th Edition (2014) Cathodic Protection of Aboveground Petroleum Storage Tanks 5706.7, 5706.7.1 RP 2003— 8th Edition (2015) Protection Against Ignitions Arising out of Static, Lightning and Stray Currents 5706.7 ~~Spec 12P—3rd Edition (Reaffirmed 2008) Specification for Fiberglass Reinforced Plastic Tanks~~ Std 653— 5th Edition (2018) Tank Inspection, Repair, Alteration and Reconstruction 5706.7 Std 2000— 7th Edition (2014) Venting Atmosphere and Low-pressure Storage Tanks: Nonrefrigerated and Refrigerated 5704.2.7.3.2 Std 2015 -- 8th Edition 2001 (2018) Requirements for Safe Entry and Clearing of Petroleum Storage Tanks 5706.7, 5706.7.2		
	ASME A13.1— 2020 Scheme for the Identification of Piping Systems 3509.3, 5003.2.2.1, 5303.4.3, 5503.4.5, 5703.5.2 A17.1— 2019 /CSA B44— 19 Safety Code for Elevators and Escalators 508.1.6, 604.2, 907.3.3, 1009.4.1 A17.3— 2020 Safety Code for Existing Elevators and Escalators 1103.3.1, 1103.3.2 B16.18— 2018 Cast Copper-alloy Solder-joint Pressure Fittings 909.13.1 B16.22— 2018 Wrought Copper and Copper-alloy Solder-joint Pressure Fittings 909.13.1 B31.1— 2020 Power Piping 5003.2.2, Table 5703.6.2 B31.3— 2020 Process Piping 5003.2.2.2, Table 5703.6.2 B31.4— 2019 Pipeline Transportation Systems for Liquids and Slurries Table 5703.6.2		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary

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	B31.9—2020 Building Services Piping Table 5703.6.2, 5703.6.3, 5703.6.11 BPVC—2019 ASME Boiler and Pressure Vessel Code (Sections I, II, IV, V & VI, VIII) 5003.2.1, 5303.2, 5303.3.2, 5503.2.6, 5503.4.3, 5503.7, 5704.2.13.1.5, 5806.3.1,5806.4.1,5806.4.8		
	~~ASSE~~ ASSP ~~ANSI/~~ ASSP Z359.1—2019 The Fall Protection Code 1015.6, 1015.7		
	ASTM B88—16 Specification for Seamless Copper Water Tube 909.13.1 B251/B251M— 17 Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube 909.13.1 B280—18 Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Ser vice 909.13.1 D56—16a Test Method for Flash Point by Tag Closed Cup Tester 202 D86—17 Test Method for Distillation of Petr oleum Products at Atmospheric Pressure 202 D92—18 Test Method for Flash and Fire Points by Cleveland Open Cup Tester 202 , 2401.2 , 5001.1 , 5104.1.1, 5104.1.2 , 5701.2 D93—18 Test Method for Flash Point by Pensky- Martens Closed Up Tester 202 D2859—16 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials 804.3.3.1, 804.3.3.2 E84—18b Standard Test Method for Surface Burning Characteristics of Building Materials 202 , 803.1 , 803.1.2 , 803.3 , 803.5.2 , 803.10 , 803.12 , 803.13 , 804.1.1, 804.1.2,804.2.4 , 3305.9 E108—17 Standard Test Methods for Fire Tests of Roof Coverings 317.2, 317.3 E648—17a Standard Test Method for Critical Radiant Flux of Floor - covering Systems Using a Radiant Heat Energy Source 804.3.1, 804.3.2 , 804.4 E1354—17 Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter 304.3.2, 304.3.4 , 318.1 , 808.1 , 808.2 , 2310.5.3 , 3305.2.3 , 3305.9 , 3603.4 E1529—16e1 Standard Test Method for Determining Effects of Large Hydrocarbon Pool Fir es on Structural Members and Assemblies 5704.2.9.2.3 E1537—16 Test Method for Fir e Testing of Upholstered Furniture 805.1.1.2, 805.2.1.2, 805.3.1.2, 805.4.1.2 E1590—17 Test Method for Fire Testing of Mattresses 805.1.2.2, 805.2.2.2, 805.3.2.2.1, 805.4.2.2 E2404—17 Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including		

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	Vinyl) and Wood Wall or Ceiling Coverings, Facing and Veneers to Assess Surface Burning Characteristics 803.5.1, 803.5.2, 803.12 E2573— 17 Standard Practice for Specimen Preparation and Mounting of Site- fabricated Str etch Systems to Assess Surface Burning Characteristics 803.10 E2579— 15 Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Sur face Burning Characteristics 803.13 E3082—17 Standard Test Methods for Deter mining the Effectiveness of Fire- retardant Treatments for Natural Christmas Trees 806.1.4 F 2200 – 17 Standard Specification for Automated Vehicular Gate Construction 503.5, 503.6		
	BHMA A156.10— 2017 Power-operated Pedestrian Doors 1010.3.2 A156.19— 2020 Power Assist and Low-energy Power-operated Doors 1010.3.2 A156.27— 2019 Power- and Manual-operated Revolving Pedestrian Doo s 1010.3.1, 1010.3.1.1		
	CGA ANSI/CGA G- 13—(2016) Storage and Handling of Silane and Silane Mixtures (an American National Standard) 6404.1 , 6404.2 , 6405.3 S- 1.1—(2011) Pressure Relief Device Standards—Part 1—Cylinder s for Compressed Gases 5303.3.2 , 5503.2 S- 1.3—(2008) Pressure Relief Device Standards—Part 3—Stationary Storage Container s for Compressed Gases 5303.3.2 , 5503.2		
	CSA ANSI Z21.69/CSA 6.16—2015 Connector s for Movable Gas Appliances 319.5, 606.4 ANSI Z83.26/CSA 2.37—2014 Gas- fired Outdoor Infrared Patio Heaters 605.5.2.2.1 CSA/ANSI NGV 2—2016 Compressed Natural Gas Vehicle Fuel Containers 319.9.1.3 CSA/ANSI NGV 5.1—2016 Residential Fueling Appliances 2308.2.3 CSA/ANSI NGV 5.2—2017 Vehicle Fueling Appliances		
	DOTn 49 CFR Parts 173.192—2006 Packaging for Certain Toxic Gases in Hazard Zone A Table 5003.8.2		
	FM ANSI/FM 4996—2019 Approval Standard for Classification of Pallets and Other Material Handling Products as Equivalent to Wood Pallets 315.7.5, 3206.4.1.1		

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	ICC IBC— 21 International Building Code ICC 500-20 ICC/NSSA Standard on the Design and Construction of Storm Shelters 1031.2 ICC A117.1— 17 Accessible and Usable Buildings and Facilities IEBC— 21 International Existing Building Code IFGC— 21 International Fuel Gas Code IMC— 21 International Mechanical Code IPC— 21 International Property Maintenance Code IPMC— 21 International Property Maintenance Code IRC— 21 International Residential Code IWUIC— 21 International Wildland-Urban Interface Code		
	IIAR ANSI/IIAR 2—2014, including Addendum A Safe Design of Closed-circuit Ammonia Refrigeration Systems 608.1.2 , 608.9 ANSI/IIAR 6—2018 Standard for Inspection, Testing, and Maintenance of Closed-circuit Ammonia Refrigeration Systems 608.1.2 ANSI/IIAR 7—2019 Developing Operating Procedures for Closed-circuit Ammonia Mechanical Refrigeration Systems 608.1.2 ANSI/IIAR 8—2020 Decommissioning of Closed-circuit Ammonia Refrigeration Systems 608.1.2 ANSI/IIAR 9—2018 Standard for Recognized and Generally Accepted Good Engineering Practices (RAGAGEP) for Existing Closed-circuit Ammonia Refrigeration Systems		
	IKECA ANSI/KECA C10—2016 Standard for the Methodology for Cleaning of Commercial Kitchen Exhaust Systems 606.3.3.2		
	NEMA 250— 2018 Enclosures for Electrical Equipment (1,000 Volt Maximum) 6005.2		
	NFPA 68—13 Standard on Explosion Protection by Deflagration Venting 911.1, 911.4, T able 2205.1 76—16 Standard for the Fire Protection of Telecommunications Facilities 1207.1.2.1, 1207.2.1, 1207.3.1, 1207.3.7.1, 1207.4.1, 1207.5.1, 1207.5.2, 1207.5.3, 1207.5.5, T able 1207.6, 1207.6.2.3, T able 1207.7 77—14 Recommended Practice on Static Electricity 232—17 Standard for Protection of Records 780—17 Standard for the Installation of Lighning Protection Systems 4003.4	25—2023: Standard for the Inspection, Testing and Maintenance of Water-based Fire Protection Systems 507.5.3, Table 901.6.1, 901.7, 904.7.1, 912.7, 913.5 70—2023: National Electrical Code 309.2, 322.1 , 603.1, 603.1.1, 603.2.1, 603.4, 603.4.1, 603.5, 603.8, 605.1.2, 605.1.6, 605.6.2, 607.6, 607.7, 608.17, 608.18, 904.3.1, 907.6.1, 909.12.2, 909.16.3, 910.4.6, 1006.2.2.4, 1010.2.9.2, 1201.2, 1203.1.3, 1205.1, 1206.4, 1206.14, 1207.4.1, 1207.4.2, 1207.4.8, 1207.5.3, 1207.10.6, 1207.10.7.4, 1207.11.5, 1207.11.10, 2006.3.4, 2102.1.1, 2102.1.2, 2102.1.3, 2102.1.4, 2102.1.5, 2102.1.6, 2102.1.7, 2102.1.8, 2102.1.9, 2102.1.10, 2102.1.11, 2102.1.12, 2102.1.13, 2102.1.14, 2102.1.15, 2102.1.16, 2102.1.17, 2102.1.18, 2102.1.19, 2102.1.20, 2102.1.21, 2102.1.22, 2102.1.23, 2102.1.24, 2102.1.25, 2102.1.26, 2102.1.27, 2102.1.28, 2102.1.29, 2102.1.30, 2102.1.31, 2102.1.32, 2102.1.33, 2102.1.34, 2102.1.35, 2102.1.36, 2102.1.37, 2102.1.38, 2102.1.39, 2102.1.40, 2102.1.41, 2102.1.42, 2102.1.43, 2102.1.44, 2102.1.45, 2102.1.46, 2102.1.47, 2102.1.48, 2102.1.49, 2102.1.50, 2102.1.51, 2102.1.52, 2102.1.53, 2102.1.54, 2102.1.55, 2102.1.56, 2102.1.57, 2102.1.58, 2102.1.59, 2102.1.60, 2102.1.61, 2102.1.62, 2102.1.63, 2102.1.64, 2102.1.65, 2102.1.66, 2102.1.67, 2102.1.68, 2102.1.69, 2102.1.70, 2102.1.71, 2102.1.72, 2102.1.73, 2102.1.74, 2102.1.75, 2102.1.76, 2102.1.77, 2102.1.78, 2102.1.79, 2102.1.80, 2102.1.81, 2102.1.82, 2102.1.83, 2102.1.84, 2102.1.85, 2102.1.86, 2102.1.87, 2102.1.88, 2102.1.89, 2102.1.90, 2102.1.91, 2102.1.92, 2102.1.93, 2102.1.94, 2102.1.95, 2102.1.96, 2102.1.97, 2102.1.98, 2102.1.99, 2102.1.100, 2102.1.101, 2102.1.102, 2102.1.103, 2102.1.104, 2102.1.105, 2102.1.106, 2102.1.107, 2102.1.108, 2102.1.109, 2102.1.110, 2102.1.111, 2102.1.112, 2102.1.113, 2102.1.114, 2102.1.115, 2102.1.116, 2102.1.117, 2102.1.118, 2102.1.119, 2102.1.120, 2102.1.121, 2102.1.122, 2102.1.123, 2102.1.124, 2102.1.125, 2102.1.126, 2102.1.127, 2102.1.128, 2102.1.129, 2102.1.130, 2102.1.131, 2102.1.132, 2102.1.133, 2102.1.134, 2102.1.135, 2102.1.136, 2102.1.137, 2102.1.138, 2102.1.139, 2102.1.140, 2102.1.141, 2102.1.142, 2102.1.143, 2102.1.144, 2102.1.145, 2102.1.146, 2102.1.147, 2102.1.148, 2102.1.149, 2102.1.150, 2102.1.151, 2102.1.152, 2102.1.153, 2102.1.154, 2102.1.155, 2102.1.156, 2102.1.157, 2102.1.158, 2102.1.159, 2102.1.160, 2102.1.161, 2102.1.162, 2102.1.163, 2102.1.164, 2102.1.165, 2102.1.166, 2102.1.167, 2102.1.168, 2102.1.169, 2102.1.170, 2102.1.171, 2102.1.172, 2102.1.173, 2102.1.174, 2102.1.175, 2102.1.176, 2102.1.177, 2102.1.178, 2102.1.179, 2102.1.180, 2102.1.181, 2102.1.182, 2102.1.183, 2102.1.184, 2102.1.185, 2102.1.186, 2102.1.187, 2102.1.188, 2102.1.189, 2102.1.190, 2102.1.191, 2102.1.192, 2102.1.193, 2102.1.194, 2102.1.195, 2102.1.196, 2102.1.197, 2102.1.198, 2102.1.199, 2102.1.200, 2102.1.201, 2102.1.202, 2102.1.203, 2102.1.204, 2102.1.205, 2102.1.206, 2102.1.207, 2102.1.208, 2102.1.209, 2102.1.210, 2102.1.211, 2102.1.212, 2102.1.213, 2102.1.214, 2102.1.215, 2102.1.216, 2102.1.217, 2102.1.218, 2102.1.219, 2102.1.220, 2102.1.221, 2102.1.222, 2102.1.223, 2102.1.224, 2102.1.225, 2102.1.226, 2102.1.227, 2102.1.228, 2102.1.229, 2102.1.230, 2102.1.231, 2102.1.232, 2102.1.233, 2102.1.234, 2102.1.235, 2102.1.236, 2102.1.237, 2102.1.238, 2102.1.239, 2102.1.240, 2102.1.241, 2102.1.242, 2102.1.243, 2102.1.244, 2102.1.245, 2102.1.246, 2102.1.247, 2102.1.248, 2102.1.249, 2102.1.250, 2102.1.251, 2102.1.252, 2102.1.253, 2102.1.254, 2102.1.255, 2102.1.256, 2102.1.257, 2102.1.258, 2102.1.259, 2102.1.260, 2102.1.261, 2102.1.262, 2102.1.263, 2102.1.264, 2102.1.265, 2102.1.266, 2102.1.267, 2102.1.268, 2102.1.269, 2102.1.270, 2102.1.271, 2102.1.272, 2102.1.273, 2102.1.274, 2102.1.275, 2102.1.276, 2102.1.277, 2102.1.278, 2102.1.279, 2102.1.280, 2102.1.281, 2102.1.282, 2102.1.283, 2102.1.284, 2102.1.285, 2102.1.286, 2102.1.287, 2102.1.288, 2102.1.289, 2102.1.290, 2102.1.291, 2102.1.292, 2102.1.293, 2102.1.294, 2102.1.295, 2102.1.296, 2102.1.297, 2102.1.298, 2102.1.299, 2102.1.300, 2102.1.301, 2102.1.302, 2102.1.303, 2102.1.304, 2102.1.305, 2102.1.306, 2102.1.307, 2102.1.308, 2102.1.309, 2102.1.310, 2102.1.311, 2102.1.312, 2102.1.313, 2102.1.314, 2102.1.315, 2102.1.316, 2102.1.317, 2102.1.318, 2102.1.319, 2102.1.320, 2102.1.321, 2102.1.322, 2102.1.323, 2102.1.324, 2102.1.325, 2102.1.326, 2102.1.327, 2102.1.328, 2102.1.329, 2102.1.330, 2102.1.331, 2102.1.332, 2102.1.333, 2102.1.334, 2102.1.335, 2102.1.336, 2102.1.337, 2102.1.338, 2102.1.339, 2102.1.340, 2102.1.341, 2102.1.342, 2102.1.343, 2102.1.344, 2102.1.345, 2102.1.346, 2102.1.347, 2102.1.348, 2102.1.349, 2102.1.350, 2102.1.351, 2102.1.352, 2102.1.353, 2102.1.354, 2102.1.355, 2102.1.356, 2102.1.357, 2102.1.358, 2102.1.359, 2102.1.360, 2102.1.361, 2102.1.362, 2102.1.363, 2102.1.364, 2102.1.365, 2102.1.366, 2102.1.367, 2102.1.368, 2102.1.369, 2102.1.370, 2102.1.371, 2102.1.372, 2102.1.373, 2102.1.374, 2102.1.375, 2102.1.376, 2102.1.377, 2102.1.378, 2102.1.379, 2102.1.380, 2102.1.381, 2102.1.382, 2102.1.383, 2102.1.384, 2102.1.385, 2102.1.386, 2102.1.387, 2102.1.388, 2102.1.389, 2102.1.390, 2102.1.391, 2102.1.392, 2102.1.393, 2102.1.394, 2102.1.395, 2102.1.396, 2102.1.397, 2102.1.398, 2102.1.399, 2102.1.400, 2102.1.401, 2102.1.402, 2102.1.403, 2102.1.404, 2102.1.405, 2102.1.406, 2102.1.407, 2102.1.408, 2102.1.409, 2102.1.410, 2102.1.411, 2102.1.412, 2102.1.413, 2102.1.414, 2102.1.415, 2102.1.416, 2102.1.417, 2102.1.418, 2102.1.419, 2102.1.420, 2102.1.421, 2102.1.422, 2102.1.423, 2102.1.424, 2102.1.425, 2102.1.426, 2102.1.427, 2102.1.428, 2102.1.429, 2102.1.430, 2102.1.431, 2102.1.432, 2102.1.433, 2102.1.434, 2102.1.435, 2102.1.436, 2102.1.437, 2102.1.438, 2102.1.439, 2102.1.440, 2102.1.441, 2102.1.442, 2102.1.443, 2102.1.444, 2102.1.445, 2102.1.446, 2102.1.447, 2102.1.448, 2102.1.449, 2102.1.450, 2102.1.451, 2102.1.452, 2102.1.453, 2102.1.454, 2102.1.455, 2102.1.456, 2102.1.457, 2102.1.458, 2102.1.459, 2102.1.460, 2102.1.461, 2102.1.462, 2102.1.463, 2102.1.464, 2102.1.465, 2102.1.466, 2102.1.467, 2102.1.468, 2102.1.469, 2102.1.470, 2102.1.471, 2102.1.472, 2102.1.473, 2102.1.474, 2102.1.475, 2102.1.476, 2102.1.477, 2102.1.478, 2102.1.479, 2102.1.480, 2102.1.481, 2102.1.482, 2102.1.483, 2102.1.484, 2102.1.485, 2102.1.486, 2102.1.487, 2102.1.488, 2102.1.489, 2102.1.490, 2102.1.491, 2102.1.492, 2102.1.493, 2102.1.494, 2102.1.495, 2102.1.496, 2102.1.497, 2102.1.498, 2102.1.499, 2102.1.500, 2102.1.501, 2102.1.502, 2102.1.503, 2102.1.504, 2102.1.505, 2102.1.506, 2102.1.507, 2102.1.508, 2102.1.509, 2102.1.510, 2102.1.511, 2102.1.512, 2102.1.513, 2102.1.514, 2102.1.515, 2102.1.516, 2102.1.517, 2102.1.518, 2102.1.519, 2102.1.520, 2102.1.521, 2102.1.522, 2102.1.523, 2102.1.524, 2102.1.525, 2102.1.526, 2102.1.527, 2102.1.528, 2102.1.529, 2102.1.530, 2102.1.531, 2102.1.532, 2102.1.533, 2102.1.534, 2102.1.535, 2102.1.536, 2102.1.537, 2102.1.538, 2102.1.539, 2102.1.540, 2102.1.541, 2102.1.542, 2102.1.543, 2102.1.544, 2102.1.545, 2102.1.546, 2102.1.547, 2102.1.548, 2102.1.549, 2102.1.550, 2102.1.551, 2102.1.552, 2102.1.553, 2102.1.554, 2102.1.555, 2102.1.556, 2102.1.557, 2102.1.558, 2102.1.559, 2102.1.560, 2102.1.561, 2102.1.562, 2102.1.563, 2102.1.564, 2102.1.565, 2102.1.566, 2102.1.567, 2102.1.568, 2102.1.569, 2102.1.570, 2102.1.571, 2102.1.572, 2102.1.573, 2102.1.574, 2102.1.575, 2102.1.576, 2102.1.577, 2102.1.578, 2102.1.579, 2102.1.580, 2102.1.581, 2102.1.582, 2102.1.583, 2102.1.584, 2102.1.585, 2102.1.586, 2102.1.587, 2102.1.588, 2102.1.589, 2102.1.590, 2102.1.591, 2102.1.592, 2102.1.593, 2102.1.594, 2102.1.595, 2102.1.596, 2102.1.597, 2102.1.598, 2102.1.599, 2102.1.600, 2102.1.601, 2102.1.602, 2102.1.603, 2102.1.604, 2102.1.605, 2102.1.606, 2102.1.607, 2102.1.608, 2102.1.609, 2102.1.610, 2102.1.611, 2102.1.612, 2102.1.613, 2102.1.614, 2102.1.615, 2102.1.616, 2102.1.617, 2102.1.618, 2102.1.619, 2102.1.620, 2102.1.621, 2102.1.622, 2102.1.623, 2102.1.624, 2102.1.625, 2102.1.626, 2102.1.627, 2102.1.628, 2102.1.629, 2102.1.630, 2102.1.631, 2102.1.632, 2102.1.633, 2102.1.634, 2102.1.635, 2102.1.636, 2102.1.637, 2102.1.638, 2102.1.639, 2102.1.640, 2102.1.641, 2102.1.642, 2102.1.643, 2102.1.644, 2102.1.645, 2102.1.646, 2102.1.647, 2102.1.648, 2102.1.649, 2102.1.650, 2102.1.651, 2102.1.652, 2102.1.653, 2102.1.654, 2102.1.655, 2102.1.656, 2102.1.657, 2102.1.658, 2102.1.659, 2102.1.660, 2102.1.661, 2102.1.662, 2102.1.663, 2102.1.664, 2102.1.665, 2102.1.666, 2102.1.667, 2102.1.668, 2102.1.669, 2102.1.670, 2102.1.671, 2102.1.672, 2102.1.673, 2102.1.674, 2102.1.675, 2102.1.676, 2102.1.677, 2102.1.678, 2102.1.679, 2102.1.680, 2102.1.681, 2102.1.682, 2102.1.683, 2102.1.684, 2102.1.685, 2102.1.686, 2102.1.687, 2102.1.688, 2102.1.689, 2102.1.690, 2102.1.691, 2102.1.692, 2102.1.693, 2102.1.694, 2102.1.695, 2102.1.696, 2102.1.697, 2102.1.698, 2102.1.699, 2102.1.700, 2102.1.701, 2102.1.702, 2102.1.703, 2102.1.704, 2102.1.705, 2102.1.706, 2102.1.707, 2102.1.708, 2102.1.709, 2102.1.710, 2102.1.711, 2102.1.712, 2102.1.713, 2102.1.714, 2102.1.715, 2102.1.716, 2102.1.717, 2102.1.718, 2102.1.719, 2102.1.720, 2102.1.721, 2102.1.722, 2102.1.723, 2102.1.724, 2102.1.725, 2102.1.726, 2102.1.727, 2102.1.728, 2102.1.729, 2102.1.730, 2102.1.731, 2102.1.732, 2102.1.733, 2102.1.734, 2102.1.735, 2102.1.736, 2102.1.737, 2102.1.738, 2102.1.739, 2102.1.740, 2102.1.741, 2102.1.742, 2102.1.743, 2102.1.744, 2102.1.745, 2102.1.746, 2102.1.747, 2102.1.748, 2102.1.749, 2102.1.750, 2102.1.751, 2102.1.752, 2102.1.753, 2102.1.754, 2102.1.755, 2102.1.756, 2102.1.757, 2102.1.758, 2102.1.759, 2102.1.760, 2102.1.761, 2102.1.762, 2102.1.763, 2102.1.764, 2102.1.765, 2102.1.766, 2102.1.767, 2102.1.768, 2102.1.769, 2102.1.770, 2102.1.771, 2102.1.772, 2102.1.773, 2102.1.774, 2102.1.775, 2102.1.776, 2102.1.777, 2102.1.778, 2102.1.779, 2102.1.780, 2102.1.781, 2102.1.782, 2102.1.783, 2102.1.784, 2102.1.785, 2102.1.786, 2102.1.787, 2102.1.788, 2102.1.789, 2102.1.790, 2102.1.791, 2102.1.792, 2102.1.793, 2102.1.794, 2102.1.795, 2102.1.796, 2102.1.797, 2102.1.798, 2102.1.799, 2102.1.800, 2102.1.801, 2102.1.802, 2102.1.803, 2102.1.804, 2102.1.805, 2102.1.806, 2102.1.807, 2102.1.808, 2102.1.809, 2102.1.810, 2102.1.811, 2102.1.812, 2102.1.813, 2102.1.814, 2102.1.815, 2102.1.816, 2102.1.817, 2102.1.818, 2102.1.819, 2102.1.820, 2102.1.821, 2102.1.822, 2102.1.823, 2102.1.824, 2102.1.825, 2102.1.826, 2102.1.827, 2102.1.828, 2102.1.829, 2102.1.830, 2102.1.831, 2102.1.832, 2102.1.833, 2102.1.834, 2102.1.835, 2102.1.836, 2102.1.837, 2102.1.838, 2102.1.839, 2102.1.840, 2102.1.841, 2102.1.842, 2102.1.843, 2102.1.844, 2102.1.845, 2102.1.846, 2102.1.847, 2102.1.848, 2102.1.849, 2102.1.850, 2102.1.851, 2102.1.852, 2102.1.853, 2102.1.854, 2102.1.855, 2102.1.856, 2102.1.857, 2102.1.858, 2102.1.859, 2102.1.860, 2102.1.861, 2102.1.862, 2102.1.863, 2102.1.864, 2102.1.865, 2102.1.866, 2102.1.867, 2102.1.868, 2102.1.869, 2102.1.870, 2102.1.871, 2102.1.872, 2102.1.873, 2102.1.874, 2102.1.875, 2102.1.876, 2102.1.877, 2102.1.878, 2102.1.879, 2102.1.880, 2102.1.881, 2102.1.882, 2102.1.883, 2102.1.884, 2102.1.885, 2102.1.886, 2102.1.887, 2102.1.888, 2102.1.889, 2102.1.890, 2102.1.891, 2102.1.892, 2102.1.893, 2102.1.894, 2102.1	

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	1124—06 Code for the Manufacture, Transportation, Storage and Retail Sales of Fireworks and Pyrotechnic Articles 5601.1.3	322.1	
	UL 10C—2016 Positive Pressure Fire Tests of Door Assemblies 1010.2.9.3 30—1995 Metal Safety Cans—with r visions through June 2014 5003.9.10, 5005.1.10, 5705.2.4, 5707.2 58—2018 Steel Underground Tanks for Flammable and Combustible Liquids 5704.2.13.1.5 80—2007 Steel Tanks for Oil-burner Fuels and Other Combustible Liquids—with revisions through January 2014 319.7.1, 605.4.2.1, 605.4.2.2, 607.2 87A—2015 Power - operated Dispensing Devices for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Per cent—with revisions through June 2017 2306.8.1 142—2006 Steel Aboveground Tanks for Flammable and Combustible Liquids—with revisions through August 2014 319.7.1 , 605.4.1.1 , 605.4.2.1 , 605.4.2.2 , 607.2 , 2306.2.3 199E—2004 Outline of Investigation for Fire Testing of Sprinkler s and Water Spray Nozzles for Protection of Deep Fat Fryers 904.13.4.1 217—2015 Single and Multiple Station Smoke Alarms—with revisions through November 2016 907.2.11, 915.4.4 268—2016 Smoke Detectors for Fire Alarm Systems—with revisions through July 2016 907.2.6.2, 907.2.11.7, 915.5.3 294—2018 Access Control System Units—with revisions through October 2018 1010.2.11, 1010.2.12, 1010.2.13.1, 1010.2.14 300—2005 Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment—with revisions through December 2014 904.13 300A—2006 Outline of Investigation for Extinguishing System Units for Residential Range Top Cooking Sur faces 904.14.1.1 305—2012 Panic Hardware—with revisions through March 2017 1010.2.9.3 325—2017 Standard for Door, Drapery, Gate, Louver and Window Operator s and Systems 503.5, 503.6 498A—2008 Current Taps and Adaptors—with revisions through June 2016 603.5.1 499—2014 Standard for Electrical Heating Appliances—with revisions through February 2017 607.6 647—1993 Standard for Unvented Kerosene- fired Room Heaters and Portable Heaters—with revisions through April 2010 605.5 710—2012 Exhaust Hoods for Commercial Cooking Equipment—with revisions through June 2018 606.2		

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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	723—2018 Standard for Test for Surface Burning Characteristics of Building Materials 790—2004 Standard Test Methods for Fire Tests of Roof Coverings—with revisions through October 2018 317.2, 317.3, 1207.9.5 791—2006 Standard for Residential Incinerators—with revisions through November 2014 605.8.1 793—2008 Automatically Operated Roof Vents for Smoke and Heat—with revisions through March 2017 910.3.1 817—2015 Standard for Cord Sets and Power- supply Cords—with revisions through August 2018 603.6 864—2014 Control Units and Accessories for Fire Alarm Systems—with revisions through March 2018 909.12 900—2015 Air Filter Units 2404.7.8 924—2016 Standard for Safety Emergency Lighting and Power Equipment—with revisions through May 2018 1013.5, 3103.12.6.1 971A—2006 Outline of Investigation for Metallic Underground Fuel Pipe Table 5703.6.2 1037—2016 Antitheft Alarms and Devices—with revisions through September 2017 506.1 1046—2010 Grease Filter s for Exhaust Ducts—with revisions through April 2017 606.3.1 1275—2014 Flammable Liquid Storage Cabinets—with revisions through February 2018 5003.8.7.1, 5704.3.2.1.1 1313—2015 Nonmetallic Safety Cans for Petroleum Products 5003.9.10 1315—2017 Safety for Metal Waste Paper Containers 808.1, 808.2 1363—2018 Relocatable Power Taps 603.5.1 1363A—2014 Outline of Investigation for Special Purpose Relocatable Power Taps 603.5.1.1 1369—2018 Aboveground Piping Requirements Table 5703.6.2 1389—2017 Plant Extraction Units 3904.2.1 1489—2016 Fire Resistant Pipe Protection Systems Carrying Combustible Liquids1203.1.2 ~~1564—2015 Industrial Battery Chargers—with revisions through August 2017~~ 1, 1 1741—2010 Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources—with revisions through February 2018 1207.3.3, 1207.11.5 1805—2002 Laboratory Hoods and Cabinets—with revisions through June 2006 3805.2.2 1973—2018 Batteries for Use in Stationary, Vehicle Auxilliary Power and Light Electric Rail (LER) Applications and Stationary Applications Table 1207.6 1974—2017 Standard for Evaluation for Repurposing Batteries 1207.3.9 1994—2015 Standard for Luminous Egress Path Marking Systems 1008.2.1, 1025.2.1, 1025.2.3, 1025.2.4, 1025.2.5, 1025.4		

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	2011—2019 Outline for Machinery 320.2.1, 320.3.2 2017—2008 General- purpose Signaling Devices and Systems—with revisions through January 2016 3905.1.2 2034—2017 Single and Multiple Station Carbon Monoxide Alarms—with revisions through September 2018 915.4.2, 915.4.4 2075—2013 Standard for Gas and Vapor Detector s and Sensor s—with revisions through December 2017 915.5.1, 915.5.3 2079—2015 Tests for Fire Resistance of Building Joint Systems 202 2085—1997 Protected Aboveground Tanks for Flammable and Combustible Liquids—with revisions through September 2010 202, 605.4.1.1, 605.4.2.1, 605.4.2.2, 2306.2.2, 2306.2.3, 5704.2.7.4, 5704.2.9.2.3, 5704.2.9.7.4, 5705.3.8.2 2152—2016 Outline of Investigation for Special Purpose Nonmetallic Container s and Tanks for Specific Combustible or Noncombustible Liquids 607.3 2196—2017 Standard for Fire Test for Circuit Integrity of Fire- resistive Power, Instrumentation, Control and Data Cables 913.2.2, 1203.3 2200—2012 Stationary Engine Generator Assemblies—with revisions through October 2015 1203.1.1 2201—2018 Standard for Car bon Monoxide (CO) Emission Rate of Portable Generators 1204.2 2208—2010 Solvent Distillation Units—with revisions through September 2015 5705.4.1 2245—2006 Below- grade Vaults for Flammable Liquid Storage Tanks 5704.2.8.1 2335—2010 Fire Tests of Storage Pallets—with revisions through August 2017 315.7.5, 3206.4.1.1 2360—2000 Test Methods for Determining the Combustibility Characteristics of Plastics Used in Semi-conductor Tool Construction—with revisions through October 2017 2703.10.1.2 2524—2019 Standard for In-building 2-way Emergency Radio Communication Enhancement Systems 510.4 9540—2016 Standard for Energy Storage Systems and Equipment 1207.3.1, 1207.3.2, 1207.3.7, 1207.10.6, 1207.10.7.4, 1207.11.1, 1207.11.5 9540A—2017 Standard for Safety Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems 1207.1.5, 1207.6.3 60601- 1—2003 Medical Electrical Equipment, Part I: General Requirements for Safety 603.5.1.1 60950- 1—2014 Information Technology Equipment—Safety Requirements 320.2.1 62368- 1—2014 Audio/video, Information and Communication Technology Equipment—Safety Requirements 320.2.1		

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2015 Houston IFC – Appendix A Board of Appeals	2021 IFC – Appendix A – Board of Appeals	2021 Houston Amendments	Code Change Summary
~~The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~		~~The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~	No change to Houston amendment.
A101.2 Application for appeal Organization. Any person shall have the right to appeal a decision of the <i>fire code official</i> to the board. An application for appeal shall be based on a claim that the intent of this code or the rules legally adopted here under have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The application shall be filed on a form obtained from the <i>fire code official</i> within 20 days after the notice was served. There is hereby created a Board of Appeals, consisting of 11 members. Five members at a meeting shall constitute a quorum. The positions on the board shall be filled as follows: Position 1. By a well-respected citizen of the jurisdiction. Position 2. By the <i>fire code official</i> or the official's duly authorized representative, who shall provide a board secretary. Position 3. By the fire chief or the chief's duly authorized representative. Position 4. By the director of Houston Public Works or the director's duly authorized representative. Position 5. By a well-respected citizen of the jurisdiction, who shall serve as chairman. Position 6. By a professional engineer registered as such under the laws of Texas, who shall be actively engaged in the practice as a fire protection engineer. Position 7. By a person who is a member of the Building Owners and Managers Association of Houston. Position 8. By a person who is engaged or employed in the chemical or petroleum industry. Position 9. By a person who is a member of the Houston Apartment Association. Position 10. By a person who is fire protection contractor. Position 11. By a person who is an architect registered by the State of Texas. The legal department shall have an attorney present for each board meeting, who shall advise the board on legal matters relative to topics under board jurisdiction. The <i>fire chief</i>, the <i>fire code official</i>, and director of Houston Public Works may each designate in writing a person under his supervision to act in his place as his duly authorized representative.		A101.2 Application for appeal Organization. Any person shall have the right to appeal a decision of the <i>fire code official</i> to the board. An application for appeal shall be based on a claim that the intent of this code or the rules legally adopted here under have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The application shall be filed on a form obtained from the <i>fire code official</i> within 20 days after the notice was served. There is hereby created a Board of Appeals, consisting of 11 members. Five members at a meeting shall constitute a quorum. The positions on the board shall be filled as follows: Position 1. By a well-respected citizen of the jurisdiction. Position 2. By the <i>fire code official</i> or the official's duly authorized representative, who shall provide a board secretary. Position 3. By the fire chief or the chief's duly authorized representative. Position 4. By the director of Houston Public Works or the director's duly authorized representative. Position 5. By a well-respected citizen of the jurisdiction, who shall serve as chairman. Position 6. By a professional engineer registered as such under the laws of Texas, who shall be actively engaged in the practice as a fire protection engineer. Position 7. By a person who is a member of the Building Owners and Managers Association of Houston. Position 8. By a person who is engaged or employed in the chemical or petroleum industry. Position 9. By a person who is a member of the Houston Apartment Association. Position 10. By a person who is fire protection contractor. Position 11. By a person who is an architect registered by the State of Texas. The legal department shall have an attorney present for each board meeting, who shall advise the board on legal matters relative to topics under board jurisdiction. The <i>fire chief</i>, the <i>fire code official</i>, and director of Houston Public Works may each designate in writing a person under his supervision to act in his place as his duly authorized representative. The representative designation shall be filed in the minutes of the board.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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The representative designation shall be filed in the minutes of the board. With the exception of the <i>fire chief</i>, the <i>fire code official</i>, and the director of Houston Public Works, members of the board shall be appointed by the mayor, subject to confirmation by the city council, and shall serve for a term of two years. The terms of the appointees for Positions 1, 6, 7, and 9 commence on January 1 of each odd-numbered year and end on December 31 of the following even-numbered year. The terms of the appointees for Positions 5, 8, 10, and 11 commence on January 1 of each even-numbered year and end on December 31 of the following odd-numbered year. Members shall hold over until a successor is appointed and qualified. Whenever any position on the board becomes vacant by reason of death, resignation or removal, the vacancy shall be filled for the unexpired term of the member being replaced. Should a vacancy occur on the board, the mayor shall appoint, subject to confirmation by the city council, another qualified person to serve the unexpired term of the vacancy. Any member of the board may be removed at any time by the mayor without consent of the city council.		With the exception of the <i>fire chief</i>, the <i>fire code official</i>, and the director of Houston Public Works, members of the board shall be appointed by the mayor, subject to confirmation by the city council, and shall serve for a term of two years. The terms of the appointees for Positions 1, 6, 7, and 9 commence on January 1 of each odd-numbered year and end on December 31 of the following even-numbered year. The terms of the appointees for Positions 5, 8, 10, and 11 commence on January 1 of each even-numbered year and end on December 31 of the following odd-numbered year. Members shall hold over until a successor is appointed and qualified. Whenever any position on the board becomes vacant by reason of death, resignation or removal, the vacancy shall be filled for the unexpired term of the member being replaced. Should a vacancy occur on the board, the mayor shall appoint, subject to confirmation by the city council, another qualified person to serve the unexpired term of the vacancy. Any member of the board may be removed at any time by the mayor without consent of the city council.	
~~A101.2.1 Limitation of authority. The board shall not have authority to waive requirements of this code or interpret the administration of this code.~~		A101.2.1 Limitation of authority. The board shall not have authority to waive requirements of this code or interpret the administration of this code.	No change to Houston amendment.
~~A101.2.2 Stays of enforcement. Appeals of notice and orders, other than Imminent Danger notices, shall stay the enforcement of the notice and order until the appeal is heard by the board.~~		A101.2.2 Stays of enforcement. Appeals of notice and orders, other than Imminent Danger notices, shall stay the enforcement of the notice and order until the appeal is heard by the board.	No change to Houston amendment.
~~A101.3 Membership of board Per diem. The board shall consist of five voting members appointed by the chief appointing authority of the jurisdiction. Each member shall serve for [NUMBER OF YEARS] years or until a successor has been appointed. The board member's terms shall be staggered at intervals, so as to provide continuity. The <i>fire code official</i> shall be an ex officio member of said board but shall not vote on any matter before the board. Each member of the board shall be compensated at the rate of \$50.00 per diem for each meeting the member attends at which a quorum is present; provided, however, no member shall be paid for more than three meetings in any one month. A jurisdiction employee who is a member of the board shall be paid only for those meetings that the employee attends at which a quorum is present and that are not held during, or that continue beyond, the employee's regular working hours.~~		A101.3 Membership of board Per diem. The board shall consist of five voting members appointed by the chief appointing authority of the jurisdiction. Each member shall serve for [NUMBER OF YEARS] years or until a successor has been appointed. The board member's terms shall be staggered at intervals, so as to provide continuity. The <i>fire code official</i> shall be an ex officio member of said board but shall not vote on any matter before the board. Each member of the board shall be compensated at the rate of \$50.00 per diem for each meeting the member attends at which a quorum is present; provided, however, no member shall be paid for more than three meetings in any one month. A jurisdiction employee who is a member of the board shall be paid only for those meetings that the employee attends at which a quorum is present and that are not held during, or that continue beyond, the employee's regular working hours.	No change to Houston amendment.
~~A101.3.1 Qualifications. The board shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosions, hazardous conditions or <i>fire protection systems</i>, and are not employees of the jurisdiction.~~		A101.3.1 Qualifications. The board shall consist of members who are qualified by experience and training to pass on matters pertaining to hazards of fire, explosions, hazardous conditions or <i>fire protection systems</i>, and are not employees of the jurisdiction.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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~~A101.3.2 Alternate members. The chief appointing authority is authorized to appoint two alternate members who shall be called by the board chairperson to hear appeals during the absence or disqualification of a member. Alternate members shall possess the qualifications required for board membership, and shall be appointed for the same term or until a successor has been appointed.~~		A101.3.2 Alternate members. The chief appointing authority is authorized to appoint two alternate members who shall be called by the board chairperson to hear appeals during the absence or disqualification of a member. Alternate members shall possess the qualifications required for board membership, and shall be appointed for the same term or until a successor has been appointed.	No change to Houston amendment.
~~A101.3.3 Vacancies. Vacancies shall be filled for an unexpired term in the same manner in which original appointments are required to be made.~~		A101.3.3 Vacancies. Vacancies shall be filled for an unexpired term in the same manner in which original appointments are required to be made.	No change to Houston amendment.
~~A101.3.4 Chairperson. The board shall annually select one of its members to serve as chairperson.~~		A101.3.4 Chairperson. The board shall annually select one of its members to serve as chairperson.	No change to Houston amendment.
~~A101.3.5 Secretary. The chief appointing authority shall designate a qualified clerk to serve as secretary to the board. The secretary shall file a detailed record of all proceedings, which shall set forth the reasons for the board's decision, the vote of each member, the absence of a member and any failure of a member to vote.~~		A101.3.5 Secretary. The chief appointing authority shall designate a qualified clerk to serve as secretary to the board. The secretary shall file a detailed record of all proceedings, which shall set forth the reasons for the board's decision, the vote of each member, the absence of a member and any failure of a member to vote.	No change to Houston amendment.
~~A101.3.6 Conflict of interest. A member with any personal, professional or financial interest in a matter before the board shall declare such interest and refrain from participating in discussions, deliberations and voting on such matters.~~		A101.3.6 Conflict of interest. A member with any personal, professional or financial interest in a matter before the board shall declare such interest and refrain from participating in discussions, deliberations and voting on such matters.	No change to Houston amendment.
~~A101.3.7 Compensation of members. Compensation of members shall be determined by law.~~		A101.3.7 Compensation of members. Compensation of members shall be determined by law.	No change to Houston amendment.
~~A101.3.8 Removal from the board. A member shall be removed from the board prior to the end of their terms only for cause. Any member with continued absence from regular meetings of the board may be removed at the discretion of the chief appointing authority.~~		A101.3.8 Removal from the board. A member shall be removed from the board prior to the end of their terms only for cause. Any member with continued absence from regular meetings of the board may be removed at the discretion of the chief appointing authority.	No change to Houston amendment.
~~A101.4 Rules and procedures Duties of the Board of Appeals. The board shall establish policies and procedures necessary to carry out its duties consistent with the provisions of this code and applicable state law. The procedures shall not require compliance with strict rules of evidence, but shall mandate that only relevant information be presented. The duties of the board shall be to hear appeals from decisions of the <i>fire code official</i> as to the suitability of alternate materials and types of construction and to provide for reasonable interpretations of the provisions of this code. In cooperation with the <i>fire code official</i>, the board shall submit an annual report to the mayor and the city council containing a summary of the actions of the board during the preceding year. The board may make recommendations to the mayor for amendments to this code.~~		A101.4 Rules and procedures Duties of the Board of Appeals. The board shall establish policies and procedures necessary to carry out its duties consistent with the provisions of this code and applicable state law. The procedures shall not require compliance with strict rules of evidence, but shall mandate that only relevant information be presented. The duties of the board shall be to hear appeals from decisions of the <i>fire code official</i> as to the suitability of alternate materials and types of construction and to provide for reasonable interpretations of the provisions of this code. In cooperation with the <i>fire code official</i> , the board shall submit an annual report to the mayor and the city council containing a summary of the actions of the board	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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		during the preceding year. The board may make recommendations to the mayor for amendments to this code.	
~~A101.5 Notice of meetings Procedures. The board shall meet upon notice from the chairperson within 10 days of the filing of an appeal or at stated periodic intervals. The board shall adopt reasonable rules and regulations for conduct of its duties. Petitions for hearings before the board shall be in writing, filed with the <i>fire code official</i>, and heard by the board within 30 days after the date that the petition was filed. A majority of the members present, constituting a quorum, shall conduct business of board. All decisions and findings shall be rendered in writing with copies to the <i>fire code official</i>, petitioner and all other parties to the hearing. Subject to compliance with Rule 12 of the city council's rules of procedure (see Section 2-2 of the <i>City Code</i>), any interested person who is aggrieved by a decision of the board may appeal to city council, provided that written notice to the city council for the appeal is delivered to the city secretary within 10 days after the date the board renders the decision. All appeals to the city council are subject to Rule 12 of the city council's rules of procedure. Parties wishing to preserve their right of appeal must comply with Rule 12.~~		A101.5 Notice of meetings Procedures. The board shall meet upon notice from the chairperson within 10 days of the filing of an appeal or at stated periodic intervals. The board shall adopt reasonable rules and regulations for conduct of its duties. Petitions for hearings before the board shall be in writing, filed with the <i>fire code official</i> , and heard by the board within 30 days after the date that the petition was filed. A majority of the members present, constituting a quorum, shall conduct business of board. All decisions and findings shall be rendered in writing with copies to the <i>fire code official</i> , petitioner and all other parties to the hearing. Subject to compliance with Rule 12 of the city council's rules of procedure (see Section 2-2 of the <i>City Code</i>), any interested person who is aggrieved by a decision of the board may appeal to city council, provided that written notice to the city council for the appeal is delivered to the city secretary within 10 days after the date the board renders the decision. All appeals to the city council are subject to Rule 12 of the city council's rules of procedure. Parties wishing to preserve their right of appeal must comply with Rule 12.	No change to Houston amendment.
~~A101.5.1 Open hearing. All hearings before the board shall be open to the public. The appellant, the appellant's representative, the <i>fire code official</i> and any person whose interests are affected shall be given an opportunity to be heard.~~		A101.5.1 Open hearing. All hearings before the board shall be open to the public. The appellant, the appellant's representative, the <i>fire code official</i> and any person whose interests are affected shall be given an opportunity to be heard.	No change to Houston amendment.
~~A101.5.2 Quorum. Three members of the board shall constitute a quorum.~~		A101.5.2 Quorum. Three members of the board shall constitute a quorum.	No change to Houston amendment.
~~A101.5.3 Postponed hearing. When five members are not present to hear an appeal, either the appellant or the appellant's representative shall have the right to request a postponement of the hearing.~~		A101.5.3 Postponed hearing. When five members are not present to hear an appeal, either the appellant or the appellant's representative shall have the right to request a postponement of the hearing.	No change to Houston amendment.
~~A101.6 Legal counsel Posting of agenda. The jurisdiction shall furnish legal counsel to the board to provide members with general legal advice concerning matters before them for consideration. Members shall be represented by legal counsel at the jurisdiction's expense in all matters arising from service within the scope of their duties. The board shall prepare and post an agenda in compliance with the Texas Open Meeting Law.~~		A101.6 Legal counsel Posting of agenda. The jurisdiction shall furnish legal counsel to the board to provide members with general legal advice concerning matters before them for consideration. Members shall be represented by legal counsel at the jurisdiction's expense in all matters arising from service within the scope of their duties. The board shall prepare and post an agenda in compliance with the Texas Open Meeting Law.	No change to Houston amendment.
~~A101.7 Board decision. The board shall only modify or reverse the decision of the <i>fire code official</i> by a concurring vote of three or more members.~~		A101.7 Board decision. The board shall only modify or reverse the decision of the <i>fire code official</i> by a concurring vote of three or more members.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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A101.7.1 Resolution. ~~The decision of the board shall be by resolution. Every decision shall be promptly filed in writing in the office of the <i>fire code official</i> within three days and shall be open to the public for inspection. A certified copy shall be furnished to the appellant or the appellant's representative and to the <i>fire code official</i>.~~		A101.7.1 Resolution. ~~The decision of the board shall be by resolution. Every decision shall be promptly filed in writing in the office of the <i>fire code official</i> within three days and shall be open to the public for inspection. A certified copy shall be furnished to the appellant or the appellant's representative and to the <i>fire code official</i>.~~	No change to Houston amendment.
A101.7.2 Administration. ~~The <i>fire code official</i> shall take immediate action in accordance with the decision of the board.~~		A101.7.2 Administration. ~~The <i>fire code official</i> shall take immediate action in accordance with the decision of the board.~~	No change to Houston amendment.
A101.8 Court review. ~~Any person, whether or not a previous party of the appeal, shall have the right to apply to the appropriate court for a writ of certiorari to correct errors of law. Application for review shall be made in the manner and time required by law following the filing of the decision in the office of the chief administrative officer.~~		A101.8 Court review. ~~Any person, whether or not a previous party of the appeal, shall have the right to apply to the appropriate court for a writ of certiorari to correct errors of law. Application for review shall be made in the manner and time required by law following the filing of the decision in the office of the chief administrative officer.~~	No change to Houston amendment.
2015 Houston IFC – Appendix B Fire-Flow Requirements for Buildings	2021 IFC – Appendix B	2021 Houston Amendments	Code Analysis
		~~The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~ EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX SHALL REMAIN AS SET FORTH IN THE 2021 IFC.	Appendix B has been adopted in previous editions, new editorial note added for clarification on enforcement.
2015 Houston IFC – Appendix C Fire Hydrant Locations and Distribution	2021 IFC – Appendix C	2021 Houston Amendments	Code Analysis
		~~The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~ EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX SHALL REMAIN AS SET FORTH IN THE 2021 IFC.	Appendix C has been adopted in previous editions, new editorial note added for clarification on enforcement.
+2015 Houston IFC – Appendix D Fire Apparatus Access Roads	2021 IFC – Appendix D	2021 Houston Amendments	Code Analysis
~~The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~		~~The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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SECTION D101 GENERAL D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the ~~International Fire Code~~, as well as Houston Fire Department LSB Standards No. 03, "Fire Department Access" and No. 04, "Access Control Gates."		SECTION D101 GENERAL D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of the <u>International Fire Code</u>, as well as Houston Fire Department LSB Standards No. 03, "Fire Department Access" and No. 04, "Access Control Gates."	No change to Houston amendment.
SECTION D102 REQUIRED ACCESS D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an <i>approved</i> fire apparatus access road with an asphalt, concrete or other <i>approved</i> driving surface capable of supporting the imposed load of fire apparatus weighing up to at least 75,000 <u>90,000</u> pounds (~~34,050~~ <u>40,850</u> kg).		SECTION D102 REQUIRED ACCESS D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an <i>approved</i> fire apparatus access road with an asphalt, concrete or other <i>approved</i> driving surface capable of supporting the imposed load of fire apparatus weighing up to at least 75,000 <u>90,000</u> pounds (~~34,050~~ <u>40,850</u> kg).	No change to Houston amendment.
SECTION D103 MINIMUM SPECIFICATIONS D103.5 Fire apparatus access road gates. For fire apparatus access road gate requirements, refer to Houston Fire Department LSB Standard No. 04, "Access Control Gates." ~~Gates securing the fire apparatus access roads shall comply with all of the following criteria:~~ ~~Where a single gate is provided, the gate width shall be not less than 20 feet (6,096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 12 feet (3,658 mm).~~ ~~Gates shall be of the horizontal swing, horizontal slide, vertical lift or vertical pivot type.~~ ~~Construction of gates shall be of materials that allow manual operation by one person.~~ ~~Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.~~ ~~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.~~ ~~Methods of locking shall be submitted for approval by the fire code official.~~ ~~Electric gate operators, where provided, shall be listed in accordance with UL 325.~~ ~~Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.~~		SECTION D103 MINIMUM SPECIFICATIONS D103.5 Fire apparatus access road gates. For fire apparatus access road gate requirements, refer to Houston Fire Department LSB Standard No. 04, "Access Control Gates." <u>Gates securing the fire apparatus access roads shall comply with all of the following criteria:</u> <u>Where a single gate is provided, the gate width shall be not less than 20 feet (6,096 mm). Where a fire apparatus road consists of a divided roadway, the gate width shall be not less than 12 feet (3,658 mm).</u> <u>Gates shall be of the horizontal swing, horizontal slide, vertical lift or vertical pivot type.</u> <u>Construction of gates shall be of materials that allow manual operation by one person.</u> <u>Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.</u> <u>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.</u> <u>Methods of locking shall be submitted for approval by the fire code official.</u> <u>Electric gate operators, where provided, shall be listed in accordance with UL 325.</u> <u>Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.</u>	No change to Houston amendment.

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D103.6 Signs. For fire apparatus access road/fire lane sign requirements, refer to Houston Fire Department LSB Standard No. 03, "Fire Department Access." Where required by the ~~fire code official~~ , fire apparatus access roads shall be marked with permanent NO PARKING FIRE LANE signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.		D103.6 Signs. For fire apparatus access road/fire lane sign requirements, refer to Houston Fire Department LSB Standard No. 03, "Fire Department Access." Where required by the ~~fire code official~~ , fire apparatus access roads shall be marked with permanent NO PARKING FIRE LANE signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.	No change to Houston amendment.
D105.1 Where Required. Where the vertical distance between the <i>grade plane</i> and the highest roof surface exceeds 30 feet (9144 mm), <i>approved</i> aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater. Exception: Where ~~approved by the fire code official~~ , buildings of Type IA, Type IB or Type IIA construction equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 and having fire fighter access through an enclosed <i>stairway</i> with a Class I standpipe from the lowest level of fire department vehicle access to all roof surfaces.		D105.1 Where Required. Where the vertical distance between the <i>grade plane</i> and the highest roof surface exceeds 30 feet (9144 mm), <i>approved</i> aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater. Exception: Where ~~approved by the fire code official~~ , buildings of Type IA, Type IB or Type IIA construction equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 and having fire fighter access through an enclosed <i>stairway</i> with a Class I standpipe from the lowest level of fire department vehicle access to all roof surfaces.	No change to Houston amendment.
2015 Houston IFC – Appendix F Hazard Ranking	2021 IFC – Appendix F	2021 Houston Amendments	Code Analysis
		The provisions contained in this appendix are ~~not mandatory unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~ EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX SHALL REMAIN AS SET FORTH IN THE 2021 IFC.	Appendix F has been adopted in previous editions, new editorial note added for clarification on enforcement.
2015 Houston IFC – Appendix H Fire Hydrant Locations and Distribution	2021 IFC – Appendix H	2021 Houston Amendments	Code Analysis
EDITORIAL NOTE: ENTIRETY OF APPENDIX H IS DELETED AND REPLACE WITH THE FOLLOWING TEXT.]		EDITORIAL NOTE: ENTIRETY OF APPENDIX H IS DELETED AND REPLACE WITH THE FOLLOWING TEXT.]	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
COLOR CODE INDEX: <u>Text Underlined</u> = New Language Added ~~Text Strikethrough~~ = Language Deleted Magenta = NEW or Modified Text by ICC in 2018 Turquoise = NEW or Modified Text by ICC in 2021 ~~Yellow Strikethrough~~ = Text Deleted from the Code by COH Green Text = NEW or Modified Text by COH in 2021 Grey Text = Previous COH Amendment Brought Forward to 2021			
SECTION H101 GENERAL H101.1 Signs in stairways. Standardized signs shall be provided in buildings at each floor landing in an interior exit <i>stairway</i> and ramp connecting more than three stories. The signs shall be installed in <i>stairways</i> to identify each stair, floor level number, roof access information, the upper and lower termination of the <i>stairway</i>, and reentry information. Signs within <i>stairways</i> shall be located above the floor landing in a position that is readily visible when the door is in the open or closed position and in accordance with the <i>Texas Accessibility Standards</i>. See also Chapter 10.		SECTION H101 GENERAL H101.1 Signs in stairways. Standardized signs shall be provided in buildings at each floor landing in an interior exit <i>stairway</i> and ramp connecting more than three stories. The signs shall be installed in <i>stairways</i> to identify each stair, floor level number, roof access information, the upper and lower termination of the <i>stairway</i>, and reentry information. Signs within <i>stairways</i> shall be located above the floor landing in a position that is readily visible when the door is in the open or closed position and in accordance with the <i>Texas Accessibility Standards</i>. See also Chapter 10.	No change to Houston amendment.
SECTION H102 OCCUPANCY SIDE OF STAIRWAY DOORS H102.1 Signs on occupancy (tenant) side of stairway doors. Standardized identification signs shall be located at each level on the occupancy (tenant) side of all enclosed <i>stairways</i>, regardless of the height of the building.		SECTION H102 OCCUPANCY SIDE OF STAIRWAY DOORS H102.1 Signs on occupancy (tenant) side of stairway doors. Standardized identification signs shall be located at each level on the occupancy (tenant) side of all enclosed <i>stairways</i>, regardless of the height of the building.	No change to Houston amendment.
H102.2 Details for signs installed on the occupancy (tenant) side of doors. H102.2.1 Stairway identification. <i>Stairway</i> identification signs shall have an alphabetic letter or name identification. The name identification shall precede the word STAIR and any alphabetic letter shall follow the word STAIR, such as STAIR A or WEST STAIR, to be placed at the top of the sign in 1-inch (25 mm) high block lettering. Numerical and written numbers shall not be used for stairwell identification. See Section H105.		H102.2 Details for signs installed on the occupancy (tenant) side of doors. H102.2.1 Stairway identification. <i>Stairway</i> identification signs shall have an alphabetic letter or name identification. The name identification shall precede the word STAIR and any alphabetic letter shall follow the word STAIR, such as STAIR A or WEST STAIR, to be placed at the top of the sign in 1-inch (25 mm) high block lettering. Numerical and written numbers shall not be used for stairwell identification. See Section H105.	No change to Houston amendment.
H102.2.2 Reentry. Where <i>stairway</i> doors are locked from the <i>stairway</i> side to prohibit reentry to a floor, NO REENTRY shall be placed at the bottom of the sign in 1-inch (25 mm) high block lettering.		H102.2.2 Reentry. Where <i>stairway</i> doors are locked from the <i>stairway</i> side to prohibit reentry to a floor, NO REENTRY shall be placed at the bottom of the sign in 1-inch (25 mm) high block lettering.	No change to Houston amendment.
SECTION H103 SIGNS INSTALLED IN STAIRWAYS H103.1 Stairway identification. <i>Stairway</i> identification signs shall have an alphabetic letter or name identification. The name identification shall precede the word STAIR and any alphabetic letter shall follow the word STAIR, such as STAIR A or WEST STAIR, to be placed at the top of the sign in 1-inch (25 mm) high block lettering. Numerical and written numbers shall not be used for stairwell identification. See Section H105.		SECTION H103 SIGNS INSTALLED IN STAIRWAYS H103.1 Stairway identification. <i>Stairway</i> identification signs shall have an alphabetic letter or name identification. The name identification shall precede the word STAIR and any alphabetic letter shall follow the word STAIR, such as STAIR A or WEST STAIR, to be placed at the top of the sign in 1-inch (25 mm) high block lettering. Numerical and written numbers shall not be used for stairwell identification. See Section H105.	No change to Houston amendment.
H103.2 Roof access. The roof access condition, such as ROOF ACCESS LOCKED or NO ROOF ACCESS, shall be placed under the <i>stairway</i> identification in 1-inch (25 mm) high block lettering.		H103.2 Roof access. The roof access condition, such as ROOF ACCESS LOCKED or NO ROOF ACCESS, shall be placed under the <i>stairway</i> identification in 1-inch (25 mm) high block lettering.	No change to Houston amendment.
H103.3 Floor level number. The floor level number shall be placed in the middle of the sign in 2-inch (50 mm) high block lettering. Mezzanine levels shall have the letter M preceding the floor number. Basement levels shall have the letter B preceding the floor number.		H103.3 Floor level number. The floor level number shall be placed in the middle of the sign in 2-inch (50 mm) high block lettering. Mezzanine levels shall have the letter M preceding the floor number. Basement levels shall have the letter B preceding the floor number. No other designation for mezzanine and basement levels shall be used.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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No other designation for mezzanine and basement levels shall be <u>used</u> .			
H103.4 Lower and upper terminus. The lower and upper terminus designation of the <i>stairway</i> shall be placed under the floor number in 1-inch (25 mm) high block lettering.		H103.4 Lower and upper terminus. The lower and upper terminus designation of the <i>stairway</i> shall be placed under the floor number in 1-inch (25 mm) high block lettering.	No change to Houston amendment.
H103.5 Reentry. Where <i>stairway</i> doors are locked from the <i>stairway</i> side to prohibit reentry to a floor, NO REENTRY shall be placed under the lower and upper terminus designation in 1-inch (25 mm) high block lettering. Additionally, the nearest floor above and below where a person can reenter from the <i>stairway</i> shall be placed at the bottom of the sign in 1-inch (25 mm) high block lettering.		H103.5 Reentry. Where <i>stairway</i> doors are locked from the <i>stairway</i> side to prohibit reentry to a floor, NO REENTRY shall be placed under the lower and upper terminus designation in 1-inch (25 mm) high block lettering. Additionally, the nearest floor above and below where a person can reenter from the <i>stairway</i> shall be placed at the bottom of the sign in 1-inch (25 mm) high block lettering.	No change to Houston amendment.
SECTION H104 COMPLIANCE WITH TEXAS ACCESSIBILITY STANDARDS (TAS) H104.1 Raised and braille characters/character portions. <i>Stairway</i> identification, floor level number and reentry information on signs shall comply with TAS requirements for raised and Braille characters. All other letters and numbers on the sign shall comply with TAS requirements for character proportions.		SECTION H104 COMPLIANCE WITH TEXAS ACCESSIBILITY STANDARDS (TAS) H104.1 Raised and braille characters/character portions. <i>Stairway</i> identification, floor level number and reentry information on signs shall comply with TAS requirements for raised and Braille characters. All other letters and numbers on the sign shall comply with TAS requirements for character proportions.	No change to Houston amendment.
H104.2 Finish and contrast. All characters and backgrounds of signs shall comply with TAS requirements for finish and contrast.		H104.2 Finish and contrast. All characters and backgrounds of signs shall comply with TAS requirements for finish and contrast.	No change to Houston amendment.
H104.3 Mounting location and height. All signs shall comply with TAS requirements for mounting location and height.		H104.3 Mounting location and height. All signs shall comply with TAS requirements for mounting location and height.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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OCCUPANCY SIDE STAIR ID STAIR A NO RE-ENTRY 2 Inch 2 Inch Grade II Braille 1 Inch RESTRICTED RE-ENTRY Front Elevation OPTION A SCALE: 3"=1' STAIR A NO RE-ENTRY 2 Inch 2 Inch Grade II Braille 2 Inch UNRESTRICTED RE-ENTRY Front Elevation OPTION B SCALE: 3"=1' City of Houston Star Signage 05.09.13		OCCUPANCY SIDE STAIR ID STAIR A NO RE-ENTRY 2 Inch 2 Inch Grade II Braille 1 Inch RESTRICTED RE-ENTRY Front Elevation OPTION A SCALE: 3"=1' STAIR A NO RE-ENTRY 2 Inch 2 Inch Grade II Braille 2 Inch UNRESTRICTED RE-ENTRY Front Elevation OPTION B SCALE: 3"=1' City of Houston Star Signage 05.09.13	No change to Houston amendment.
2015 Houston IFC – Appendix I	2021 IFC – Appendix I	2021 Houston Amendments	Code Analysis
APPENDIX I EDITORIAL NOTE: DELETE THE ENTIRETY OF APPENDIX I AND REPLACE WITH THE FOLLOWING TEXT.] AUTOMATIC SPRINKLER SYSTEMS, FIRE ALARM AND DETECTION SYSTEMS IN EXISTING NON-HIGH-RISE ATRIUM BUILDINGS		APPENDIX I EDITORIAL NOTE: DELETE THE ENTIRETY OF APPENDIX I AND REPLACE WITH THE FOLLOWING TEXT.] AUTOMATIC SPRINKLER SYSTEMS, FIRE ALARM AND DETECTION SYSTEMS IN EXISTING NON-HIGH-RISE ATRIUM BUILDINGS	No change to Houston amendment.
SECTION I101 GENERAL I101.1 Purpose. The purpose of this appendix chapter is to provide a reasonable degree of safety to persons occupying existing atrium buildings by providing for the installation of <i>automatic sprinkler systems</i> or fire alarm and detection systems in buildings that do not already have such systems in compliance with this appendix. I101.2 Application. This appendix chapter shall apply to any atrium building annexed into the corporate limits. Exception: The provisions of this appendix shall not apply to the following: 1. Atrium buildings built in accordance with the <i>Building Code</i>. Existing high-rise buildings, as defined in Chapter 2.		SECTION I101 GENERAL I101.1 Purpose. The purpose of this appendix chapter is to provide a reasonable degree of safety to persons occupying existing atrium buildings by providing for the installation of <i>automatic sprinkler systems</i> or fire alarm and detection systems in buildings that do not already have such systems in compliance with this appendix. I101.2 Application. This appendix chapter shall apply to any atrium building annexed into the corporate limits. Exception: The provisions of this appendix shall not apply to the following: 2. Atrium buildings built in accordance with the <i>Building Code</i>. 3. Existing high-rise buildings, as defined in Chapter 2.	No change to Houston amendment.

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Green Text = NEW or Modified Text by COH in 2021

Grey Text = Previous COH Amendment Brought Forward to 2021

SECTION I102 DEFINITION I102.1 Definition. The following term, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2: <u>ATRIUM.</u>		SECTION I102 DEFINITION I102.1 Definition. The following term, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2: <u>ATRIUM.</u>	No change to Houston amendment.																
TABLE I102.1 REFERENCED STANDARDS <table><tr><th>STANDARD ACRONYM</th><th>STANDARD NAME</th></tr><tr><td>NFPA 10—21</td><td>Portable Fire Extinguishers</td></tr><tr><td>NFPA 25—23</td><td>Inspection, Testing and Maintenance of Water-based Fire Protection Systems</td></tr><tr><td>NFPA 72—19</td><td>National Fire Alarm and Signaling Code</td></tr></table>	STANDARD ACRONYM	STANDARD NAME	NFPA 10—21	Portable Fire Extinguishers	NFPA 25—23	Inspection, Testing and Maintenance of Water-based Fire Protection Systems	NFPA 72—19	National Fire Alarm and Signaling Code		TABLE I102.1 REFERENCED STANDARDS <table><tr><th>STANDARD ACRONYM</th><th>STANDARD NAME</th></tr><tr><td>NFPA 10—21</td><td>Portable Fire Extinguishers</td></tr><tr><td>NFPA 25—23</td><td>Inspection, Testing and Maintenance of Water-based Fire Protection Systems</td></tr><tr><td>NFPA 72—19</td><td>National Fire Alarm and Signaling Code</td></tr></table>	STANDARD ACRONYM	STANDARD NAME	NFPA 10—21	Portable Fire Extinguishers	NFPA 25—23	Inspection, Testing and Maintenance of Water-based Fire Protection Systems	NFPA 72—19	National Fire Alarm and Signaling Code	No change to Houston amendment.
STANDARD ACRONYM	STANDARD NAME																		
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NFPA 25—23	Inspection, Testing and Maintenance of Water-based Fire Protection Systems																		
NFPA 72—19	National Fire Alarm and Signaling Code																		
SECTION I103 FIRE PROTECTION AND DETECTION SYSTEMS I103.1 Required. All existing atrium buildings shall be equipped with one of the following: 1. An automatic and manual fire alarm system in accordance with NFPA 72 and smoke detectors installed in every room exceeding 40 square feet as well as all common areas according to the compliance schedule set forth in Section I104. An automatic sprinkler system with total coverage throughout the building in accordance with NFPA 13 and with the capability to alarm all occupants throughout the building using alarm notification appliances as required by Section 907. Such sprinkler system shall be installed according to the compliance schedule set forth in Section I104.		SECTION I103 FIRE PROTECTION AND DETECTION SYSTEMS I103.1 Required. All existing atrium buildings shall be equipped with one of the following: 2. An automatic and manual fire alarm system in accordance with NFPA 72 and smoke detectors installed in every room exceeding 40 square feet as well as all common areas according to the compliance schedule set forth in Section I104. 3. An automatic sprinkler system with total coverage throughout the building in accordance with NFPA 13 and with the capability to alarm all occupants throughout the building using alarm notification appliances as required by Section 907. Such sprinkler system shall be installed according to the compliance schedule set forth in Section I104.	No change to Houston amendment.																
SECTION I104 COMPLIANCE SCHEDULE I104.1 Letter of intent. Within six months after the date of annexation of the building into the jurisdiction, owners of existing atrium buildings shall provide the fire code official with a letter expressing the owner’s intent to comply with this section. I104.2 Compliance check points. Except as provided by this section, owners of existing atrium buildings shall comply with the following schedule: 1. If the owner chooses to install an alarm system and smoke detectors in accordance with subsection 1 of Section I103.1, the total square footage of the building shall be equipped with an operational automatic and manual fire alarm system and smoke detectors within two years after the date of annexation into the jurisdiction. 2. If the owner chooses to install a sprinkler system in accordance with subsection 2 of Section I103.1:		SECTION I104 COMPLIANCE SCHEDULE I104.1 Letter of intent. Within six months after the date of annexation of the building into the jurisdiction, owners of existing atrium buildings shall provide the fire code official with a letter expressing the owner’s intent to comply with this section. I104.2 Compliance check points. Except as provided by this section, owners of existing atrium buildings shall comply with the following schedule: 3. If the owner chooses to install an alarm system and smoke detectors in accordance with subsection 1 of Section I103.1, the total square footage of the building shall be equipped with an operational automatic and manual fire alarm system and smoke detectors within two years after the date of annexation into the jurisdiction. 4. If the owner chooses to install a sprinkler system in accordance with subsection 2 of Section I103.1:	No change to Houston amendment.																

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2.1 Fifty percent of the building shall be equipped with an operational <u>automatic sprinkler system</u> with the capability to alarm all occupants throughout the building within five years after the date of annexation of the building into the jurisdiction. The total square footage of the building shall be equipped with an operational <u>automatic sprinkler system</u> with the capability to alarm all occupants throughout the building within seven years after the date of annexation of the building into the jurisdiction.		2.2 Fifty percent of the building shall be equipped with an operational <u>automatic sprinkler system</u> with the capability to alarm all occupants throughout the building within five years after the date of annexation of the building into the jurisdiction. 2.3 The total square footage of the building shall be equipped with an operational <u>automatic sprinkler system</u> with the capability to alarm all occupants throughout the building within seven years after the date of annexation of the building into the jurisdiction.	
2015 Houston IFC – Appendix J	2021 IFC – Appendix J	2021 Houston Amendments	Code Analysis
Appendix J <u>[EDITORIAL NOTE: ENTIRETY OF APPENDIX J IS DELETED AND REPLACED WITH THE FOLLOWING TEXT.]</u> <u>AUTOMATIC SPRINKLER SYSTEMS IN EXISTING HIGH-RISE BUILDINGS</u>		Appendix J <u>[EDITORIAL NOTE: ENTIRETY OF APPENDIX J IS DELETED AND REPLACED WITH THE FOLLOWING TEXT.]</u> <u>AUTOMATIC SPRINKLER SYSTEMS IN EXISTING HIGH-RISE BUILDINGS</u>	No change to Houston amendment.
<u>SECTION J101</u> <u>GENERAL</u> <u>J101.1 Purpose.</u> The purpose of this appendix chapter is to provide a reasonable degree of safety to persons occupying existing high-rise buildings by providing for installation of <u>automatic sprinkler systems</u> in such buildings that do not already have such systems.		<u>SECTION J101</u> <u>GENERAL</u> <u>J101.1 Purpose.</u> The purpose of this appendix chapter is to provide a reasonable degree of safety to persons occupying existing high-rise buildings by providing for installation of <u>automatic sprinkler systems</u> in such buildings that do not already have such systems. 1.	No change to Houston amendment.
<u>J101.2 Application.</u> This appendix chapter shall apply to any high-rise building existing within the corporate limits of the city on December 31, 2005, and any high-rise building annexed into the corporate limits after that date. <u>Exception:</u> The provisions of this appendix shall not apply to the following: 1. Airport traffic control towers in accordance with Sections 412 and 907.2.22 of the <i>Building Code</i>. 2. Open parking garages in accordance with Section 406.5 of the <i>Building Code</i>. 3. Buildings with an occupancy in Group A-5 in accordance with Section 303.6 of the <i>Building Code</i>. 4. Low-hazard special industrial occupancies in accordance with Section 503.1.1 of the <i>Building Code</i>. 5. Buildings with an occupancy in Group H in accordance with Section 415 of the <i>Building Code</i>. Individually owned individual <i>dwelling units</i> in high-rise buildings.		<u>J101.2 Application.</u> This appendix chapter shall apply to any high-rise building existing within the corporate limits of the city on December 31, 2005, and any high-rise building annexed into the corporate limits after that date. <u>Exception:</u> The provisions of this appendix shall not apply to the following: 6. Airport traffic control towers in accordance with Sections 412 and 907.2.22 of the <i>Building Code</i>. 7. Open parking garages in accordance with Section 406.5 of the <i>Building Code</i>. 8. Buildings with an occupancy in Group A-5 in accordance with Section 303.6 of the <i>Building Code</i>. 9. Low-hazard special industrial occupancies in accordance with Section 503.1.1 of the <i>Building Code</i>. 10. Buildings with an occupancy in Group H in accordance with Section 415 of the <i>Building Code</i>. 11. Individually owned individual <i>dwelling units</i> in high-rise buildings.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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SECTION J102 DEFINITION J102.1 Definition. The following term, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2: HIGH-RISE BUILDING.		SECTION J102 DEFINITION J102.1 Definition. The following term, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2: HIGH-RISE BUILDING.	No change to Houston amendment.
SECTION J103 AUTOMATIC SPRINKLER SYSTEMS J103.1 Required. All existing high-rise buildings shall be equipped with an <i>automatic sprinkler system</i> in accordance with NFPA 13 according to the compliance schedule set forth in Section J104.		SECTION J103 AUTOMATIC SPRINKLER SYSTEMS J103.1 Required. All existing high-rise buildings shall be equipped with an <i>automatic sprinkler system</i> in accordance with NFPA 13 according to the compliance schedule set forth in Section J104.	No change to Houston amendment.
SECTION J104 COMPLIANCE SCHEDULE J104.1 Letter of intent. On or before December 31, 2006, or within one year after the date of annexation of the building into the jurisdiction, owners of existing high-rise buildings shall provide the <i>fire code official</i> with a letter expressing the owner's intent to comply with this section.		SECTION J104 COMPLIANCE SCHEDULE J104.1 Letter of intent. On or before December 31, 2006, or within one year after the date of annexation of the building into the jurisdiction, owners of existing high-rise buildings shall provide the <i>fire code official</i> with a letter expressing the owner's intent to comply with this section.	No change to Houston amendment.
J104.2 Compliance check points. Except as provided by this section, owners of existing high-rise buildings shall comply with the following schedule for installation of <i>automatic sprinkler systems</i>: - On or before December 31, 2009, or within four years after the date of annexation of the building into the jurisdiction, a water supply in accordance with NFPA 13 shall be installed to all floors of the building, and the owner shall provide the <i>fire code official</i> with written plans for compliance with this appendix and schedules for completion of the work stated in the written plan. - On or before December 31, 2014, or within nine years after the date of annexation of the building into the jurisdiction, a minimum of 50% of the floors shall be equipped with an operational <i>automatic sprinkler system</i>. On or before December 31, 2017, or within twelve years after the date of annexation of the building into the jurisdiction, the total square footage of the building shall be equipped with an operational <i>automatic sprinkler system</i>.		J104.2 Compliance check points. Except as provided by this section, owners of existing high-rise buildings shall comply with the following schedule for installation of <i>automatic sprinkler systems</i>: - On or before December 31, 2009, or within four years after the date of annexation of the building into the jurisdiction, a water supply in accordance with NFPA 13 shall be installed to all floors of the building, and the owner shall provide the <i>fire code official</i> with written plans for compliance with this appendix and schedules for completion of the work stated in the written plan. - On or before December 31, 2014, or within nine years after the date of annexation of the building into the jurisdiction, a minimum of 50% of the floors shall be equipped with an operational <i>automatic sprinkler system</i>. - On or before December 31, 2017, or within twelve years after the date of annexation of the building into the jurisdiction, the total square footage of the building shall be equipped with an operational <i>automatic sprinkler system</i>.	No change to Houston amendment.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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2015 Houston IFC – Appendix M	2021 IFC – Appendix M	2021 Houston Amendments	Code Analysis
Appendix M <u>[EDITORIAL NOTE: THE ENTIRETY OF APPENDIX M IS DELETED AND REPLACED WITH THE FOLLOWING TEXT.]</u> <u>HOME DAY CARE—R-3 OCCUPANCY</u>		Appendix M <u>[EDITORIAL NOTE: THE ENTIRETY OF APPENDIX M IS DELETED AND REPLACED WITH THE FOLLOWING TEXT.]</u> <u>HOME DAY CARE—R-3 OCCUPANCY</u>	No change to Houston amendment.
<u>SECTION M101</u> <u>GENERAL</u> <u>M101.1 General.</u> This appendix chapter shall apply to a home day care operated within a <i>dwelling</i>. The area of application shall include buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents, guardians or relatives by blood, marriage, or adoption in a place other than the home of the person cared for.		<u>SECTION M101</u> <u>GENERAL</u> <u>M101.1 General.</u> This appendix shall apply to a home day care operated within a <i>dwelling</i>. Home day care facilities shall be in compliance with Appendix AM of the Houston <i>Residential Code</i>.	Houston amendment has been modified and remaining section removed to reference IRC Appendix AM for home day care occupancies.
<u>SECTION M102</u> <u>DEFINTION</u> <u>EXIT ACCESS.</u> That portion of a <i>means of egress</i> system that leads from any occupied point in a building or structure to an <i>exit</i>.			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
<u>SECTION M103</u> <u>MEANS OF EGRESS</u> <u>M103.1 Exits required.</u> If the occupant load of the residence is more than nine, including those who are residents, during the time of operation of the day care, two <i>exits</i> are required from the ground-level <i>story</i>. Two <i>exits</i> are required from a home day care operated in a <i>manufactured home</i> regardless of the occupant load. Exits shall comply with Section R311 of the <i>Residential Code</i>.			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
<u>M103.1.1 Exit access prohibited.</u> An exit access from the area of day care operation shall not pass through bathrooms, bedrooms, closets, garages, fenced rear <i>yards</i> or similar areas. <u>Exception:</u> An exit may discharge into a fenced <i>yard</i> if the gate or gates remain unlocked during day care hours. The gates may be locked if there is an area of refuge located within the fenced <i>yard</i> and more than 50 feet (15,240 mm) from the <i>dwelling</i>. The area of refuge shall be large enough to allow 5 square feet (0.5 m²) per occupant.			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.

2015 Houston IFC Amendments	2021 International Fire Code	2021 Houston IFC Amendments	Code Change Summary
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M103.1.2 Basements. If the <u>basement</u> of a <u>dwelling</u> is to be used in the day care operation, two exits are required from the <u>basement</u> regardless of the occupant load. One of the exits may pass through the <u>dwelling</u> and the other must lead directly to the exterior of the <u>dwelling</u> . Exception: An emergency and escape window complying with Section R310 of the <u>Residential Code</u> which does not conflict with Section M103.1.1 may be used as the second means of egress from a <u>basement</u> .			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M103.1.3 Yards. If the <u>yard</u> is to be used as part of the day care operation it shall be fenced.			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M103.1.3.1 Type of fence and hardware. The fence shall be of durable materials and be at least 6 feet (1,529 mm) tall, completely enclosing the area used for the day care operations. Each opening shall be a gate or door equipped with a self-closing and self-latching device to be installed at a minimum of 5 feet (1,528 mm) above the ground. Exception: The door of any <u>dwelling</u> which forms part of the enclosure need not be equipped with self-closing and self-latching devices.			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M103.1.3.2 Construction of fence. Openings in the fence, wall or enclosure required by this section shall have intermediate rails or an ornamental pattern that does not allow a sphere 4 inches (102 mm) in diameter to pass through. In addition, the following criteria must be met: 1. <u>The maximum vertical clearance between <i>grade</i> and the bottom of the fence, wall or enclosure shall be 2 inches (51 mm).</u> 2. <u>Solid walls or enclosures that do not have openings, such as masonry or stone walls, shall not contain indentations or protrusions, except for tooled masonry joints.</u> 3. <u>Maximum mesh size for chain link fences shall be 1¼ inches (32 mm) square, unless the fence has slats at the top or bottom which reduce the opening to no more than 1¼ inches (44 mm). The wire shall be</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.

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not less than 9 gauge [0.148 inch (3.8 mm)].			
M103.1.3.3 Decks. <u>Decks that are more than 12 inches (305 mm) above <i>grade</i> shall have a guard in compliance with Section R312 of the <i>Residential Code</i>.</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M103.2 Width and height of an exit. <u>The minimum width of a required exit is 36 inches (914 mm) with a net clear width of 32 inches (813 mm). The minimum height of a required exit is 6 feet, 8 inches (2,032 mm).</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M103.3 Type of lock and latches for exits. <u>Regardless of the occupant load served, exit doors shall be openable from the inside without the use of a key or any special knowledge or effort. When the occupant load is 10 or less, a night latch, dead bolt or security chain may be used, provided such devices are openable from the inside without the use of a key or tool, and mounted at a height not to exceed 48 inches (1,219 mm) above the finished floor.</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M103.4 Landings. <u>Landings for stairways and doors shall comply with Section R311 of the <i>Residential Code</i>, except that a landing shall be required for the exterior side of a sliding door when a home day care is being operated in a Group R-3 occupancy.</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
SECTION M104 <u>SMOKE DETECTION</u> M104.1 General. <u>Smoke detectors shall be installed in <i>dwelling units</i> used for home day care operations. Detectors shall be installed in accordance with the approved manufacturer's instructions. If the current smoke detection system in the <i>dwelling</i> is not in compliance with the currently adopted code for smoke detection, it shall be upgraded to meet the currently adopted code requirements and Section M103 before day care operations commence.</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M104.2 Power source. <u>Required smoke detectors shall receive their primary power from the building wiring when that wiring is served from a commercial source and shall be equipped with a battery backup. The detector shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Required smoke detectors shall be interconnected so if one detector is activated, all detectors are activated.</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.
M104.3 Location. <u>A detector shall be located in each bedroom and any room that is to be used as a sleeping room, and centrally located in the corridor, hallway or area giving access to each separate sleeping area. When the <i>dwelling unit</i> has more than one <i>story</i>, and in <i>dwellings</i> with <i>basements</i>, a detector shall be installed on each</u>			Previous amendment removed, refer to IRC Appendix AM for home day care provisions.

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<i>story</i> and in the <i>basement</i> . In <i>dwelling units</i> where a <i>story</i> or <i>basement</i> is split into two or more levels, the smoke detector shall be installed on the upper level, except that when the lower level contains a sleeping area, a detector shall be installed on each level. When sleeping rooms are on the upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. In <i>dwelling units</i> where the ceiling height of a room open to the hallway serving the bedrooms or sleeping area exceeds that of the hallway by 24 inches (610 mm) or more, smoke detectors shall be installed in the hallway and the adjacent room. Detectors shall sound an alarm audible in all sleeping areas of the <i>dwelling unit</i> in which they are located.			
2015 Houston IFC – Appendix N	2021 IFC – Appendix N – Indoor Trade Shows and Exhibitions	2021 Houston Amendments	Code Analysis
		The provisions contained in this appendix are ~~not~~ mandatory ~~unless specifically referenced in the adopting ordinance or legislation of the jurisdiction.~~ EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX SHALL REMAIN AS SET FORTH IN THE 2021 IFC.	New appendix for Indoor Trade Shows and Exhibitions adopted.