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2015 Houston IBC – Chapter 1 Scope and Administration	2021 IBC – Chapter 1 Scope and Administration	2021 Houston Amendments – Chapter 1 Scope and Administration	Code Analysis
	<p>SECTION 101</p> <p>SCOPE AND GENERAL REQUIREMENTS</p>		
<p>[A] 101.1 Title. These regulations shall be known as the <i>City of Houston Building Code</i> of [NAME OF JURISDICTION], hereinafter referred to as “this code,” and also known as the <i>Building Code</i>.</p> <p>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. 2021-1037¹, which appears in the preamble of this code. A predecessor document to this code was known as the <i>City of Houston Building Code—General Provisions</i>, and any reference to the <i>City of Houston Building Code—General Provisions</i> in other ordinances or documents of the <i>jurisdiction</i> shall be construed to mean this code. In certain instances, references to the <i>Building Code</i> may be found in ordinances, contracts, and other documents of the <i>jurisdiction</i>. In any instance in which it can be determined from the context or scope of the document, that the reference was intended to include one or more of the codes that now collectively constitute the <i>Construction Code</i>, then it shall be so construed.</p>		<p>[A] 101.1 Title. These regulations shall be known as the <i>City of Houston Building Code</i> of [NAME OF JURISDICTION], hereinafter referred to as “this code,” and also known as the <i>Building Code</i>.</p> <p>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. 2023-907¹, which appears in the preamble of this code. A predecessor document to this code was known as the <i>City of Houston Building Code—General Provisions</i>, and any reference to the <i>City of Houston Building Code—General Provisions</i> in other ordinances or documents of the <i>jurisdiction</i> shall be construed to mean this code. In certain instances, references to the <i>Building Code</i> may be found in ordinances, contracts, and other documents of the <i>jurisdiction</i>. In any instance in which it can be determined from the context or scope of the document, that the reference was intended to include one or more of the codes that now collectively constitute the <i>Construction Code</i>, then it shall be so construed.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.2 Scope. The provisions of this code shall apply to the construction, <i>alteration</i>, relocation, enlargement, replacement, <i>repair</i>, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures, <u>except work located primarily in a public way, public utility towers and poles, mechanical equipment not specifically regulated in this code, and hydraulic flood control structures.</u></p> <p>Exception: Except as noted in Section 101.4.8, detached Detached one- and two-family <i>dwelling</i>s and multiple single-family <i>dwelling</i>s (townhouses) not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height, shall comply with the International Residential Code.</p>	<p>[A] 101.2 Scope. The provisions of this code shall apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.</p> <p>Exception: Detached one- and two-family dwellings and multiple single family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height, shall comply with this code or the International Residential Code.</p>	<p>[A] 101.2 Scope. The provisions of this code shall apply to the construction, <i>alteration</i>, relocation, enlargement, replacement, <i>repair</i>, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures, <u>except work located primarily in a public way, public utility towers and poles, mechanical equipment not specifically regulated in this code, and hydraulic flood control structures.</u></p> <p>Exception: Except as noted in Section 101.4.8, detached Detached one- and two-family <i>dwelling</i>s and townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height, shall comply with this code or the International Residential Code.</p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>

¹. The City Secretary shall insert the number of the adopting ordinance.

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2021 Houston IBC Amendments

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<p>[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted. <u>Appendices F, J, K, N, and R, including any amendments thereto adopted by this jurisdiction, are hereby adopted, and shall be incorporated into and made part of this code.</u></p>	<p>No change</p>	<p>[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted. <u>Appendices F, J, N, and R, including any amendments thereto adopted by this jurisdiction, are hereby adopted, and shall be incorporated into and made part of this code.</u></p>	<p>Appendix K removed from amendments.</p>
<p>[A] 101.3 Intent. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, public health and general welfare through structural strength, <i>means of egress</i> facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide 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></p>	<p>[A] 101.3 Intent Purpose. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, public health and general welfare through structural strength, means of egress facilities, stability, sanitation, <u>adequate light and ventilation, energy conservation, and safety to life for providing a reasonable level of life safety and property protection from the hazards of fire, explosion and other hazards attributed to the built environment or dangerous conditions,</u> and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.</p>	<p>[A] 101.3 Purpose. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, health and general welfare through structural strength, <i>means of egress</i>, stability, sanitation, light and <i>ventilation</i>, energy conservation, and for providing a reasonable level of life safety and property protection from the hazards of fire, <i>explosion</i> or <i>dangerous</i> conditions, 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></p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
<p>101.3.1 Landlord/tenant. <u>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 subject to 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 than to determine the rights and liabilities of persons under agreements to which this jurisdiction is not a party.</u></p>	<p>N/A</p>	<p>101.3.1 Landlord/tenant. <u>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 subject to 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 than to determine the rights and liabilities of persons under agreements to which this jurisdiction is not a party.</u></p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4 Referenced codes. The other codes listed in Sections 101.4.1 through 101.4.87 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. <u>This code includes numerous references to the <i>International Codes</i>, including but not limited to, <i>Fuel Gas, Mechanical, Plumbing, Property Maintenance, Fire, Residential, Energy Conservation, Existing Buildings, and Electrical.</i> For the sake of convenience and cost savings to the public in the preparation of Houston Amendments pages to this code, those references have not been revised unless the text of the provision in which they appear has otherwise been revised by this jurisdiction. Any such references shall be regarded as references to the corresponding code as adopted by this jurisdiction from time to time. This jurisdiction reserves the right to adopt codes based upon promulgations of organizations other than the International Code Council, including but not limited to the Uniform Series Codes, to the extent permitted by state law. Any reference to a specific chapter, section, or provision of a code that has not been adopted by this jurisdiction shall be construed to mean the corresponding provision of the corresponding code as adopted by this jurisdiction.</u></p>	<p>[A] 101.4 Referenced codes. The other codes listed specified in Sections 101.4.1 through 101.4.7 and referenced elsewhere in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference.</p>	<p>[A] 101.4 Referenced codes. The other codes specified in Sections 101.4.1 through 101.4.87 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. <u>This code includes numerous references to the <i>International Codes</i>, including but not limited to, <i>Fuel Gas, Mechanical, Plumbing, Property Maintenance, Fire, Residential, Energy Conservation, Existing Buildings, and Electrical.</i> For the sake of convenience and cost savings to the public in the preparation of Houston Amendments pages to this code, those references have not been revised unless the text of the provision in which they appear has otherwise been revised by this jurisdiction. Any such references shall be regarded as references to the corresponding code as adopted by this jurisdiction from time to time. This jurisdiction reserves the right to adopt codes based upon promulgations of organizations other than the International Code Council, including but not limited to the Uniform Series Codes, to the extent permitted by state law. Any reference to a specific chapter, section, or provision of a code that has not been adopted by this jurisdiction shall be construed to mean the corresponding provision of the corresponding code as adopted by this jurisdiction.</u></p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>

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<p>[A] 101.4.1 Gas. The provisions of the International Fuel Gas Plumbing Code, as defined in Chapter 2 of this code, shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending from the point of delivery to inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.</p> <p>Exception: The installation of gas piping and gas appliances governed by the <i>Residential Code</i>.</p>	<p>No change</p>	<p>[A] 101.4.1 Gas. The provisions of the International Fuel Gas Plumbing Code, as defined in Chapter 2 of this code, shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending from the point of delivery to inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.</p> <p>Exception: The installation of gas piping and gas appliances governed by the <i>Residential Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4.2 Mechanical. The provisions of the International Mechanical Code, as defined in Chapter 2 of this code, shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.</p> <p>Exception: The installation, alterations, repairs and replacement of mechanical systems governed by the <i>Residential Code</i>.</p>	<p>[A] 101.4.2 Mechanical. The provisions of the International Mechanical Code shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.</p>	<p>[A] 101.4.2 Mechanical. The provisions of the International Mechanical Code, as defined in Chapter 2 of this code, shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.</p> <p>Exception: The installation, alterations, repairs and replacement of mechanical systems governed by the <i>Residential Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4.3 Plumbing. The provisions of the International Plumbing Code, as defined in Chapter 2 of this code, shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system, and to all aspects of a medical gas system. The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems.</p> <p>Exception: Work governed by the <i>Residential Code</i>.</p>	<p>No change</p>	<p>[A] 101.4.3 Plumbing. The provisions of the International Plumbing Code, as defined in Chapter 2 of this code, shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system, and to all aspects of a medical gas system. The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems.</p> <p>Exception: Work governed by the <i>Residential Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4.4 Property maintenance. Buildings, structures, premises and the equipment and systems installed therein shall be maintained in accordance with the provisions of the code of record under which the building, structure, premise and equipment and system was installed and the provisions of the International Property Maintenance Code, as defined in Chapter 2 of this code, shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.</p>	<p>No change</p>	<p>[A] 101.4.4 Property maintenance. Buildings, structures, premises and the equipment and systems installed therein shall be maintained in accordance with the provisions of the code of record under which the building, structure, premise and equipment and system was installed and the provisions of the International Property Maintenance Code, as defined in Chapter 2 of this code, shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4.5 Fire prevention. The provisions of the International Fire Code, as defined in Chapter 2 of this code, shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in</p>	<p>No change</p>	<p>[A] 101.4.5 Fire prevention. The provisions of the International Fire Code, as defined in Chapter 2 of this code, shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the</p>	<p>No change to Houston amendment.</p>

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<p>the occupancy of structures or premises; and from the construction, extension, <i>repair, alteration</i> or removal of fire suppression, <i>automatic sprinkler systems</i> and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.</p>		<p>construction, extension, <i>repair, alteration</i> or removal of fire suppression, <i>automatic sprinkler systems</i> and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.</p>	
<p>[A] 101.4.6 Energy. The provisions of the <i>International Energy Conservation Code</i>, as defined in Chapter 2 of this code, shall apply to all matters governing the design and construction of buildings for energy efficiency.</p>	<p>No change</p>	<p>[A] 101.4.6 Energy. The provisions of the International Energy Conservation Code, as defined in Chapter 2 of this code, shall apply to all matters governing the design and construction of buildings for energy efficiency.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4.7 Existing buildings. The provisions of the <i>International Existing Building Code</i>, as defined in chapter 2 of this code, shall apply to matters governing the <i>repair, alteration</i>, change of occupancy, <i>addition</i> to and relocation of existing buildings.</p>	<p>No change</p>	<p>[A] 101.4.7 Existing buildings. The provisions of the International Existing Building Code, as defined in Chapter 2 of this code, shall apply to matters governing the <i>repair, alteration, change of occupancy, addition</i> to and relocation of <i>existing buildings</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 101.4.8 Electrical. The provisions of the <i>Electrical Code</i>, as defined in Chapter 2 of this code, shall apply to the installation of electrical systems, including <i>alterations, repairs, replacement, equipment, appliances, fixtures, fittings, and appurtenances thereto</i>.</p>	<p>N/A</p>	<p>101.4.8 Electrical. The provisions of the <i>Electrical Code</i>, as defined in Chapter 2 of this code, shall apply to the installation of electrical systems, including <i>alterations, repairs, replacement, equipment, appliances, fixtures, fittings, and appurtenances thereto</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall prevail be applicable. Where, in any specific instance case, different sections of provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the City Code or other volumes of the Construction Code, including adopted appendices, other than the Fire Code and its adopted appendices and standards, the most restrictive shall prevail govern. Where, in any specific instance, provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the Fire Code, including its adopted appendices and standards, and the building official 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 this code, 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 further appeal.</p>	<p style="text-align: center;">SECTION 102 APPLICABILITY</p> <p>No change</p>	<p>[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall prevail be applicable. Where, in any specific instance case, different sections of provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the City Code or other volumes of the Construction Code, including adopted appendices, other than the Fire Code and its adopted appendices and standards, the most restrictive shall prevail govern. Where provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the Fire Code, including its adopted appendices and standards, and the building official 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 this code, 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 further appeal.</p>	<p>No change to Houston amendment.</p>
	<p>[A] 102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.</p>		<p>Edits made to clarify code, no major change to code</p>

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<p>[A] 102.6 Existing and annexed structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the International Existing Building Code, the International Property Maintenance Code or the International Fire Code.</p>	<p>No Change</p>	<p>[A] 102.6 Existing and annexed structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the International Existing Building Code, the International Property Maintenance Code or the International Fire Code.</p>	<p>No change to Houston amendment.</p>
<p>[A] 102.6.2 Buildings previously occupied. The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the International Fire Code, or International the Property Maintenance Code, or as is deemed necessary by the <i>building official</i> for the general safety and welfare of the occupants and the public.</p>	<p>No Change</p>	<p>[A] 102.6.2 Buildings previously occupied. The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the International Fire Code or International the Property Maintenance Code, or as is deemed necessary by the <i>building official</i> for the general safety and welfare of the occupants and the public.</p>	<p>No change to Houston amendment.</p>
<p>102.6.3 Existing structures. A building in existence within the <i>jurisdiction</i> at the time of the adoption of this code may have its existing use and occupancy continued if:</p> <ol style="list-style-type: none"> 1. Such use or occupancy was legal under a prior version of this code; 2. The building is in compliance with all applicable provisions of Appendix D of the Existing Building Code; and 3. The continued use and occupancy are not unsafe pursuant to the provisions of Section 116. 	<p>N/A</p>	<p>102.6.3 Existing structures. A building in existence within the <i>jurisdiction</i> at the time of the adoption of this code may have its existing use and occupancy continued if:</p> <ol style="list-style-type: none"> 1. Such use or occupancy was legal under a prior version of this code; 2. The building is in compliance with all applicable provisions of Appendix D of the Existing Building Code; and 3. The continued use and occupancy are not unsafe pursuant to the provisions of Section 116. 	<p>No change to Houston amendment.</p>
<p>102.6.4 Annexed structures. Any building in existence prior to the annexation into the <i>jurisdiction</i> of the land on which it is situated may have its use and occupancy continued if:</p> <ol style="list-style-type: none"> 1. Such use of occupancy was legal under the building design and construction codes and related laws applicable in the <i>jurisdiction</i> in which the building was situated at the time immediately prior to its annexation; 2. The building is in compliance with all applicable provisions of Appendix D of the Existing Building Code; and 3. The continued use and occupancy are not unsafe pursuant to the provisions of Section 116. 	<p>N/A</p>	<p>102.6.4 Annexed structures. Any building in existence prior to the annexation into the <i>jurisdiction</i> of the land on which it is situated may have its use and occupancy continued if:</p> <ol style="list-style-type: none"> 1. Such use or occupancy was legal under the building design, construction codes, and related laws applicable in the <i>jurisdiction</i> in which the building was situated at the time immediately prior to its annexation; 2. The building is in compliance with all applicable provisions of Appendix D of the Existing Building Code; and 3. The continued use and occupancy are not unsafe pursuant to the provisions of Section 116. 	<p>No change to Houston amendment.</p>

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SECTION 103 DEPARTMENT OF BUILDING SAFETY CODE ENFORCEMENT	SECTION 103 DEPARTMENT OF BUILDING SAFETY CODE COMPLIANCE AGENCY	SECTION 103 CODE COMPLIANCE AGENCY BUILDING CODE ENFORCEMENT	
<p>[A] 103.1 Creation of enforcement agency. The Department of Building Safety Building Code Enforcement is hereby created within Houston Public Works, and the official in charge thereof shall be known as the <i>building official</i>.</p>	<p>[A] 103.1 Creation of enforcement agency. The Department of Building Safety [INSERT NAME OF DEPARTMENT] is hereby created and the official in charge thereof shall be known as the building official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.</p>	<p>[A] 103.1 Creation of enforcement agency. The [INSERT NAME OF DEPARTMENT] Building Code Enforcement is hereby created within Houston Public Works, and the official in charge thereof shall be known as the <i>building official</i>. The function of the agency shall be implementation, administration and enforcement of the provisions of this code.</p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
<p>[A] 103.3 Deputies. In accordance with the prescribed procedures of this <i>jurisdiction</i> and with the concurrence of the appointing authority, the <i>building official</i> shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the <i>building official</i>. For the maintenance of existing properties, see the <i>International Property Maintenance Code</i>.</p>	<p>[A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, the other related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the building official. For the maintenance of existing properties, see the International Property Maintenance Code.</p>		<p>Edits made to clarify code, no major change to code</p>
SECTION 104 DUTIES AND POWERS OF BUILDING OFFICIAL	SECTION 104 DUTIES AND POWERS OF BUILDING OFFICIAL	SECTION 104 DUTIES AND POWERS OF BUILDING OFFICIAL	
<p>[A] 104.2.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas. See Chapter 19 of the <i>City Code</i>. For application for reconstruction, rehabilitation, repair, alteration, addition or other improvement of existing buildings or structures located in flood hazard areas, the building official shall determine if the proposed work constitutes substantial improvement or repair of substantial damage. Where the building official determines that the proposed work constitutes substantial improvement or repair of substantial damage, and where required by this code, the building official shall require the building to meet the requirements of Section 1612.</p>	<p>[A] 104.2.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas. For applications for reconstruction, rehabilitation, repair, alteration, addition or other improvement of existing buildings or structures located in flood hazard areas, the building official shall determine if the proposed work constitutes substantial improvement or repair of substantial damage. Where the building official determines that the proposed work constitutes substantial improvement or repair of substantial damage, and where required by this code, the building official shall require the building to meet the requirements of Section 1612 or Section R322 of the International Residential Code, as applicable.</p>	<p>[A] 104.2.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas. See Chapter 19 of the <i>City Code</i>. For applications for reconstruction, rehabilitation, repair, alteration, addition or other improvement of existing buildings or structures located in flood hazard areas, the building official shall determine if the proposed work constitutes substantial improvement or repair of substantial damage. Where the building official determines that the proposed work constitutes substantial improvement or repair of substantial damage, and where required by this code, the building official shall require the building to meet the requirements of Section 1612 or Section R322 of the International Residential Code, as applicable.</p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
	<p>[A] 104.4 Inspections. The building official shall make the required inspections, or the building official shall have the authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The building official is authorized to engage such expert opinion as deemed necessary to report up upon unusual technical issues that arise, subject to the approval of the appointing authority.</p>		<p>Edits made to clarify code, no major change to code.</p>

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<p>[A] 104.6 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the <i>building official</i> has reasonable cause to believe that there exists in a structure or upon a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the <i>building official</i> is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the <i>building official</i> shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the <i>building official</i> or an <u>authorized representative</u> shall have recourse to the remedies provided by law to secure entry.</p> <p><u>When, due to an emergency, immediate entry is necessary to make an inspection to protect life or property, or when the <i>building official</i> has obtained an inspection warrant or other remedy provided by law to secure entry, no owner or occupant or any other person having charge, care of control of any building or premises shall fail or neglect, after request is made as herein provided, to promptly permit entry therein by the <i>building official</i> for the purpose of inspection and examination pursuant to this code.</u></p>	<p>[A] 104.6 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the building official has reasonable cause to believe that there exists in a structure or upon a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the building official is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the building official shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the building official shall have recourse to the remedies provided by law to secure entry.</p>	<p>[A] 104.6 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the <i>building official</i> has reasonable cause to believe that there exists in a structure or upon a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, <i>dangerous</i> or hazardous, the <i>building official</i> is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises be unoccupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the <i>building official</i> shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the <i>building official</i> or an <u>authorized representative</u> shall have recourse to the remedies provided by law to secure entry.</p> <p><u>When, due to an emergency, immediate entry is necessary to make an inspection to protect life or property, or when the <i>building official</i> has obtained an inspection warrant or other remedy provided by law to secure entry, no owner or occupant or any other person having charge, care of control of any building or premises shall fail or neglect, after request is made as herein provided, to promptly permit entry therein by the <i>building official</i> for the purpose of inspection and examination pursuant to this code.</u></p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
<p>[A] 104.8 Liability. The <i>building official</i>, member of the board of appeals or employee charged with the enforcement of this code, while acting for the <i>jurisdiction</i> 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 civilly or criminally rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Except as otherwise provided by law, the <i>building 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>building 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 <i>jurisdiction</i> shall provide legal representation and indemnification for any suit or claim brought against the <i>building official</i> or any deputies because of acts or omissions performed in the implementation or enforcement of this code.</p> <p><u>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 other construction for any damages to persons or property caused by defects, nor shall the code enforcement agency or the <i>jurisdiction</i> be held as assuming any</u></p>	<p>No change</p>	<p>[A] 104.8 Liability. The building official, member of the board of appeals 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 civilly or criminally rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Except as otherwise provided by law, the <i>building 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, 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 <i>jurisdiction</i> shall provide legal representation and indemnification for any suit or claim brought against the <i>building official</i> or any deputies alleging any acts or omissions performed in the implementation or enforcement of this code or scope of employment.</p> <p><u>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 other construction for any damages to persons or property caused by defects, nor shall the code enforcement agency or the <i>jurisdiction</i> 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.</u></p>	<p>Minor wordsmithing changes to amendment by Legal department, intent remains unchanged.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p>such liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.</p>			
<p>104.8.1 Legal defense. Any suit or criminal complaint instituted against an 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 legal representatives of the <i>jurisdiction</i> until the final termination of the proceedings. The <i>building official</i> or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.</p>	<p>No change</p>	<p>[A] 104.8.1 Legal defense. Any suit or criminal complaint instituted against an 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 legal representatives of the <i>jurisdiction</i> until the final termination of the proceedings. The <i>building official</i> or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.</p>	<p>No change to Houston amendment.</p>
	<p>[A] 104.9.1 Used materials and equipment. The use of used Materials that meet are reused shall comply with the requirements of this code for new materials is permitted. Used equipment and devices shall not be reused unless approved by the building official.</p>		<p>Edits made to clarify code, no major change to code</p>
<p>[A] 104.10 Modifications. Where there are practical difficulties involved in carrying out the provisions of this code, the building official shall have the authority to grant modifications for individual cases, upon application of the owner or the owner's authorized agent, provided that the building official shall first find that special individual reason makes the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of <u>Building Code Enforcement</u> the department of building safety.</p>	<p>No change</p>	<p>[A] 104.10 Modifications. Where there are practical difficulties involved in carrying out the provisions of this code, the <i>building official</i> shall have the authority to grant modifications for individual cases, upon application of the <i>owner</i> or the owner's authorized agent, provided that the <i>building official</i> shall first find that special individual reason makes the strict letter of this code impractical, the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, <i>accessibility</i>, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the Building Code Enforcement Division the department of building safety.</p>	<p>No change to Houston amendment.</p>
<p>[A] 104.10.1 Flood hazard areas. See Chapter 19 of the <i>City Code</i>. The building official shall not grant modifications to any provision required in flood hazard areas as established by Section 1612.3 unless a determination has been made that:</p> <ol style="list-style-type: none"> 1. A showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section 1612 inappropriate. 2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable. 3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, cause fraud on or victimization of the public, or conflict with existing laws or ordinances. 4. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard. 	<p>No change</p>	<p>[A] 104.10.1 Flood hazard areas. See Chapter 19 of the <i>City Code</i>. The building official shall not grant modifications to any provision required in flood hazard areas as established by Section 1612.3 unless a determination has been made that:</p> <ol style="list-style-type: none"> 1. A showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section 1612 inappropriate. 2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable. 3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, cause fraud on or victimization of the public, or conflict with existing laws or ordinances. 4. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard. 	<p>No change to Houston amendment.</p>

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<p>5. Submission to the applicant of written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation, and stating that construction below the design flood elevation increases risks to life and property.</p>		<p>5. Submission to the applicant of written notice specifying the difference between the <i>design flood elevation</i> and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation, and stating that construction below the <i>design flood elevation</i> increases risks to life and property.</p>	
	<p>[A] 104.11 Alternative materials, design and methods of construction and 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 approved. An alternative material, design or method of construction shall be approved where the building official 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, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability, and safety. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. 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 approved. An alternative material, design or method of construction shall be approved where the <i>building official</i> finds that the proposed alternative meets all of the following:</p> <ol style="list-style-type: none"> 1. The alternative material, design or method of construction is satisfactory and complies with the intent of the provisions of this code. 2. The material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code as it pertains to the following: <ol style="list-style-type: none"> 2.1. Quality. 2.2. Strength. 2.3. Effectiveness. 2.4. <i>Fire resistance.</i> 2.5. Durability. 2.6. Safety. <p>Where the alternative material, design or method of construction is not approved, the <i>building official</i> shall respond in writing, stating the reasons why the alternative was not approved.</p>		<p>Clarifies intend of alternate methods or materials, and provides more details for what level of protection alternative methods or materials must meet.</p>

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	<p>[A] 104.11.2 Tests. Whenever 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 building official shall have the authority to require tests as evidence of compliance to be made at no without expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.</p>		<p>Edits made to clarify code, no major change to code</p>
<p>104.12 Discontinuation of use; notice to vacate. Whenever any building or structure or equipment located therein is being used contrary to the provisions of this code or otherwise is in violation of this code, the <i>building official</i> may, by notice to the owner or the owner’s representative and to all users of the structure, order that any or all uses of the structure be discontinued or that the structure, or portion thereof, be vacated within such time and for as long as the <i>building official</i> reasonably prescribes.</p> <p>If the use of occupancy of the structure creates a serious and immediate hazard to human life or to property, the <i>building official</i> shall order the use discontinued immediately and may order the structure, or portion thereof, vacated immediately.</p> <p>In the absence of a serious and immediate hazard to human life or to property, the <i>building official</i> shall not order a use discontinued and shall not issue an order to vacate until five business days after the <i>building official</i> has given the required notice of a right to a hearing pursuant to Section 104.12.1 and 117. For the purposes of this Section:</p> <ol style="list-style-type: none"> 1. An “owner” of a structure is the record owner(s) of the structure, according to the official public records of real property maintained by the clerk of the county in which the structure is located; 2. An “owner’s representative” is a person whom the <i>building official</i> reasonably believes to be a representative of an owner; 3. A “use” of a structure includes its use as a residence or for any commercial purpose; and 4. The “users” of a structure include the structure’s residential and commercial tenants but do not include customers of commercial tenants or other persons who have no independent right to enter the structure. 	<p>N/A</p>	<p>104.12 Discontinuation of use; notice to vacate. Whenever any building or structure or equipment located therein is being used contrary to the provisions of this code or otherwise is in violation of this code, the <i>building official</i> may, by notice to the owner or the owner’s representative and to all users of the structure, order that any or all uses of the structure be discontinued or that the structure, or portion thereof, be vacated within such time and for as long as the <i>building official</i> reasonably prescribes.</p> <p>If the use or occupancy of the structure creates a serious and immediate hazard to human life or to property, the <i>building official</i> shall order the use discontinued immediately and may order the structure, or portion thereof, vacated immediately.</p> <p>In the absence of a serious and immediate hazard to human life or to property, the <i>building official</i> shall not order a use discontinued and shall not issue an order to vacate until five business days after the <i>building official</i> has given the required notice of a right to a hearing pursuant to Sections 104.12.1 and 117. For the purposes of this Section:</p> <ol style="list-style-type: none"> 1. An “owner” of a structure is the record owner(s) of the structure, according to the official public records of real property maintained by the clerk of the county in which the structure is located; 2. An “owner’s representative” is a person whom the <i>building official</i> reasonably believes to be a representative of an owner; 3. A “use” of a structure includes its use as a residence or for any commercial purpose; and 4. The “users” of a structure include the structure’s residential and commercial tenants but do not include customers of commercial tenants or other persons who have no independent right to enter the structure. 	<p>No change to Houston amendment.</p>

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<p>104.12.1 Right to hearing. Whenever pursuant to this code the <i>building official</i> orders the discontinuation of the use of all or a portion of a structure or equipment or orders the vacation of all or a portion of a structure, the <i>building official</i> shall give notice to the owner or the owner's representative and to all users of the structure of their right to a hearing pursuant to Section 117.</p> <p>Upon the request of the owner, the owner's representative, or a user of the structure, the <i>building official</i> shall schedule the hearing for a date no later than two weeks after the <i>building official's</i> receipt of the request. If the owner, the owner's representative, or a user of the structure requests that the hearing be conducted within three business days of the request, the hearing shall be so conducted. If the <i>building official</i> does not receive a request for a hearing from the owner, the owner's representative, or a user of the structure within 20 days after the date of the <i>building official's</i> order to discontinue a use or to vacate, no hearing need be conducted.</p>	<p>N/A</p>	<p>104.12.1 Right to hearing. Whenever pursuant to this code the <i>building official</i> orders the discontinuation of the use of all or a portion of a structure or equipment or orders the vacation of all or a portion of a structure, the <i>building official</i> shall give notice to the owner or the owner's representative and to all users of the structure of their right to a hearing pursuant to Section 117.</p> <p>Upon the request of the owner, the owner's representative, or a user of the structure, the <i>building official</i> shall schedule the hearing for a date no later than two weeks after the <i>building official's</i> receipt of the request. If the owner, the owner's representative, or a user of the structure requests that the hearing be conducted within three business days of the request, the hearing shall be so conducted. The owner, owner's representative, user of the structure, or building official may postpone the hearing one time where good cause is provided. If the <i>building official</i> does not receive a request for a hearing from the owner, the owner's representative, or a user of the structure within 20 days after the date of the <i>building official's</i> order to discontinue a use or to vacate, no hearing need be conducted.</p>	<p>Minor wordsmithing changes to amendment by Legal department, intent remains unchanged.</p>
<p>104.12.2 Relocation assistance; right of entry. Upon the <i>building official's</i> issuance of an order to vacate all or a portion of a structure classified as an "R-2 residential occupancy" by Section 310, the <i>building official</i> may designate in writing one or more persons to contact residents of the structure to offer the <i>jurisdiction's</i> assistance in locating and otherwise making arrangements for alternative housing. The persons so designated are authorized to enter the structure and its grounds at reasonable times to contact residents personally for the purposes of this section. The persons so designated may not require the residents to take any specific action; in particular, the said persons are not authorized to enforce an order to vacate.</p>	<p>N/A</p>	<p>104.12.2 Relocation assistance; right of entry. Upon the <i>building official's</i> issuance of an order to vacate all or a portion of a structure classified as an "R-2 residential occupancy" by Section 310, the <i>building official</i> may designate in writing one or more persons to contact residents of the structure to offer the <i>jurisdiction's</i> assistance in locating and otherwise making arrangements for alternative housing. The persons so designated are authorized to enter the structure and its grounds at reasonable times to contact residents personally for the purposes of this section. The persons so designated may not require the residents to take any specific action; in particular, the said persons are not authorized to enforce an order to vacate.</p>	<p>No change to Houston amendment.</p>
<p>[A] 105.1 Required. Any <i>owner</i> or owner's authorized agent who intends to construct, enlarge, alter, <i>repair</i>, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, <i>repair</i>, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the <i>building official</i> and obtain the required <i>permit</i>, and no person shall cause, suffer or permit the same such work to be done unless a separate permit for each building or structure has first been obtained.</p>	<p>No change</p> <p style="text-align: center;">SECTION 105 PERMITS</p>	<p>[A] 105.1 Required. Any <i>owner</i> or owner's authorized agent who intends to construct, enlarge, alter, <i>repair</i>, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, <i>repair</i>, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the <i>building official</i> and obtain the required <i>permit</i>, and no person shall cause, suffer or permit the same such work to be done unless a separate permit for each building or structure has first been obtained.</p>	<p>No change to Houston amendment.</p>
<p>[A] 105.1.2 Annual permit records. The person to whom an annual <i>permit</i> is issued shall keep a detailed record of <i>alterations</i> made under such annual <i>permit</i>. The <i>building official</i> shall have access to such records at all times or such records shall be filed with the <i>building official</i> as designated.</p>	<p>No change</p>	<p>[A] 105.1.2 Annual permit records. The person to whom an annual <i>permit</i> is issued shall keep a detailed record of <i>alterations</i> made under such annual <i>permit</i>. The <i>building official</i> shall have access to such records at all times or such records shall be filed with the <i>building official</i> as designated.</p>	<p>No change to Houston amendment.</p>

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[A] 105.2 Work exempt from permit. Exemptions from *permit* requirements of this code shall not be deemed to grant exemption from permits required by other codes or ordinances and shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other codes, laws or ordinances of this *jurisdiction*. *Permits* shall not be required for the following:

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area is not greater than 120 square feet (11 m²).
2. Fences not over ~~7 8~~ feet (2134 mm 243.84 cm) high that are not constructed of masonry or concrete and that are not electrically energized, or includes razor wire or barbed wire.
3. Oil derricks.
4. Retaining walls that are not over 4 feet (121.92 cm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18,925 L) and the ratio of height to diameter or width is not greater than 2:1.
6. ~~Sidewalks and driveways~~ Uncovered decks accessory to a one- or two-family dwelling, not more than 30 inches (76.20 cm) above adjacent grade, and not over any basement or story below and are not part of an accessible route.
7. Minor repair and maintenance of existing structures that include:
 - 7.1. Painting, tarping, repair or replacement of wall papering, tiling, carpeting, cabinets, counter tops, and similar finish work.
 - 7.2. Repair to gypsum board (sheetrock or drywall) on existing walls that are not part of a fire-rated assembly and do not exceed an aggregate of 100 square feet (9.29 m²).
 - 7.3. Repair, using the same material, of exterior wood fascia, trim and soffits that does not exceed an aggregate of 128 square feet (11.89 m²).
 - 7.4. Roof covering that does not exceed an aggregate of 100 square feet (9.29 m²).
8. Temporary motion picture, television and theater stage sets and scenery.
9. Prefabricated *swimming pools* accessory to a Group R-3 occupancy that ~~are less than 24 inches (610 mm) deep,~~

[A] 105.2 Work exempt from permit. Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction. Permits shall not be required for the following:

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided **that** the floor area is not greater than 120 square feet (11 m²).
2. Fences not over 7 feet (2134 mm) high.
3. Oil derricks.
4. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18 925 L) and the ratio of height to diameter or width is not greater than 2:1.
6. Sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade, and not over any basement or story below and are not part of an accessible route.
7. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.
8. Temporary motion picture, television and theater stage sets and scenery.
9. Prefabricated swimming pools accessory to a Group R-3 occupancy that are less than 24 inches (610mm) deep, are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.
10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.
11. Swings and other playground equipment accessory to detached one- and two-family dwellings.
12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

[A] 105.2 Work exempt from permit. Exemptions from *permit* requirements of this code shall not be deemed to grant exemption from permits required by other codes or ordinances and shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other codes, laws or ordinances of this *jurisdiction*. *Permits* shall not be required for the following:

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses, and similar uses, provided the floor area is not greater than 120 square feet (11 m²).
2. Fences not over ~~7 8~~ feet (~~2134~~ 2438 mm) high that are not constructed of masonry or concrete and that are not electrically energized, or includes razor wire or barbed wire.
3. Oil derricks.
4. Retaining walls that are not over 4 feet (1219 cm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18 925 L) and the ratio of height to diameter or width is not greater than 2:1.
6. Sidewalks and driveways Uncovered decks accessory to a one- or two-family dwelling, not more than 30 inches (762 cm) above adjacent grade, and not over any basement or story below and are not part of an accessible route.
 - 6.1. Sidewalks and walkways on private property for one- and two-family dwellings.**
7. Minor repair and maintenance of existing structures that include:
 - 7.1. Painting, tarping, repair, or replacement of wall papering, tiling, carpeting, cabinets, counter tops, and similar finish work.
 - 7.2. Repair to gypsum board (sheetrock or drywall) on existing walls that are not part of a fire-rated assembly and do not exceed an aggregate of 100 square feet (9.29 m²).
 - 7.3. Repair, using the same material, of exterior wood fascia, trim and soffits that does not exceed an aggregate of 128 square feet (11.89 m²).

Edits made to clarify code, no major change to code.
 Minor change to clarify exemptions for sidewalks and walkways on private one- and two-family dwelling property.
 Donation boxes included per ARA Ordinance update.

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are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.

10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.

11. Swings and other playground equipment ~~accessory to detached one- and two-family dwellings other than those regulated by Section 424.~~

12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1,372 mm) from the exterior wall and do not require additional support.

13. Nonfixed and movable fixtures, cases, racks, counters, and partitions not over 5 feet 9 inches (1,753 mm) in height.

14. Flagpoles that support an appurtenance that weighs less than 150 pounds (68 kg), provided the flagpole complies with all applicable provisions of the Construction Code and its proposed location is not specifically regulated by a City Code or a code other than this code, and is not more than 75 feet (22,680 mm) tall if mounted on the ground or not more than 25 feet (7,620 mm) taller than the building when mounted on a building.

15. A tower less than 75 feet (22,680 mm) in height that meets the following conditions:

15.1. Tower structures used primarily for the support of amateur and citizens' band radio or private television antennas;

15.2. Tower structures on real property owned, leased, held or used, or dedicated for use by a public utility for rendering its service, such as tower structures used primarily for the transmission of electrical power by a public utility or the conveyance of communications over a telephone wire-line system operated by a public utility;

15.3. High mast tower structures or antennas built on land on, along or adjacent to streets, roads, highways, and bridges maintained by the state or a political subdivision of the state; and

15.4. Tower structures constructed or placed on land or other structures owned, leased, held or dedicated for use by the state or federal government or any political subdivision thereof, which land or other structures are used by the government entity primarily for rendering fire, police or other public protection services or utility services, whether or not the tower structure is used jointly by the governmental entity and any other public or private person or entity for other and additional public or private purposes.

13. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.

Electrical:

1. Repairs and maintenance: Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

2. Radio and television transmitting stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installations of towers and antennas.

3. Temporary testing systems: A permit shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

Gas:

1. Portable heating appliance.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.

Mechanical:

1. Portable heating appliance.
2. Portable ventilation equipment.
3. Portable cooling unit.
4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any part that does not alter its approval or make it unsafe.
6. Portable evaporative cooler.
7. Self-contained refrigeration system containing 10 pounds (4.54 kg) or less of refrigerant and actuated by motors of 1 horsepower (0.75 kW) or less.

Plumbing:

1. The stopping of leaks in drains, water, soil, waste or vent pipe, provided, however, that if any concealed trap, drain pipe, water, soil, waste or vent pipe becomes defective and it becomes

7.4. Roof covering that does not exceed an aggregate of 100 square feet (9.29 m²).

8. Temporary motion picture, television and theater stage sets and scenery.

9. Prefabricated *swimming pools* accessory to a Group R-3 occupancy that **are less than 24 inches (610 mm) deep**, are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.

10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.

11. Swings and other playground equipment **accessory to detached one- and two-family dwellings other than those regulated by Section 424.**

12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1,372 mm) from the exterior wall and do not require additional support.

13. Nonfixed and movable fixtures, cases, racks, counters, and partitions not over 5 feet 9 inches (1,753 mm) in height.

14. Flagpoles that support an appurtenance that weighs less than 150 pounds (68 kg), provided the flagpole complies with all applicable provisions of the Construction Code and its proposed location is not specifically regulated by a City Code or a code other than this code, and is not more than 75 feet (22,680 mm) tall if mounted on the ground or not more than 25 feet (7,620 mm) taller than the building when mounted on a building.

15. A tower less than 75 feet (22,680 mm) in height that meets the following conditions:

15.1. Tower structures used primarily for the support of amateur and citizens' band radio or private television antennas;

15.2. Tower structures on real property owned, leased, held or used, or dedicated for use by a public utility for rendering its service, such as tower structures used primarily for the transmission of electrical power by a public utility or the conveyance of communications over a telephone wire-line system operated by a public utility;

15.3. High mast tower structures or antennas built on land on, along or adjacent to streets, roads, highways, and bridges

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<p><u>A building permit for any tower structure that is 60 feet (18,288 mm) or more in height and does not meet these exemptions shall not be issued unless a special permit has been obtained pursuant to Section 28-522 of the City Code.</u></p> <p>16. A “work of art,” as defined in Section 202, shall be exempt from obtaining a structural building permit where not regulated by the <i>Houston Sign Code</i> and a structural building permit is obtained to address the supporting foundation, primary and secondary structural frame, including the anchorage or structural connections thereto and any proposed façade.</p> <p>17. To the extent that the state and federal governments are exempt as a matter of law from compliance with the <i>Construction Code</i>, neither the state nor the federal government shall be required to obtain a building 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 any permit for exempt work.</p> <p>18. Except for exempt work undertaken for, by or on the premises of the state or the federal government, building 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 <i>jurisdiction</i>) 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.</p> <p>Counties are required to comply with the provisions of the <i>Construction Code</i>. Except as provided by Section 212.903 of the <i>Texas Local Government Code</i>, a county shall notify the <i>building official</i> of each work project that is undertaken. The <i>building official</i> shall, upon request and demonstration of capacity, allow a county to self-permit and self-inspect work that is performed by or for the county on county-owned buildings and facilities for which a permit is required. No fee shall be imposed hereunder for work that a county is authorized to self-permit and self-inspect.</p> <p>Electrical:</p> <p>Repairs and maintenance: Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.</p> <p>Radio and television transmitting stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installations of towers and antennas.</p>	<p>necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.</p> <p>2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures and the removal and reinstallation of water closets, provided that such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.</p>	<p><u>maintained by the state or a political subdivision of the state; and</u></p> <p>15.4. Tower structures constructed or placed on land or other structures owned, leased, held or dedicated for use by the state or federal government or any political subdivision thereof, which land or other structures are used by the government entity primarily for rendering fire, police or other public protection services or utility services, whether or not the tower structure is used jointly by the governmental entity and any other public or private person or entity for other and additional public or private purposes.</p> <p><u>A building permit for any tower structure that is 60 feet (18,288 mm) or more in height and does not meet these exemptions shall not be issued unless a tower permit has been obtained pursuant to Section 28-522 of the City Code.</u></p> <p>16. A “work of art,” as defined in Section 202, shall be exempt from obtaining a structural building permit where not regulated by the <i>Houston Sign Code</i> and a structural building permit is obtained to address the supporting foundation, primary and secondary structural frame, including the anchorage or structural connections thereto and any proposed façade.</p> <p>17. To the extent that the state and federal governments are exempt as a matter of law from compliance with the <i>Construction Code</i>, neither the state nor the federal government shall be required to obtain a building 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 any permit for exempt work.</p> <p>18. Except for exempt work undertaken for, by or on the premises of the state or the federal government, building 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 <i>jurisdiction</i>) 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.</p> <p>19. Donation stations and donation boxes as defined in Chapter 28 of the City Code</p>	
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~~**Temporary testing systems:** A *permit* shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or antennas.~~

Gas:

- ~~1. Portable heating appliance.~~
- ~~2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.~~

Mechanical:

- ~~1. Portable heating appliance.~~
- ~~2. Portable ventilation equipment.~~
- ~~3. Portable cooling unit.~~
- ~~4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.~~
- ~~5. Replacement of any part that does not alter its approval or make it unsafe.~~
- ~~6. Portable evaporative cooler.~~
- ~~7. Self contained refrigeration system containing 10 pounds (4.54 kg) or less of refrigerant and actuated by motors of 1 horsepower (0.75 kW) or less.~~

Plumbing:

- ~~1. The stopping of leaks in drains, water, soil, waste or vent pipe, provided, however, that if any concealed trap, drain pipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a *permit* shall be obtained and inspection made as provided in this code.~~
- ~~2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.~~

Counties are required to comply with the provisions of the *Construction Code*. Except as provided by state law, a county shall notify the *building official* of each work project that is undertaken. The *building official* shall, upon request and demonstration of capacity, allow a county to self-permit and self-inspect work that is performed by or for the county on county-owned buildings and facilities for which a permit is required. No fee shall be imposed hereunder for work that a county is authorized to self-permit and self-inspect.

Electrical:

- ~~1. **Repairs and maintenance:** Minor repair work, including the replacement of lamps or the connection of *approved* portable electrical equipment to *approved* permanently installed receptacles.~~
- ~~2. **Radio and television transmitting stations:** The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installations of towers and antennas.~~
- ~~3. **Temporary testing systems:** A *permit* shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.~~

Gas:

- ~~1. Portable heating appliance.~~
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Mechanical:

- ~~1. Portable heating appliance.~~
- ~~2. Portable ventilation equipment.~~
- ~~3. Portable cooling unit.~~
- ~~4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.~~
- ~~5. Replacement of any part that does not alter its approval or make it unsafe.~~
- ~~6. Portable evaporative cooler.~~
- ~~7. Self contained refrigeration system containing 10 pounds (4.54 kg) or less of refrigerant and actuated by motors of 1 horsepower (0.75 kW) or less.~~

Plumbing:

- ~~1. The stopping of leaks in drains, water, soil, waste or vent pipe, provided, however, that if any concealed trap, drain pipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and~~

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		<p>replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.</p> <p>2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes, or fixtures.</p>	
<p>[A] 105.2.1 Emergency repairs. Where equipment replacements and or any other repairs for which permits are required must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the <i>building official</i>.</p>	<p><u>No change</u></p>	<p>[A] 105.2.1 Emergency repairs. Where equipment replacements and or any other repairs for which permits are required must be performed in an emergency situation, the <i>permit</i> application shall be submitted within the next working business day to the <i>building official</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 105.2.2 Repairs. Application or notice to the <i>building official</i> is not required for ordinary repairs to structures, replacement of lamps or the connection of <i>approved</i> portable electrical equipment to <i>approved</i> permanently installed receptacles, and items listed in Section 105.2. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load bearing support, or the removal or change of any required <i>means of egress</i>, or rearrangement of parts of a structure affecting the egress requirement; nor shall ordinary repairs include <i>addition</i> to, <i>alteration</i> of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.</p>	<p>[A] 105.2.2 Repairs. Application or notice to the building official is not required for ordinary repairs to structures, replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.</p> <p>[A] 105.2.2 Public service agencies. A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution or metering or other related equipment that is under the ownership and control of public service agencies by established right.</p>		<p>Edits made to clarify code, no major change to code</p>
<p>[A] 105.2.3 Public service agencies. A <i>permit</i> shall not be required for the installation, <i>alteration</i> or repair of generation, transmission, distribution or metering or other related equipment that is under the ownership and control of public service agencies by established right.</p>	<p>[A] 105.2.3-105.2.2 Public service agencies. A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution or metering or other related equipment that is under the ownership and control of public service agencies by established right.</p>		
	<p>[A]107.2.5 Exterior balconies and elevated walking surfaces. Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer's installation instructions.</p>		<p>Requires additional information for balconies or elevated walking surfaces to show details of moisture barriers.</p>

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	107.2.5 107.2.6 Site plan.		
	[A] 107.2.5.1 107.2.6.1 Design flood elevations.		
	[A] 107.2.6 107.2.7 Structural information.		
	107.2.8 Relocatable buildings. Construction documents for relocatable buildings shall comply with Section 3112.		Edits made to clarify code, no major change to code
<p>[A] 105.3 Application for permit. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by Building Code Enforcement the department of building safety for that purpose. Such application shall:</p> <ol style="list-style-type: none"> 1. Identify and describe the work to be covered by the permit for which application is made. 2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work. 3. Indicate the use and occupancy for which the proposed work is intended. 4. Be accompanied by construction documents and other information as required in Section 107. 5. State the valuation <u>total aggregate square footage of any new structure, addition(s), alteration, and the square footage of new paving, and linear feet of new sidewalks and curbs located within the right-of-way associated with</u> of the proposed work. 6. Be signed by the applicant, or the applicant's authorized agent. 7. Give such other data and information as required by the building official. 	<u>No change</u>	<p>[A] 105.3 Application for permit. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by Building Code Enforcement the department of building safety for that purpose. Such application shall:</p> <ol style="list-style-type: none"> 1. <i>Identify</i> and describe the work to be covered by the <i>permit</i> for which application is made. 2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work. 3. Indicate the use and occupancy for which the proposed work is intended. 4. Be accompanied by <i>construction documents</i> and other information as required in Section 107. 5. State the valuation <u>total aggregate square footage of any new structure, addition(s), alteration, and the square footage of new paving, and linear feet of new sidewalks and curbs located within the right-of-way associated with</u> of the proposed work. Exception: One- or two-family dwellings. 6. Be signed by the applicant, or the applicant's authorized agent. 7. Give such other data and information as required by the <i>building official</i>. 	Minor change to clarify one- and two-family dwellings are exempt, no other changes to Houston amendment.

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<p>[A] 105.3.2 Time limitation of application. <u>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 building official. The building official 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.</u> 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 shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the building official 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</p>	<p>No change</p>	<p>[A] 105.3.2 Time limitation of application. <u>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 building official. The building official 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.</u> An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the building official 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.</p>	<p>No change to Houston amendment.</p>
<p>[A] 105.4 Validity of permit. The issuance or granting of a <i>permit</i> or approval of plans and specifications shall not be construed to be a <i>permit</i> for, or an approval of, any violation of any of the provisions of this code or of any other <u>applicable laws, or ordinances</u> of the <i>jurisdiction</i>. <i>Permits</i> 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.</p> <p>The issuance of a <i>permit</i> based on <u>construction documents, specifications, and other data</u> shall not prevent the <i>building official</i> from <u>thereafter</u> requiring the correction of errors in the <i>construction documents, specifications, and other data, or from</i>. The building official is authorized to preventing construction, occupancy or use of a structure when where in violation of this code or of any other applicable law ordinances of this jurisdiction.</p> <p>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.</p> <p>A name change on an application or an 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, the building official shall process the request and issue an amended permit. A name change fee and an administrative fee shall be charged as</p>	<p>No change</p>	<p>[A] 105.4 Validity of permit. The issuance or granting of a <i>permit</i> or approval of plans and specifications shall not be construed to be a <i>permit</i> for, or an approval of, any violation of any of the provisions of this code or of any other <u>applicable laws, or ordinances</u> of the <i>jurisdiction</i>. <i>Permits</i> 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.</p> <p>The issuance of a <i>permit</i> based on <u>construction documents, specifications, and other data</u> shall not prevent the <i>building official</i> from <u>thereafter</u> requiring the correction of errors in the <i>construction documents, specifications, and other data, or from</i>. The building official is authorized to preventing construction, occupancy or use of a structure when where in violation of this code or of any other applicable law <u>ordinances of this jurisdiction.</u></p> <p>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.</p> <p>A name change on an application or an 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, the building official shall process the request and 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 <i>city fee schedule</i>.</p>	<p>No change to Houston amendment.</p>

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<p>provided in Section 118.1 of the <i>Building Code</i> and the city fee schedule.</p> <p>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.</p>		<p>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.</p>	
<p>[A] 105.5 Expiration. Every <i>permit</i> issued shall become invalid inactive on the 180th day after its issuance unless the work on the site authorized by such <i>permit</i> is has commenced and been inspected by a city inspector within 180 days after its issuance, or if the work authorized on the site by such <i>permit</i> is suspended or abandoned for a period of 180 days after the time date the work is was commenced. The <i>building official</i> is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.</p> <p>If work has not commenced under a <i>permit</i> within two years after the date of issuance or is suspended or abandoned at any time for a period of two years, the <i>permit</i> shall expire. In order to recommence work associated with an expired <i>permit</i>, the permit holder shall re-permit the project and pay the full permit fee applicable for any previously uninspected portions of the original scope of work. Where the original plans with <i>building official</i> approval are not available for completion of field inspections, a lost plan recheck shall be submitted for <i>building official</i> approval. Appropriate plan review fees shall apply.</p> <p>Exception: For the purpose of issuing a certificate of occupancy or a certificate of compliance, the <i>building official</i> may, upon request, reactivate a <i>permit</i> and perform a final inspection of work.</p>	<p>No change</p>	<p>[A] 105.5 Expiration. Every <i>permit</i> issued shall become invalid inactive on the 180th day after its issuance unless the work on the site authorized by such <i>permit</i> is has commenced and been inspected by a city inspector within 180 days after its issuance, or if the work authorized on the site by such <i>permit</i> is suspended or abandoned for a period of 180 days after the time date the work is was commenced. The <i>building official</i> is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.</p> <p>If work has not commenced under a <i>permit</i> within two years after the date of issuance or is suspended or abandoned at any time for a period of two years, the <i>permit</i> shall expire. In order to recommence work associated with an expired <i>permit</i>, the permit holder shall re-permit the project and pay the full permit fee applicable for any previously uninspected portions of the original scope of work. Where the original plans with <i>building official</i> approval are not available for completion of field inspections, a lost plan recheck shall be submitted for <i>building official</i> approval. Appropriate plan review fees shall apply.</p> <p>Exception: For the purpose of issuing a certificate of occupancy or a certificate of compliance, the <i>building official</i> may, upon request, reactivate a <i>permit</i> and perform a final inspection of work.</p>	<p>No change to Houston amendment.</p>
<p>[A] 105.6 Suspension or revocation. The <i>building official</i> is authorized to suspend or revoke a <i>permit</i> issued under the provisions of this code wherever the <i>permit</i> is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code. Prior to taking such action, the <i>building official</i> shall provide notice to the building owner or to a tenant therein of a right to a hearing on the matter pursuant to Section 117 of this code.</p>	<p>No change</p>	<p>[A] 105.6 Suspension or revocation. The <i>building official</i> is authorized to suspend or revoke a <i>permit</i> issued under the provisions of this code wherever the <i>permit</i> is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code. Prior to taking such action, the <i>building official</i> shall provide notice to the building owner or to a tenant therein of a right to a hearing on the matter pursuant to Section 117 of this code.</p>	<p>No change to Houston amendment.</p>

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	<p>SECTION 106 FLOOR AND ROOF DESIGN LOADS</p>		
	<p style="text-align: center;">SECTION 107 SUBMITTAL CONSTRUCTION DOCUMENTS</p> <p>[A] 107.1 General. Submittal documents consisting of <i>construction documents</i>, statement of <i>special inspections</i>, geotechnical report and other data shall be submitted in two or more sets; or in a digital format where allowed by the building official, with each permit application. The construction documents 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. Where special conditions exist, the <i>building official</i> is authorized to require additional <i>construction documents</i> to be prepared by a <i>registered design professional</i>.</p> <p>Exception: The <i>building official</i> is authorized to waive the submission of <i>construction documents</i> and other 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.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>[A] 107.2.4 Exterior wall envelope. <i>Construction documents</i> for all buildings shall describe the <i>exterior wall envelope</i> in sufficient detail to determine compliance with this code. The <i>construction documents</i> shall provide details of the <i>exterior wall envelope</i> as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane barrier and details around openings. The <i>construction documents</i> shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the <i>construction documents</i> maintain the weather resistance of the <i>exterior wall envelope</i>. The supporting documentation shall fully describe the <i>exterior wall</i> system that was tested, where applicable, as well as the test procedure used.</p>		
	<p>[A] 107.2.5 Exterior balconies and elevated walking surfaces. Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation have weather-exposed surfaces, and the structural framing is protected by an impervious moisture barrier, the <i>construction documents</i> shall include details for all elements of the impervious moisture barrier system. The <i>construction documents</i> shall include manufacturer's installation instructions.</p>		<p>Edits made to clarify code, no major change to code</p>

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<p>[A] 107.5 Retention of construction documents. One set of <i>approved construction documents</i> shall <u>may</u> be retained by the <i>building official</i> for a period of not less than 180 days from the date of completion of the permitted work, or as required by state or local laws.</p>	<p>No change</p>	<p>[A] 107.5 Retention of construction documents. One set of <i>approved construction documents</i> shall <u>may</u> be retained by the <i>building official</i> for a period of not less than 180 days from the date of completion of the permitted work, or as required by state or local laws.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION 108 TEMPORARY STRUCTURES AND USES</p>		<p style="text-align: center;">SECTION 108 TEMPORARY STRUCTURES AND USES</p>	
<p>[A] 108.3 Temporary power. The <i>building official</i> is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of compliance completion <u>compliance completion</u> has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat, or power in <u>the <i>Electrical Code</i> NEPA 70</u>. The temporary power authorization requires compliance with all code requirements applicable to the systems being energized and any additional safety requirements considered necessary by the <i>building official</i>.</p>	<p>No change</p>	<p>[A] 108.3 Temporary power. The <i>building official</i> is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of <u>compliance completion</u> has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat, or power in <u>the <i>Electrical Code</i> NEPA 70</u>. The temporary power authorization requires compliance with all code requirements applicable to the systems being energized and any additional safety requirements considered necessary by the <i>building official</i>.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION 109 FEES</p>		<p style="text-align: center;">SECTION 109 FEES</p>	
<p>[A] 109.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or <i>alterations</i> requiring a <i>permit</i>, a fee for each <i>permit</i> shall be paid as required, in accordance with <u>Section 118 and the city fee schedule as established by the applicable governing authority.</u></p>	<p>[A] 109.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or <i>alterations</i> requiring a <i>permit</i>, a fee for each <i>permit</i> shall be paid as required, in accordance with the schedule as established by the applicable governing authority.</p> <p>[A] 109.2 Schedule of permit fees. <u>Where a permit is required,</u> a fee for each <i>permit</i> shall be paid as required, in accordance with the schedule as established by the applicable governing authority.</p>	<p>[A] 109.2 Schedule of permit fees. Where a permit is required, a fee for each <i>permit</i> shall be paid as required, in accordance with <u>Section 118 and the city fee schedule as established by the applicable governing authority.</u></p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
<p>[A] 109.3 Building permit fee calculation. The applicant for a <i>permit</i> shall provide an estimated <i>permit</i> value at time of application. <i>Permit</i> valuations shall include total value of work, including materials and labor, for which the <i>permit</i> is being issued, such as electrical, gas, mechanical, plumbing equipment, and permanent systems. If, in the opinion of the <i>building official</i>, the <i>valuation</i> is underestimated on the application, the <i>permit</i> shall be denied, unless the applicant can show detailed estimates to meet the approval of the <i>building official</i>. Final building <i>permit valuation</i> shall be set by the <i>building official</i>. <u>The value to be used in computing the permit fee for new structures, additions, alterations, remodeling or repairs shall be the total value of all construction work for which the permit is issued based on the current building valuation data sheet published by the International Code Council.</u></p> <p>Exceptions:</p> <p>1. The structural building permit fee for new one- and two-family <i>dwellings</i> and <i>townhouses</i> and their detached</p>	<p>[A] 109.3 Building permit valuations. The applicant for a permit shall provide an estimated permit value at time of application. Permit valuations shall reflect 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 building official, the valuation is underestimated on the application, the permit shall be denied, unless the applicant can show detailed estimates to meet the approval of the building official.</p> <p>[A] 109.3 Building permit valuations. The applicant for a permit shall provide an estimated permit value at time of application. Permit valuations shall reflect 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 building official, the valuation is underestimated on the application, the permit shall be denied, unless the applicant can show detailed estimates to meet the approval of the building official. <u>Final building permit valuation shall be set by the building official.</u></p>	<p>[A] 109.3 Permit Valuations. The applicant for a <i>permit</i> shall provide an estimated <i>permit</i> value at time of application. <i>Permit</i> valuations shall reflect the total value of work, including materials and labor, for which the <i>permit</i> is being issued, such as electrical, gas, mechanical, plumbing equipment, and permanent systems. If, in the opinion of the <i>building official</i>, the <i>valuation</i> is underestimated on the application, the <i>permit</i> shall be denied, unless the applicant can show detailed estimates to meet the approval of the <i>building official</i>. Final building <i>permit valuation</i> shall be set by the <i>building official</i>. <u>The value to be used in computing the permit fee for new structures, additions, alterations, remodeling or repairs shall be the total value of all construction work for which the permit is issued based on the current building valuation data sheet published by the International Code Council on the date of adoption of this code.</u></p> <p>Exceptions:</p> <p>1. The structural building permit fee for new one- and two-family <i>dwellings</i> and <i>townhouses</i> and their detached <i>accessory structures</i> shall be calculated as specified in</p>	<p>Edits made to clarify code, no major change to code. Minor change to Houston amendment clarifying what building valuation data sheet to be used.</p>

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<p><u>accessory structures shall be calculated as specified in Section 118.2.1, Tables 118(1) and 118(2), and the city fee schedule, based on the total square footage of the building area as defined by this code.</u></p> <p><u>2. The permit fee for new additions to one- and two-family dwellings and townhouses shall be calculated as required for new residential buildings.</u></p> <p><u>The permit fee for repair, alterations, or remodeling of one- and two-family dwellings and townhouses shall be 20% of the calculated fee for new construction as specified in Section 118.2.1, Tables 118(1) and 118(2), and the city fee schedule based, on the total aggregate square footage of the building area being repaired or altered or the total aggregate square footage of the walls and ceilings being repaired or altered.</u></p>		<p><u>Section 118.2.1, Tables 118(1) and 118(2), and the city fee schedule based on the total square footage of the building area as defined by this code.</u></p> <p><u>2. The permit fee for new additions to one- and two-family dwellings and townhouses shall be calculated as required for new residential buildings.</u></p> <p><u>3. The permit fee for repair, alterations, or remodeling of one- and two-family dwellings and townhouses shall be 20% of the calculated fee for new construction as specified in Section 118.2.1, Tables 118(1) and 118(2), and the city fee schedule based on the total aggregate square footage of the building area being repaired or altered or the total aggregate square footage of the walls and ceilings being repaired or altered.</u></p>	
<p>[A] 109.4 Work commencing before permit issuance. Any person who commences any work on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to an investigation fee established by the building official that shall be in addition to the required permit fees. The investigation fee shall be equal to the amount of the permit fee required by this code.</p>	<p>[A] 109.4 Work commencing before permit issuance. Any person who commences any work on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to a fee established by the building official that shall be in addition to the required permit fees.</p>	<p>[A] 109.4 Work commencing before permit issuance. Any person who commences any work before obtaining the necessary permits shall be subject to an investigation fee established by the building official that shall be in addition to the required permit fees. The investigation fee shall be equal to the amount of the permit fee required by this code.</p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
<p>[A] 109.6 Refunds. The building official is authorized to establish a refund policy may authorize the refund of any fee paid hereunder that was erroneously paid or collected due to an error by one or more city employees. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.</p> <p><u>The building official may authorize a refund of not more than 90 percent of the amount in excess of the minimum permit fee paid when no work has been done under a permit issued in accordance with this code. If work has been done under the permit, no refund shall be authorized. The originally paid administrative fee and the plan review portion of the permit fee shall be nonrefundable.</u></p> <p><u>The building official shall not authorize a refund of any fee paid except on written application filed not later than 180 calendar days after the date of fee payment by the original permit holder or an authorized successor in the event of the death or incapacity of the original permit holder.</u></p>	<p>No change</p>	<p>[A] 109.6 Refunds. The building official is authorized to establish a refund policy may authorize the refund of any fee paid hereunder that was erroneously paid or collected due to an error by one or more city employees. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.</p> <p><u>The building official may authorize a refund of not more than 90 percent of the amount in excess of the minimum permit fee paid when no work has been done under a permit issued in accordance with this code. If work has been done under the permit, no refund shall be authorized. The originally paid administrative fee and the plan review portion of the permit fee are nonrefundable.</u></p> <p><u>The building official shall not authorize a refund of any fee paid except on written application filed not later than 180 calendar days after the date of fee payment by the original permit holder or an authorized successor in the event of the death or incapacity of the original permit holder.</u></p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 110 INSPECTIONS</p> <p>[A] 110.1 General. Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain accessible and exposed visible and able to be accessed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections</p>		<p>Edits made to clarify code, no major change to code</p>

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	presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the owner or the owner's authorized agent to cause the work to remain accessible and exposed visible and able to be accessed for inspection purposes. Neither the building official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.		
	[A] 110.3 Required inspections. The building official, upon notification, shall make the inspections set forth in Sections 110.3.1 through 110.3.10 110.3.11 .		
[A] 110.3.3 Reserved. Lowest floor elevation. In flood hazard areas, upon placement of the lowest floor, including the basement, and prior to further vertical construction, the elevation certification required in Section 1612.5 shall be submitted to the <i>building official</i> .	[A] 110.3.3 Lowest floor elevation. In flood hazard areas, upon placement of the lowest floor, including the basement, and prior to further vertical construction, the elevation certification required in Section 1612.4 or the International Residential Code, as applicable , shall be submitted to the building official.	[A] 110.3.3 Reserved. Lowest floor elevation. In flood hazard areas, upon placement of the lowest floor, including the basement , and prior to further vertical construction, the elevation certification required in Section 1612.5, or the International Residential Code, as applicable, shall be submitted to the <i>building official</i> .	Edits made to clarify code, no major change to code. No change to Houston amendment.
[A] 110.3.5 Lath, gypsum board and gypsum panel product inspection. Lath, gypsum board and gypsum panel product inspections that are not otherwise exempted from permits including, but not limited to, fire-resistance-rated or shear wall assemblies shall be made after lathing, gypsum board and gypsum panel products, interior and exterior, are in place, but before any plastering is applied or gypsum board and gypsum panel product joints and fasteners are taped and finished. Exception: Gypsum board and gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly. Moved to 110.3.6	[A] 110.3.5 Types IV-A, IV-B and IV-C connection protection inspection. In buildings of Types IV-A, IV-B and IV-C construction, where connection <i>fire-resistance ratings</i> are provided by wood cover calculated to meet the requirements of Section 2304.10.1, inspection of the wood cover shall be made after the cover is installed, but before any other coverings or finishes are installed. Exception: Gypsum board and gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly.		Requires inspection of wood covering before other covers or finishes are installed.
	[A] 110.3.5 110.3.6 Lath, gypsum board and gypsum panel product inspection. Lath, gypsum board and gypsum panel product inspections shall be made after lathing, gypsum board and gypsum panel products, interior and exterior, are in place, but before any plastering is applied or gypsum board and gypsum panel product joints and fasteners are taped and finished. Exception: Gypsum board and gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly.	[A] 110.3.6 Lath, gypsum board and gypsum panel product inspection. Lath, <i>gypsum board and gypsum panel product</i> inspections that are not otherwise exempted from permits including, but not limited to, fire-resistance-rated or shear wall assemblies shall be made after lathing, gypsum board and gypsum panel products, interior and exterior, are in place, but before any plastering is applied or gypsum board and <i>gypsum panel product</i> joints and fasteners are taped and finished. Exception: Gypsum board and gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly.	Requires inspection of gypsum products before plastering is applied. No change to Houston amendment removing exception.
[A] 110.3.7 Energy efficiency inspections. Inspections shall be made to determine compliance with the <i>Energy Conservation Code Chapter 13</i> and shall include, but not be limited to, inspections for: envelope insulation R- and U-values,	[A] 110.3.7 Weather-exposed balcony and walking surface waterproofing. Where balconies or other elevated walking surfaces have weather-exposed surfaces , and the structural framing is protected by an impervious moisture barrier, all		Requires additional information for balconies or elevated walking surfaces to provide inspection of moisture barriers before concealing.

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<p>fenestration U-value, duct system R-value, and HVAC and water-heating equipment efficiency.</p> <p>Moved to 110.3.9</p>	<p>elements of the impervious moisture barrier system shall not be concealed until inspected and approved.</p> <p>Exception: Where special inspections are provided in accordance with Section 1705.1.1, Item 3.</p>		
<p>[A] 110.3.8 Other inspections. In addition to the inspections specified in Section 110.3.1 through 110.3.7, the <i>building official</i> is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety <i>Building Code Enforcement</i>.</p> <p>Moved to 110.3.10</p>	<p>[A] 110.3.6 110.3.7 110.3.8 Fire- and smoke-resistant penetrations. Protection of joints and penetrations in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and approved.</p>		
	<p>[A] 110.3.8 110.3.9 Energy efficiency inspections. Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope insulation R- and U-values, fenestration U-value, duct system R-value, and HVAC and water-heating equipment efficiency.</p>	<p>[A] 110.3.9 Energy efficiency inspections. Inspections shall be made to determine compliance with the <i>Energy Conservation Code Chapter 13</i> and shall include, but not be limited to, inspections for: envelope insulation R- and U-values, fenestration U-value, duct system R-value, and HVAC and water-heating equipment efficiency.</p>	<p>Requires additional inspections for energy efficiency, new requirements.</p> <p>No change to Houston amendment.</p>
	<p>[A] 110.3.9 110.3.10 Other inspections. In addition to the inspections specified in Sections 110.3.1 through 110.3.9, the <i>building official</i> is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety.</p>	<p>[[A] 110.3.10 Other inspections. In addition to the inspections specified in Section 110.3.1 through 110.3.9, the <i>building official</i> is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety <i>Building Code Enforcement</i>.</p>	<p>Edits made to clarify code for energy efficiency inspections.</p> <p>No change to Houston amendment.</p>
<p>110.3.11 Reinspection. A reinspection fee may be assessed for each inspection or reinspection when an inspector arrives to perform the work and finds the portion of work for which inspection is called is not complete or when corrections called for in a previous inspection report have not been made.</p> <p>This section is not to be interpreted as requiring inspection fees the first time a job is rejected for failure to comply with the requirements of this code, but as controlling the practice of calling for inspections before the job is ready for such inspection or reinspection.</p> <p>The building official may assess reinspection fees when the inspection record card is not posted or otherwise available on the work site, when the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or for deviating from plans approved by the <i>building official</i>.</p> <p>To obtain a reinspection, the applicant shall make a request and pay the reinspection fee in accordance with Section 118 and the city fee schedule.</p>	<p>[A] 110.3.10 110.3.11 Special inspections. For special inspections, see Chapter 17.</p>		<p>Edits made to clarify code, no major change to code</p>

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<p><u>In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.</u> Moved to 110.3.13</p>			
	<p>[A] 110.3.11 110.3.12 Final inspection. The final inspection shall be made after all work required by the building permit is completed.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>[A] 110.3.3.11.1 110.3.12.1 Flood hazard documentation. If located in a flood hazard area, documentation of the elevation of the lowest floor as required in Section 1612.4 shall be submitted to the building official prior to the final inspection.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>N/A</p>	<p>110.3.13 Reinspection. A reinspection fee may be assessed for each inspection or reinspection when an inspector arrives to perform the work and finds the portion of work for which inspection is called is not complete or when corrections called for in a previous inspection report have not been made.</p> <p><u>This section is not to be interpreted as requiring inspection fees the first time a job is rejected for failure to comply with the requirements of this code, but as controlling the practice of calling for inspections before the job is ready for such inspection or reinspection.</u></p> <p><u>The building official may assess reinspection fees when the inspection record card is not posted or otherwise available on the work site, when the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or for deviating from plans approved by the <i>building official</i>.</u></p> <p><u>To obtain a reinspection, the applicant shall make a request and pay the reinspection fee in accordance with Section 118 and the <i>city fee schedule</i>.</u></p> <p><u>In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.</u></p>	<p>No change to Houston amendment.</p>
	<p>[A] 110.4 Inspection agencies. The building official is authorized to accept reports of approved inspection agencies, provided that such agencies satisfy the requirements as to qualifications and reliability.</p>		<p>Edits made to clarify code, no major change to code</p>
<p>[A] 111.1 Use and occupancy. A building or structure or portion thereof, such as an individual business lease space, shall not be used or occupied, and a change in the existing use or occupancy classification of a building or structure or portion thereof shall not be made, until the <i>building official</i> has issued a <u>separate</u> certificate of occupancy for each lease space therefor as provided herein. For</p>	<p>[A] 111.1 Use and Change of occupancy. A building or structure shall not be used or occupied in whole or in part, and a change in the existing use or occupancy classification of occupancy classification of a building or structure or portion thereof shall not be made, until the <i>building official</i> has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy</p>	<p>[A] 111.1 Use and Change of occupancy. A building or structure or portion thereof, such as an individual business lease space, shall not be used or occupied in whole or in part, and a change of occupancy of a building or structure or portion thereof shall not be made, until the <i>building official</i> has issued a <u>separate</u> certificate of occupancy for each lease space therefor as provided herein. For</p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>

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<p>purposes of this section, a lease space means a leasehold or tenancy held or occupied by an individual or entity for its sole use and may include one or more rooms. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the <i>jurisdiction</i>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Certificates of occupancy are not required for work exempt from <i>permits</i> under Section 105.2. 2. A certificate of occupancy is not required for Group U occupancies accessory to single-family dwellings and not containing hazardous materials exceeding the maximum allowable quantity limits (MAQ's) identified in Section 307. 	<p>shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the <i>jurisdiction</i>. Certificates 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.</p> <p>Exception: Certificates of occupancy are not required for work exempt from <i>permits</i> in accordance with Section 105.2.</p>	<p>purposes of this section, a lease space means a leasehold or tenancy held or occupied by an individual or entity for its sole use and may include one or more rooms. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the <i>jurisdiction</i>. Certificates 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Certificates of occupancy are not required for work exempt from <i>permits</i> under Section 105.2. 2. A certificate of occupancy is not required for Group U occupancies accessory to single-family dwellings and not containing hazardous materials exceeding the maximum allowable quantity limits (MAQ's) identified in Section 307. 	
<p>[A] 111.2 Certificate issued. After the <i>building official</i> inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the department of building safety <i>Building Code Enforcement</i>, the <i>building official</i> shall issue a certificate of occupancy that contains the following:</p> <ol style="list-style-type: none"> 1. The building <i>permit</i> number <u>or project number</u>. 2. The address of the structure. 3. The name and address of the owner, <u>and where applicable, the tenant, and</u> or the owner's authorized agent. 4. A description of that portion of the structure for which the certificate is issued. 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified. 6. The name of the <i>building official</i>. 7. The edition of the code under which the <i>permit</i> was issued. 8. The use and occupancy, in accordance with the provisions of Chapter 3 of the building or portion thereof. 9. The type of construction as defined in Chapter 6. 10. The design <i>occupant load</i>. 11. <u>If a fire alarm system is provided, whether the fire alarm system is required.</u> 12. If an <i>automatic sprinkler system</i> is provided, <u>the type of system provided, and whether the sprinkler system is required.</u> 13. Any special stipulations and conditions of the building <i>permit</i>. 	<p>[A] 111.2 Certificate issued. After the <i>building official</i> inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the department of building safety, the <i>building official</i> shall issue a certificate of occupancy that contains the following:</p> <ol style="list-style-type: none"> 1. The building <i>permit</i> number. 2. The address of the structure. 3. The name and address of the <i>owner</i> or the owner's authorized agent. 4. A description of that portion of the structure for which the certificate is issued. 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code. For the occupancy and division of occupancy and the use for which the proposed occupancy is classified 6. The name of the <i>building official</i>. 7. The edition of the code under which the <i>permit</i> was issued. 8. The use and occupancy, in accordance with the provisions of Chapter 3. 9. The type of construction as defined in Chapter 6. 10. The design <i>occupant load</i>. 11. <u>If Where an <i>automatic sprinkler system</i> is provided, whether the sprinkler system is required.</u> 12. Any special stipulations and conditions of the <i>building permit</i>. 	<p>[A] 111.2 Certificate issued. After the <i>building official</i> inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the department of building safety <i>Building Code Enforcement</i>, the <i>building official</i> shall issue a certificate of occupancy that contains the following:</p> <ol style="list-style-type: none"> 1. The <i>permit</i> number <u>or project number</u>. 2. The address of the structure. 3. The name and address of the <i>owner</i>, <u>and where applicable, the tenant, and</u> or the owner's authorized agent. 4. A description of that portion of the structure for which the certificate is issued. 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code. 6. The name of the <i>building official</i>. 7. The edition of the code under which the <i>permit</i> was issued. 8. The use and occupancy, in accordance with the provisions of Chapter 3. 9. The type of construction as defined in Chapter 6. 10. The design <i>occupant load</i>. 11. <u>If a fire alarm system is provided, and whether the fire alarm system is required.</u> 12. <u>Where an <i>automatic sprinkler system</i> is provided, the type of system provided, and whether the sprinkler system is required.</u> 13. Any special stipulations and conditions of the building <i>permit</i>. 	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>

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<p>[A] 111.4 Revocation. The <i>building official</i> is authorized to, in writing, suspend or revoke a certificate of occupancy or <u>compliance completion</u> issued under the provisions of this code <u>after notice of a right to a hearing on the matter pursuant to Section 117</u> wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.</p>	<p>[A] 111.4 Revocation. The <i>building official</i> is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code, in writing, wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code or other ordinance of the jurisdiction.</p>	<p>[A] 111.4 Revocation. The <i>building official</i> is authorized to suspend or revoke a certificate of occupancy or compliance completion issued under the provisions of this code, in writing, after notice of a right to a hearing on the matter pursuant to Section 117 wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of this code or other ordinance of the <i>jurisdiction</i>.</p>	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>
<p>111.5 Posting. The <i>certificate of occupancy</i> shall be posted in a conspicuous place on the premises and shall not be removed except by the <i>building official</i>. The owner shall maintain the correct information on the <i>certificate of occupancy</i>. The <i>code official</i> and <i>fire code official</i> shall require errors on a <i>certificate of occupancy</i> or <i>certificate of compliance</i> to be corrected.</p>	<p>N/A</p>	<p>111.5 Posting. The <i>certificate of occupancy</i> shall be posted in a conspicuous place on the premises and shall not be removed except by the <i>building official</i>. The owner shall maintain the correct information on the <i>certificate of occupancy</i>. The <i>code official</i> and <i>fire code official</i> shall require errors on a <i>certificate of occupancy</i> or <i>certificate of compliance</i> to be corrected.</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 112 SERVICE UTILITIES</p> <p>[A] 112.1 Connection of service utilities. A person shall not make connections from a utility, a source of energy, fuel, or power, or a water system or sewer system to any building or system that is regulated by this code for which a <i>permit</i> is required, until released approved by the <i>building official</i>.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>[A] 112.2 Temporary connection. The <i>building official</i> shall have the authority to authorize the temporary connection of the building or system to the utility, the source of energy, fuel, or power, or the water system or sewer system for the purpose of testing systems or for use under a temporary approval.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>[A] 112.3 Authority to disconnect service utilities. The <i>building official</i> shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section 101.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 112.1 or 112.2. The <i>building official</i> shall notify the <i>serving utility</i>, and wherever possible the <i>owner</i> or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the <i>owner</i> or the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.</p>		<p>Edits made to clarify code, no major change to code</p>
<p>[A] 113.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the <i>building 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 applicable governing authority and shall hold office at its pleasure. The board shall adopt rules of procedure for</p>	<p style="text-align: center;">SECTION 113 BOARD MEANS OF APPEALS</p> <p>[A] 113.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the <i>building official</i> relative to the application and interpretation of this code, there shall be and is</p>	<p style="text-align: center;">SECTION 113 MEANS OF APPEALS</p> <p>[A] 113.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the <i>building official</i> relative to the application and interpretation of this code, there shall be and is</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>

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<p>conducting its business. Organization. There is hereby created a General Appeals Board consisting of 10 members. Five members at a meeting shall constitute a quorum.</p>	<p>hereby created a board of appeals. The board of appeals shall be appointed by the applicable governing authority and shall hold office at its pleasure. 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 building official.</p>	<p>hereby created a board of appeals. The board of appeals shall be appointed by the applicable governing authority and shall hold office at its pleasure. 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 building official. Organization. There is hereby created a General Appeals Board consisting of 10 members. Five members at a meeting shall constitute a quorum.</p>	
<p>113.1.1 Membership. The positions shall be filled as follows:</p> <p>Position 1 – By an architect registered as such under the laws of the State of Texas who shall be actively engaged in the practice of architecture of heavy construction works.</p> <p>Position 2 – By an architect registered as such under the laws of the State of Texas who shall be actively engaged in the practice of architecture of residential works.</p> <p>Position 3 – By a professional engineer registered as such under the laws of the State of Texas who shall be actively engaged in practice as a structural engineer.</p> <p>Position 4 – By a professional engineer registered as such under the laws of the State of Texas who shall be actively engaged in practice as a mechanical engineer.</p> <p>Position 5 – By a person who shall be actively engaged in the business of residential construction.</p> <p>Position 6 – By a person who shall be actively engaged in the business of general contracting of heavy construction work.</p> <p>Position 7 – By a well-respected citizen of the <i>jurisdiction</i> who shall be chairman of the board.</p> <p>Position 8 – By the <i>building official</i>, who shall also serve as secretary of the board.</p> <p>Position 9 – By the fire marshal.</p> <p>Position 10 – By a professional engineer registered as such under the laws of the State of Texas who is actively engaged in practice as an electrical engineer.</p> <p>The jurisdiction's Legal Department shall have an attorney present for each board meeting. The attorney shall advise the board on legal matters relative to topics under the board's authority.</p>	<p>N/A</p>	<p>113.1.1 Membership. The positions shall be filled as follows:</p> <p>Position 1 – By an architect registered as such under the laws of the State of Texas who shall be actively engaged in the practice of architecture of heavy construction works.</p> <p>Position 2 – By an architect registered as such under the laws of the State of Texas who shall be actively engaged in the practice of architecture of residential works.</p> <p>Position 3 – By a professional engineer registered as such under the laws of the State of Texas who shall be actively engaged in practice as a structural engineer.</p> <p>Position 4 – By a professional engineer registered as such under the laws of the State of Texas who shall be actively engaged in practice as a mechanical engineer.</p> <p>Position 5 – By a person who shall be actively engaged in the business of residential construction.</p> <p>Position 6 – By a person who shall be actively engaged in the business of general contracting of heavy construction work.</p> <p>Position 7 – By a well-respected citizen of the <i>jurisdiction</i> who shall be chairman of the board.</p> <p>Position 8 – By the <i>building official</i>, who shall also serve as secretary of the board.</p> <p>Position 9 – By the fire marshal.</p> <p>Position 10 – By a professional engineer registered as such under the laws of the State of Texas who is actively engaged in practice as an electrical engineer.</p> <p>The <i>jurisdiction's</i> Legal Department shall have an attorney present for each board meeting. The attorney shall advise the board on legal matters relative to topics under the board's authority.</p>	<p>No change to Houston amendment.</p>

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<p>113.1.2 Authorized representatives. <u>The building official and the fire marshal, from time to time, may designate in writing a person under the said official's supervision to act as a duly authorized representative of the said official. Said representative shall enjoy all rights and privileges of the position. A copy of such a designation, specifying the dates any such person shall act as representative of the building official or of the fire marshal, shall be filed with the minutes of the board.</u></p>	<p>N/A</p>	<p>113.1.2 Authorized representatives. <u>The building official and the fire marshal, from time to time, may designate in writing a person under the said official's supervision to act as an authorized representative of the said official. Said representative shall enjoy all rights and privileges of the position. A copy of such a designation, specifying the dates any such person shall act as representative of the building official or of the fire marshal, shall be filed with the minutes of the board.</u></p>	<p>No change to Houston amendment.</p>
<p>113.1.3 Term of appointment. <u>Other than the members in Positions 8 and 9, who shall serve ex officio, members of the board shall be appointed by the Mayor, with the approval of the City Council, and shall serve for a term of two years. Terms of office for the appointees to Positions 1, 3, 5 and 7 shall expire on the second day of January of each odd numbered year, and terms of office for the appointees to Positions 2, 4, 6 and 10 shall expire on the second day of January of each even-numbered year; however, each member shall continue in office until the member's respective successor is appointed and qualified. The adoption of this code shall not terminate the term of office of any person currently serving on the board, and any person who is currently serving on the board shall continue to serve in the position for which the person was appointed and confirmed until a successor is appointed and qualified.</u></p>	<p>N/A</p>	<p>113.1.3 Term of appointment. <u>Other than the members in Positions 8 and 9, who shall serve ex officio, members of the board shall be appointed by the mayor, with the approval of the city council, and shall serve for a term of two years. Terms of office for the appointees to Positions 1, 3, 5 and 7 shall expire on the second day of January of each odd-numbered year, and terms of office for the appointees to Positions 2, 4, 6 and 10 shall expire on the second day of January of each even-numbered year; however, each member shall continue in office until the member's respective successor is appointed and qualified. The adoption of this code shall not terminate the term of office of any person currently serving on the board, and any person who is currently serving on the board shall continue to serve in the position for which the person was appointed and confirmed until a successor is appointed and qualified.</u></p>	<p>No change to Houston amendment.</p>
<p>113.1.4 Vacancies. <u>Whenever any appointive position on the board becomes vacant by reason of death, resignation, or removal, said 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 remainder of the term of such vacancy.</u></p>	<p>N/A</p>	<p>113.1.4 Vacancies. <u>Whenever any appointive position on the board becomes vacant by reason of death, resignation, or removal, said 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 remainder of the term of such vacancy.</u></p>	<p>No change to Houston amendment.</p>
<p>113.1.5 Removal. <u>Any member of the board may be removed at any time by the mayor without consent of the City Council.</u></p>	<p>N/A</p>	<p>113.1.5 Removal. <u>Any member of the board may be removed at any time by the mayor without consent of the city council.</u></p>	<p>No change to Houston amendment.</p>
<p>113.1.6 Compensation. <u>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 member of the board shall be paid only for those meetings that the employee attends at which a quorum is present that are held outside of or continue beyond the employee's working hours.</u></p>	<p>N/A</p>	<p>113.1.6 Compensation. <u>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 member of the board shall be paid only for those meetings that the employee attends at which a quorum is present that are held outside of or continue beyond the employee's working hours.</u></p>	<p>No change to Houston amendment.</p>
<p>113.1.7 Conflict of interest. <u>In each instance where this code provides for a jurisdiction employee to serve as a voting member of any board created by the provisions of this code, such jurisdiction employee member shall not vote as a member of such board on any motion, resolution, decision, interpretation</u></p>	<p>N/A</p>	<p>113.1.7 Conflict of interest. <u>In each instance where this code provides for a jurisdiction employee to serve as a voting member of any board created by the provisions of this code, such jurisdiction employee member shall not vote as a member of such board on any motion, resolution, decision, interpretation or recommendation by the board concerning a decision or</u></p>	<p>No change to Houston amendment.</p>

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<p><u>or recommendation by the board concerning a decision or interpretation or an appeal from a decision or interpretation of any provision of this code or related ordinances made by the jurisdiction employee member.</u></p>		<p><u>interpretation or an appeal from a decision or interpretation of any provision of this code or related ordinances made by the jurisdiction employee member.</u></p>	
<p>[A] 113.2 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 equally good or better form of construction is proposed. The board shall have no authority to waive requirements of this code. Duties of the board. The duties of the board are to interpret the provisions of this code in appeals from decisions of the building official; to settle possible jurisdiction disputes among the Plumbing Code Review Board, the Electrical Board, and Mechanical Code Review Board; and to hear appeals from the building official as to the suitability of alternate materials or alternate methods of construction other than those relating to air-conditioning, plumbing, and electrical. The board also may make recommendations to the mayor for amendments to this code. The board shall have no authority to waive requirements of this code.</p>	<p>[A] 113.2 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 construction is proposed. The board shall not have authority to waive requirements of this code or interpret the administration of this code.</p>	<p>[A] 113.2 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 equally good or better form of construction is proposed. The board shall have no authority to waive requirements of this code. Duties of the board. The duties of the board are to interpret the provisions of this code in appeals from decisions of the building official; to settle possible jurisdiction disputes among the Plumbing Code Review Board, the Electrical Board, and the Mechanical Code Review Board; and to hear appeals from the building official as to the suitability of alternate materials or alternate methods of construction other than those relating to air-conditioning, plumbing, and electrical. The board also may make recommendations to the mayor for amendments to this code. The board shall have no authority to waive requirements of this code.</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>
<p>[A] 113.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the jurisdiction. Procedures. The board shall adopt reasonable rules and regulations for conduct of its duties. Petitions for hearings before the board shall be made in writing and filed with the building official and shall be heard by the board within 30 days after the date filed. A majority of the members of the board present shall determine matters presented to the board. All decisions and findings shall be reduced to writing by the secretary, with copies to the petitioner and all other parties to the hearing. Any interested person aggrieved by a decision of the board may appeal to the city council, provided that written notice to the city council for such appeal is delivered to the city secretary within 10 days after the date that the written decision of the board is mailed to the appellant by the board secretary.</p> <p>All appeals to the city council are subject to the rules of the city council, which are codified in Section 2-2 of the <i>City Code</i>, copies of which are available from the city secretary. Parties wishing to preserve their right of appeal must comply with the rules of the city council, including Rule 12.</p>	<p>No change</p>	<p>[A] 113.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the jurisdiction. Procedures. The board shall adopt reasonable rules and regulations for conduct of its duties. Petitions for hearings before the board shall be made in writing and filed with the building official and shall be heard by the board within 30 days after the date filed. A majority of the members of the board present shall determine matters presented to the board. All decisions and findings shall be reduced to writing by the secretary, with copies to the petitioner and all other parties to the hearing. Any interested person aggrieved by a decision of the board may appeal to the city council, provided that written notice to the city council for such appeal is delivered to the city secretary within 10 days after the date that the written decision of the board is mailed to the appellant by the board secretary.</p> <p>All appeals to the city council are subject to the rules of the city council, which are codified in Section 2-2 of the <i>City Code</i>, copies of which are available from the city secretary. Parties wishing to preserve their right of appeal must comply with the rules of the city council, including Rule 12.</p>	<p>No change to Houston amendment.</p>
<p>113.4 Posting of agenda. The secretary of the board shall prepare and post an agenda for each meeting in the manner provided by Chapter 551 of the <i>Texas Government Code</i>.</p>	<p>[A] 113.4 Administration. The building official shall take immediate action in accordance with the decision of the board.</p>	<p>[A] 113.4 Administration. The building official shall take immediate action in accordance with the decision of the board. Posting of agenda. The secretary of the board shall prepare and post an agenda for each meeting in the manner provided by Chapter 551 of the Texas Government Code.</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>

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<p>[A] 114.1 Unlawful acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, <i>repair</i>, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.</p> <p>Where no specific penalty is otherwise provided in this code, the violation of any provision of this code shall constitute a misdemeanor punishable upon conviction by a fine or not less than \$500.00 nor more than \$2,000.00. Each day that any violation continues shall constitute and be punishable as a separate offense. Where any such conduct constitutes a violation of state penal law, the offense shall be punishable as provided in the applicable state law. In prosecutions under this code, the various provisions hereof that are designated as an "exception" or "exceptions" shall not be treated as exceptions within the meaning of Section 2.02 of the <i>Texas Penal Code</i>, and, instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the <i>Texas Penal Code</i>.</p>	<p>SECTION 114 VIOLATIONS</p> <p>No change</p>	<p>SECTION 114 VIOLATIONS</p> <p>[A] 114.1 Unlawful acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, <i>repair</i>, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.</p> <p>Where no specific penalty is otherwise provided in this code, the violation of any provision of this code shall constitute a misdemeanor punishable upon conviction by a fine of not less than \$500.00 nor more than \$2,000.00. Each day that any violation continues shall constitute and be punishable as a separate offense. Where any such conduct constitutes a violation of state penal law, the offense shall be punishable as provided in the applicable state law. In prosecutions under this code, the various provisions hereof that are designated as an "exception" or "exceptions" shall not be treated as exceptions within the meaning of Section 2.02 of the <i>Texas Penal Code</i>, and, instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the <i>Texas Penal Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] 114.4 Violation penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the <i>approved construction documents</i> or directive of the <i>building official</i>, or of a <i>permit</i> or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law in Section 114.1.</p>	<p>No change</p>	<p>[A] 114.4 Violation penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the <i>approved construction documents</i> or directive of the <i>building official</i>, or of a <i>permit</i> or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law in Section 114.1.</p>	<p>No change to Houston amendment.</p>
	<p>SECTION 115 STOP WORK ORDER</p> <p>[A] 115.1 Authority. Where the <i>building official</i> finds any work regulated by this code being performed in a manner either contrary to the provisions of this code or in a dangerous or unsafe manner, the <i>building official</i> is authorized to issue a stop work order.</p>	<p>SECTION 115 STOP WORK ORDER</p>	<p>Edits made to clarify code, no major change to code</p>
<p>[A] 115.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property involved, the owner's authorized agent, or the person 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 will be permitted to resume.</p> <p>The building official shall, with the issuance of a stop work order, deliver notice of the right to a hearing on the matter to the person performing the work and the permit holder, if present at the site, or the notice shall be otherwise conspicuously posted at the site. Upon request from the property owner, the owner's authorized agent, or the person doing the work, a hearing shall be held within three</p>	<p>[A] 115.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property involved, the owner's authorized agent or the person 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 will be permitted is authorized to resume.</p>	<p>[A] 115.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property involved, the owner's authorized agent or the person 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 will be permitted to resume.</p> <p>The building official shall, with the issuance of a stop work order, deliver notice of the right to a hearing on the matter to the person performing the work and the permit holder, if present at the site, or the notice shall be otherwise conspicuously posted at the site. Upon request from the property owner, the owner's authorized agent, or the person doing the work, a hearing shall be held within three business days of receiving the stop work order, unless the permit holder, or person who was doing the work requests an</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>

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<p><u>business days of receiving the stop work order, unless the permit holder, or person who was doing the work requests an extension of time. Any stop work order that has been issued shall remain in effect pending any hearing that has been requested unless the <i>building official</i> withdraws the stop work order.</u></p>		<p><u>extension of time. Any stop work order that has been issued shall remain in effect pending any hearing that has been requested unless the <i>building official</i> withdraws the stop work order.</u></p>	
	<p>[A] 115.3 Emergencies. Where an emergency exists, the <i>building official</i> shall not be required to give a written notice prior to stopping the work.</p>		<p>Providing more power to building official for stop work notice.</p>
	<p>[A] 115.4 Unlawful continuance 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 subject to penalties as prescribed by law. fines established by the authority having jurisdiction.</p>		<p>Edits made to clarify code, no major change to code</p>
<p>[A] 116.1 Conditions. Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that 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 <i>building official</i> deems necessary and as provided for in this section. A vacant structure that is not secured against entry shall be deemed unsafe. Unsafe buildings or structures. All buildings or structures regulated by this code that are structurally inadequate or unsafe, or not provided with adequate egress, or that constitute a fire hazard, or are otherwise dangerous to human life are, for the purpose of this section, unsafe buildings or structures. Any use of buildings or structures constituting a hazard to safety, health, or public welfare by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster, damage, or abandonment is, for the purpose of this section, an unsafe use. Parapet walls, cornices, spires, towers, tanks, statuary and other appendages or structural members that are supported by, attached to, or a part of a building and that are in deteriorated condition or otherwise unable to sustain the design loads that are specified in this code are hereby designated as unsafe building appendages.</p> <p>All such unsafe buildings, structures or appendages shall be abated, repaired, rehabilitated, demolished, or removed in accordance with the procedures set forth in the <i>Property Maintenance Code</i> and Chapter 10, Articles VIII, and X of the <i>City Code</i>.</p> <p>In matters of fire safety design and construction, including, but not limited to, egress (corridors, exit numbers, stairs, fire escapes and fire escape signs), wall and ceiling finish, enclosure of vertical shafts, basement access, standpipes and occupancy separation, a</p>	<p style="text-align: center;">SECTION 116</p> <p style="text-align: center;">UNSAFE STRUCTURES AND EQUIPMENT</p> <p>[A] 116.1 Unsafe Conditions. Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that 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 building official deems necessary and as provided for in this section. A vacant structure that is not secured against unauthorized entry shall be deemed unsafe.</p>	<p style="text-align: center;">SECTION 116</p> <p style="text-align: center;">UNSAFE STRUCTURES AND EQUIPMENT</p> <p>[A] 116.1 Unsafe conditions. Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that 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 building official deems necessary and as provided for in this section. A vacant structure that is not secured against unauthorized entry shall be deemed unsafe. Unsafe buildings or structures. All buildings or structures regulated by this code that are structurally inadequate or unsafe, or do not have adequate egress, that constitute a fire hazard, or are otherwise dangerous to human life are, for the purposes of this section, unsafe buildings or structures. Any use of buildings or structures constituting a hazard to safety, health, or public welfare by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster, damage, or abandonment is, for the purposes of this section, an unsafe use. Parapet walls, cornices, spires, towers, tanks, statuary and other appendages or structural members that are supported by, attached to, or a part of a building and that are in deteriorated condition or otherwise unable to sustain the design loads that are specified in this code are hereby designated as unsafe building appendages.</p> <p>All such unsafe buildings, structures or appendages shall be abated, repaired, rehabilitated, demolished, or removed in accordance with the procedures set forth in the <i>Property Maintenance Code</i> and Chapter 10, Articles VIII and X of the <i>City Code</i>.</p> <p>In matters of fire safety design and construction, including, but not limited to, egress (corridors, exit numbers, stairs, fire escapes</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>

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<p>building shall not be deemed to be a fire hazard if it is in compliance with the most restrictive of:</p> <ol style="list-style-type: none"> 1. The provisions of the Life Safety Appendix D of the <i>Existing Building Code</i>, if applicable; 2. The building code that was applicable when the building was constructed; or 3. If the occupancy classification of the building or a portion thereof has changed since it was constructed, then the building code that was in effect when the occupancy classification was changed. <p>Any building not situated within the <i>jurisdiction</i> at the time of its construction or change of occupancy classification shall be governed by the design and construction code and related laws applicable in the <i>jurisdiction</i> in which it was constructed at the time of its construction or change of occupancy and by the provisions of the Life Safety Appendix D in the <i>Existing Building Code</i>. To the extent of any conflict among the requirements of any applicable codes, the most restrictive will apply. However, compliance with the aforesaid provisions shall not be deemed to excuse life-threatening defects of maintenance, sanitation, repair of casualty damage, security from unauthorized entry, structural stability, electrical systems, gas systems, plumbing systems, heating or cooling systems or other building systems.</p> <p>Exception: For a building under construction or contract at the time of its annexation by the <i>jurisdiction</i>, see the Annexation Ordinance (Ordinance No. 78-2672), a copy of which is published in the preamble of this volume.</p>		<p>and fire escape signs), wall and ceiling finish, enclosure of vertical shafts, basement access, standpipes and occupancy separation, a building shall not be deemed to be a fire hazard if it is in compliance with the most restrictive of:</p> <ol style="list-style-type: none"> 1. The provisions of the <i>Life Safety Appendix D</i> of the <i>Existing Building Code</i>, if applicable; 2. The building code that was applicable when the building was constructed; or 3. If the occupancy classification of the building or a portion thereof has changed since it was constructed, then the applicable building code that was in effect when the occupancy classification was changed. <p>Any building not situated within the <i>jurisdiction</i> at the time of its construction or change of occupancy classification shall be governed by the design and construction code and related laws applicable in the <i>jurisdiction</i> in which it was constructed at the time of its construction or change of occupancy and by the provisions of the <i>Life Safety Appendix D</i> in the <i>Existing Building Code</i>. To the extent of any conflict among the requirements of any applicable codes, the most restrictive will apply. However, compliance with the aforesaid provisions shall not be deemed to excuse life-threatening defects of maintenance, sanitation, repair of casualty damage, security from unauthorized entry, structural stability, electrical systems, gas systems, plumbing systems, heating or cooling systems or other building systems.</p> <p>Exception: For a building under construction or contract at the time of its annexation by the <i>jurisdiction</i>, shall be subject to the provisions of state law.</p>	
<p>[A] 116.2 Record. The building 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.</p>	<p>No change</p>	<p>[A] 116.2 Record. The building 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.</p>	<p>No change to Houston amendment.</p>
<p>[A] 116.3 Notice. If an unsafe condition is found, the building official shall serve on the owner, agent or person in control of the structure, 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 that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the building official acceptance or rejection of the terms of the order.</p>	<p>[A] 116.3 Notice. If an unsafe condition is found, the building official shall serve on the owner, agent or person in control 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 that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the building official acceptance or rejection of the terms of the order.</p>	<p>[A] 116.3 Notice. If an unsafe condition is found, the building 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 that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the building official acceptance or rejection of the terms of the order.</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>
<p>[A] 116.4 Method of service. Such notice shall be deemed properly served if a copy thereof is (a) delivered to the owner personally; (b) sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested; or (c) delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter</p>	<p>[A] 116.4 Method of service. Such notice shall be deemed properly served if where a copy thereof is served in accordance with one of the following methods:</p> <p>(a) 1. A copy is delivered to the owner personally.</p>	<p>[A] 116.4 Method of service. Such notice shall be deemed properly served where a copy thereof is served in accordance with one of the following methods:</p> <p>1. A copy is delivered to the owner personally.</p>	<p>Edits made to clarify code, no major change to code No change to Houston amendment.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p>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 upon the owner's agent or upon the person responsible for the structure shall constitute service of notice upon the owner.</p>	<p>(b) 2. A copy is sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested.</p> <p>(c) 3. A copy is delivered in any other manner as prescribed by local law.</p> <p>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 upon the owner's authorized agent or upon the person responsible for the structure shall constitute service of notice upon the owner.</p>	<p>2. A copy is sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested.</p> <p>3. A copy is delivered in any other manner as prescribed by local law.</p> <p>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 shall constitute service of notice on the owner.</p>	
<p>[A] 116.5 Restoration. Where the structure or equipment determined to be unsafe by the building official is restored to a safe condition, 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 and change of occupancy shall comply with the requirements of Section 105.2.2 and the International Existing Building Code.</p>	<p>[A] 116.5 Restoration or abatement. Where the structure or equipment determined to be unsafe by the building official is restored to a safe condition, the owner, the owner's authorized agent, operator or occupant of a structure, premises or equipment deemed unsafe by the building 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 and change of occupancy shall comply with the requirements of Section 105.2.2 and the International Existing Building Code.</p>	<p>[A] 116.5 Restoration or abatement. Where the structure or equipment determined to be unsafe by the building official is restored to a safe condition, the owner, the owner's authorized agent, operator or occupant of a structure, premises or equipment deemed unsafe by the building 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 and change of occupancy shall comply with the requirements of the International Existing Building Code.</p>	<p>Allows for owners authorized representative. No change to Houston amendment.</p>
<p>SECTION 117 HEARING PROCEDURES</p> <p>117.1 Hearing notices. Unless otherwise specifically provided, whenever notice is to be given to any person concerning the right to a hearing, the notice may be given by personal hand delivery or by certified mail, return receipt requested.</p> <p>If notice is being given to a building owner or to a tenant therein and the building official is unable to determine the name or address of such person after checking the building and the applicable records Houston Public Works, the County Appraisal District, the electrical utility company, the gas utility company, and the water utility provider, notice shall be mailed to the billing addresses of the building as shown on the records of the electrical utility company and the gas utility company and shall be posted on or in view of each entrance to the building. Additionally, if any notice is mailed to a building owner or a building tenant and is returned without delivery, notice shall be effective if posted on or in view of each entrance to the building.</p>	<p>N/A</p>	<p>SECTION 117 HEARING PROCEDURES</p> <p>117.1 Hearing notices. Unless otherwise specifically provided, whenever notice is to be given to any person concerning the right to a hearing, the notice may be given by personal hand delivery or by certified mail, return receipt requested.</p> <p>If notice is being given to a building owner or to a tenant therein and the building official is unable to determine the name or address of the person after checking the building and the applicable records of Houston Public Works, the County Appraisal District, the electrical utility company, the gas utility company, and the water utility provider, notice shall be mailed to the billing addresses of the building as shown on the records of the electrical utility company and the gas utility company and shall be posted on or in view of each entrance to the building. Additionally, if any notice is mailed to a building owner or a building tenant and is returned without delivery, notice shall be effective if posted on or in view of each entrance to the building.</p>	<p>No change to Houston amendment.</p>
<p>117.2 Hearings. Except where otherwise specifically provided, all hearings held pursuant to this code shall be conducted by the Director of Houston Public Works or a representative, who shall hereinafter be referred to as the "hearing official." The director shall not designate any person to be a hearing official under this code who has taken any part in the investigation of the matter that is the</p>	<p>N/A</p>	<p>117.2 Hearings. Except where otherwise specifically provided, all hearings held pursuant to this code shall be conducted by the director of Houston Public Works or a representative, who shall hereinafter be referred to as the "hearing official." The director shall not designate any person to be a hearing official under this code who has taken any part in the investigation of the matter that is the</p>	<p>No change to Houston amendment.</p>

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<p>subject of the hearing or any person who directly supervised the investigation. The hearing official shall consider only the evidence presented at the hearing in rendering a decision. The decision of the hearing official shall be final, shall be set forth in writing, and shall be served on each party in the same manner as a notice of a right to a hearing.</p>		<p>subject of the hearing or any person who directly supervised the investigation. The hearing official shall consider only the evidence presented at the hearing in rendering a decision. The decision of the hearing official shall be final, shall be set forth in writing, and shall be served on each party in the same manner as a notice of a right to a hearing.</p>	
<p style="text-align: center;">SECTION 118 PERMIT AND INSPECTION FEES</p> <p>118.1 General. The fees for permits, inspections and licenses established under the Construction Code are payable in the amounts set forth in the city fee schedule.</p> <p>118.1.1 Permit or license. An administrative fee as stated for this provision in the city fee schedule shall be charged upon the preparation of each permit or license issued by the <i>building official</i>. 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.</p>	N/A	<p style="text-align: center;">SECTION 118 PERMIT AND INSPECTION FEES</p> <p>118.1 General. The fees for permits, inspections and licenses established under the <i>Construction Code</i> are payable in the amounts set forth in the <i>city fee schedule</i>.</p> <p>118.1.1 Permit or license. An administrative fee as stated for this provision in the <i>city fee schedule</i> shall be charged upon the preparation of each permit or license issued by the <i>building official</i>. 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.</p>	No change to Houston amendment.
<p>118.1.2 Receipt. An administrative fee as stated for this provision in the city fee schedule shall be charged upon the preparation of each receipt for a fee or deposit issued by the <i>building official</i>. 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.</p>	N/A	<p>118.1.2 Receipt. An administrative fee as stated for this provision in the <i>city fee schedule</i> shall be charged upon the preparation of each receipt for a fee or deposit issued by the <i>building official</i>. 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.</p>	No change to Houston amendment.
<p>118.1.3 Minimum permit fee. If the fee or fees imposed for any single permit that is issued by the <i>building official</i>, whether issued under this code or the <i>City Code</i>, do not total more than the minimum permit fee stated for this provision in the city fee schedule, then the minimum permit fee as stated for this provision in the city fee schedule shall be charged for the permit. The foregoing minimum permit fee shall not be applicable if no other fee is provided by law for the permit. The administrative fee assessed pursuant to Section 118.1.1 above shall not be included in the foregoing minimum permit fee calculation, and it shall be payable in addition to the minimum permit fee.</p>	N/A	<p>118.1.3 Minimum permit fee. If the fee or fees imposed for any single permit that is issued by the <i>building official</i>, whether issued under this code or the <i>City Code</i>, do not total more than the minimum permit fee stated for this provision in the <i>city fee schedule</i>, then the minimum permit fee as stated for this provision in the <i>city fee schedule</i> shall be charged for the permit. The foregoing minimum permit fee shall not be applicable if no other fee is provided by law for the permit. The administrative fee assessed pursuant to Section 118.1.1 above shall not be included in the foregoing minimum permit fee calculation, and it shall be payable in addition to the minimum permit fee.</p>	No change to Houston amendment.
<p>118.1.4 Certificate of occupancy or compliance. The fee stated for this provision in the city fee schedule shall be charged for each certificate of occupancy or compliance issued for a building or structure or portion thereof such as an individual business lease space. When authorized, the <i>building official</i> may issue a temporary certificate of occupancy, upon payment of the fee stated for this provision in the city fee schedule for</p>	N/A	<p>118.1.4 Certificate of occupancy or compliance. The fee stated for this provision in the <i>city fee schedule</i> shall be charged for each certificate of occupancy or compliance issued for a building or structure or portion thereof such as an individual business lease space. When authorized, the <i>building official</i> may issue a temporary certificate of occupancy, upon payment of the fee stated for this provision in the <i>city fee schedule</i> for</p>	No change to Houston amendment.

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<p><u>each temporary certificate of occupancy, for a period of not more than 30 days each.</u></p> <p><u>The <i>building official</i> is authorized to issue a temporary event permit for facilities having a current certificate of occupancy that is not specifically authorized for the temporary occupancy or use proposed where the following specific life- and fire safety code provisions are addressed.</u></p> <p><u>1. Temporary uses or occupancies requiring automatic fire sprinkler protection based on the proposed use or occupancy as identified in this code shall be provided with a fire watch for the duration of the temporary event. The fire watch shall be provided through the <i>jurisdiction's</i> fire department.</u></p> <p><u>Where a temporary certificate of occupancy (TCO) is associated with a temporary event permit, the <i>building official</i> is authorized to issue a maximum of three temporary event TCO's per facility within any given 12-month period. Facilities requesting a fourth temporary event permit within any given 12-month period shall submit complete plans for appropriate code review and upgrade the facility to comply with the code provisions applicable to the proposed temporary use or occupancy.</u></p>		<p><u>each temporary certificate of occupancy, for a period of not more than 30 days each.</u></p> <p><u>The <i>building official</i> is authorized to issue a temporary event permit for facilities having a current certificate of occupancy that is not specifically authorized for the temporary occupancy or use proposed where the following specific life- and fire safety code provisions are addressed.</u></p> <p><u>1. Temporary uses or occupancies requiring automatic fire sprinkler protection based on the proposed use or occupancy as identified in this code shall be provided with a fire watch for the duration of the temporary event. The fire watch shall be provided through the <i>jurisdiction's</i> fire department.</u></p> <p><u>Where a temporary certificate of occupancy (TCO) is associated with a temporary event permit, the building official is authorized to issue a maximum of three temporary event TCO's per facility within any given 12-month period. Facilities requesting a fourth temporary event permit within any given 12-month period shall submit complete plans for appropriate code review and upgrade the facility to comply with the code provisions applicable to the proposed temporary use or occupancy.</u></p>	
<p><u>118.1.5 Reinspection fee. When it becomes necessary to make a reinspection of any work because of faulty materials or workmanship or incomplete work, the permittee shall pay the fee stated for this provision in the city fee schedule for each reinspection, except where a greater fee is specifically required under this code.</u></p>	<p>N/A</p>	<p><u>118.1.5 Reinspection fee. When it becomes necessary to make a reinspection of any work because of faulty materials or workmanship or incomplete work, the permittee shall pay the fee stated for this provision in the <i>city fee schedule</i> for each reinspection, except where a greater fee is specifically required under this code.</u></p>	<p>No change to Houston amendment.</p>
<p><u>118.1.6 Specially requested inspections during working hours. Whenever a person requests that an inspector be present at a site at a specific time, the <i>jurisdiction</i> shall provide such inspector upon payment of all applicable fees if doing so would not interfere with the regular duties of the inspector and would not cause a delay in the inspection of other work. The fee, per day, for specially requested inspections conducted during regular working hours is stated for this provision in the city fee schedule and is payable in addition to all other fees required by this code.</u></p> <p><u>A full day's fee must be paid unless the <i>building official</i> finds that the request was made as a result of an unforeseeable emergency.</u></p>	<p>N/A</p>	<p><u>118.1.6 Specially requested inspections during working hours. Whenever a person requests that an inspector be present at a site at a specific time, the <i>jurisdiction</i> shall provide such inspector upon payment of all applicable fees if doing so would not interfere with the regular duties of the inspector and would not cause a delay in the inspection of other work. The fee, per day, for specially requested inspections conducted during regular working hours is stated for this provision in the <i>city fee schedule</i> and is payable in addition to all other fees required by this code.</u></p> <p><u>A full day's fee must be paid unless the <i>building official</i> finds that the request was made as a result of an unforeseeable emergency.</u></p>	<p>No change to Houston amendment.</p>
<p><u>118.1.7 Emergency inspection. Emergency inspections shall be defined as those requested inspections occasioned by virtue of an unforeseeable incident or occurrence that necessitates an immediate inspection. In situations where there is a dispute as to whether an actual emergency occurred, the decision of the <i>building official</i> shall be final.</u></p>	<p>N/A</p>	<p><u>118.1.7 Emergency inspections. Emergency inspections shall be defined as those requested inspections occasioned by virtue of an unforeseeable incident or occurrence that necessitates an immediate inspection. In situations where there is a dispute as to whether an actual emergency occurred, the decision of the <i>building official</i> shall be final.</u></p>	<p>No change to Houston amendment.</p>

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<p>The fees for emergency inspections are stated for this provision in the city fee schedule and are payable in addition to all other fees required by this code.</p>		<p>The fees for emergency inspections are stated for this provision in the <i>city fee schedule</i> and are payable in addition to all other fees required by this code.</p>	
<p>118.1.8 Inspections and plan reviews outside regular working hours. Whenever a person requests that an inspector make an inspection or a plan analyst review plans at times other than during regular working hours, or on jurisdiction-observed holidays or weekends, the <i>building official</i> shall provide such plan analyst or inspector upon payment of all applicable fees if such would not interfere with the regular duties of the plan analyst or inspector or create an undue burden on such plan analyst or inspector.</p> <p>The fees for inspections and plan reviews at times outside regular working hours are stated for this provision in the city fee schedule and are payable in addition to all other fees required by this code.</p>	<p>N/A</p>	<p>118.1.8 Inspections and plan reviews outside regular working hours. Whenever a person requests that an inspector make an inspection or a plan analyst review plans at times other than during regular working hours, or on <i>jurisdiction-observed</i> holidays or weekends, the <i>building official</i> shall provide such plan analyst or inspector upon payment of all applicable fees if such would not interfere with the regular duties of the plan analyst or inspector or create an undue burden on such plan analyst or inspector.</p> <p>The fees for inspections and plan reviews at times outside regular working hours are stated for this provision in the <i>city fee schedule</i> and are payable in addition to all other fees required by this code.</p>	<p>No change to Houston amendment.</p>
<p>118.1.9 Inspections outside of jurisdiction. The fee an inspection outside the <i>jurisdiction</i> shall be the minimum fee stated for this provision in the city fee schedule, per person, plus the current standard mileage rate as published by the Internal Revenue Service per vehicle mile. This fee shall not apply to inspections performed under Section 118.1.10.</p>	<p>N/A</p>	<p>118.1.9 Inspections outside of jurisdiction. The fee for an inspection outside the <i>jurisdiction</i> shall be the minimum fee stated for this provision in the <i>city fee schedule</i>, per person, plus the current standard mileage rate as published by the Internal Revenue Service per vehicle mile. This fee shall not apply to inspections performed under Section 118.1.10.</p>	<p>No change to Houston amendment.</p>
<p>118.1.10 Approved fabricator/certifying agent or agency. Permit fees shall apply to an approved fabricator/certifying agent or agency, as follows:</p> <ol style="list-style-type: none"> 1. An approved agent or agency, as described in Chapter 17, shall pay the fee stated in the city fee schedule for any inspection made by the <i>building official</i> for the purpose of approving the agent or agency. The agent or agency shall also reimburse the <i>jurisdiction</i> for travel expenses incurred in performing inspections outside Harris or a contiguous county. 2. An approved fabricator as defined in Chapter 2 of this code, shall pay the fee stated in the city fee schedule for each inspection made for the purpose of verifying and approving the fabricator's quality control program. The fabricator shall also reimburse the <i>jurisdiction</i> for travel expenses incurred in performing inspections outside Harris or a contiguous county. 	<p>N/A</p>	<p>118.1.10 Approved fabricator or approved agent or agency. Fees shall apply to projects authorized by the city to use an approved fabricator/certifying agent or agency, as follows:</p> <ol style="list-style-type: none"> 1. An approved agent or agency, as described in Chapter 17, shall pay the fee stated in the <i>city fee schedule</i> for any inspections made by the <i>building official</i> for the purpose of approving the agent or agency. The agent or agency shall also reimburse the <i>jurisdiction</i> for travel expenses incurred in performing inspections outside Harris or a contiguous county. 2. An approved fabricator as defined in Chapter 2 of this code, shall pay the fee stated in the <i>city fee schedule</i> for each inspection made by the building official for the purpose of verifying and approving the fabricator's quality control program. The fabricator shall also reimburse the <i>jurisdiction</i> for travel expenses incurred in performing inspections outside Harris or a contiguous county. 	<p>Minor wordsmithing change, no change to intent of Houston amendment.</p>
<p>118.1.11 Building plan review fee. Plans submitted for a building permit shall be charged a non-refundable plan review fee. This plan review fee shall be charged as a deposit to the building permit fee. The fee shall be calculated at a rate of 25 percent of the estimated building permit fee calculated as provided in Section 118.2.1 and the city fee schedule. This fee</p>	<p>N/A</p>	<p>118.1.11 Building plan review fee. Plans submitted for a building permit shall be charged a non-refundable plan review fee. This plan review fee shall be charged as a deposit to the building permit fee. The fee shall be calculated at a rate of 25 percent of the estimated building permit fee calculated as provided in Section 118.2.1 and the <i>city fee schedule</i>. This fee</p>	<p>No change to Houston amendment.</p>

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<p><u>shall be paid upon submittal for the initial review of plans. The balance of the building permit fee shall be collected when the permit is issued. In the instance that the building permit is not subsequently issued, the plan review fee deposit remains non-refundable.</u></p>		<p><u>shall be paid upon submittal for the initial review of plans. The balance of the building permit fee shall be collected when the permit is issued. In the instance that the building permit is not subsequently issued, the plan review fee deposit remains non-refundable.</u></p>	
<p>118.1.12 Quick start plan review service. <u>Plan review meetings for certain types of construction projects shall be available when approved by the <i>building official</i>. The <i>building official</i> shall develop guidelines for proper use of this service, determination of qualified projects, and assessment of service fees not specifically noted in this code.</u></p> <p><u>The fee for quick start plan review meetings shall be 65 percent of the building permit fee calculated as provided in the city fee schedule. This fee shall be separate from, and in addition to, the structural permit fee.</u></p> <p><u>Payment of the quick start plan review fee allows review of the plans in the form presented at the time the fee is paid and one additional review in the event the drawings must be corrected to comply with this code or other applicable laws. The payment shall not entitle the applicant to expedited review of any further revisions to the plans.</u></p>	<p>N/A</p>	<p>118.1.12 Quick start plan review service. <u>Plan review meetings for certain types of construction projects shall be available when approved by the <i>building official</i>. The <i>building official</i> shall develop guidelines for proper use of this service, determination of qualified projects, and assessment of service fees not specifically noted in this code.</u></p> <p><u>The fee for quick start plan review meetings shall be 65 percent of the building permit fee calculated as provided in the <i>city fee schedule</i>. This fee shall be separate from, and in addition to, the structural permit fee.</u></p> <p><u>Payment of the quick start plan review fee allows review of the plans in the form presented at the time the fee is paid and one additional review in the event the drawings must be corrected to comply with this code or other applicable laws. The payment shall not entitle the applicant to expedited review of any further revisions to the plans.</u></p>	<p>No change to Houston amendment.</p>
<p>118.1.13 Name or address changes and duplicate job cards or certificates. <u>The fees for name or address changes on permit applications, existing permits or certificates are stated for this provision in the city fee schedule. When a duplicate job card or certificate of occupancy is requested by the applicant, the fee shall be as set forth for this provision in the city fee schedule.</u></p>	<p>N/A</p>	<p>118.1.13 Name or address changes and duplicate job cards or certificates. <u>The fees for name or address changes on permit applications, existing permits or certificates are stated for this provision in the <i>city fee schedule</i>. When a duplicate job card or certificate of occupancy is requested by the applicant, the fee shall be as set forth for this provision in the <i>city fee schedule</i>.</u></p>	<p>No change to Houston amendment.</p>
<p>118.1.14 Request for special approval, alternate method, interpretation or modification due to practical difficulty. <u>Requests submitted for review by the <i>building official</i> will be classified in one of the following categories for processing, and fees will be assessed according to the city fee schedule. Payment will be required prior to processing.</u></p> <p><u>Standard request. A standard request requires a minimal amount of research or consultation to review and grant or deny the request. Standard requests apply to submitted forms promulgated by the <i>building official</i>.</u></p> <p><u>Moderate request. A moderate request requires an intermediate amount of research or consultation to review and grant or deny the request. A moderate request submittal is limited to a single-floor level and a maximum of 30 pages. This request is allowed between 2 and 4 hours to complete.</u></p> <p><u>Extensive request. An extensive request requires lengthy research, documentation, data collection, and review time to grant or deny the request. Extensive requests include any submittal containing engineering evaluations, test</u></p>	<p>N/A</p>	<p>118.1.14 Request for special approval, alternate method, interpretation, or modification due to practical difficulty. <u>Requests submitted for review by the <i>building official</i> will be classified in one of the following categories for processing, and fees will be assessed according to the <i>city fee schedule</i>. Payment will be required prior to processing.</u></p> <p><u>Standard request. A standard request requires a minimal amount of research or consultation to review and grant or deny the request. Standard requests apply to submitted forms promulgated by the <i>building official</i>.</u></p> <p><u>Moderate request. A moderate request requires an intermediate amount of research or consultation to review and grant or deny the request. A moderate request submittal is limited to a single-floor level and a maximum of 30 pages.</u></p> <p><u>Extensive request. An extensive request requires lengthy research, documentation, data collection, and review time to grant or deny the request. Extensive requests include any submittal containing engineering evaluations, test reports, or requests for areas located on multiple floor</u></p>	<p>No change to Houston amendment.</p>

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<p><u>reports, or requests for areas located on multiple floor levels requiring several plan sheets and details to clearly document the location and scope of the proposed work, including any submittal package exceeding 30-pages.</u></p>		<p><u>levels requiring several plan sheets and details to clearly document the location and scope of the proposed work, including any submittal package exceeding 30-pages.</u></p>																													
<p>118.1.15 Investigation fee. An investigation fee stated for this provision in the city fee schedule shall be charged when work has commenced prior to the issuance of the proper permits. This fee shall include one follow-up trip; each additional follow-up trip thereafter shall be charged a separate investigation fee.</p>	<p>N/A</p>	<p>118.1.15 Investigation fee. An investigation fee stated for this provision in the <i>city fee schedule</i> shall be charged when work has commenced prior to the issuance of the proper permits. This fee shall include one follow-up trip; each additional follow-up trip thereafter shall be charged a separate investigation fee.</p>	<p>No change to Houston amendment.</p>																												
<p>118.1.16 Annual fee increase. Notwithstanding any maximum fee established pursuant to the <i>Construction Code</i>, the fees in this or in any volume of the <i>Construction Code</i>, as adjusted according to this section, 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>.</p>	<p>N/A</p>	<p>118.1.16 Annual fee increase. Notwithstanding any maximum fee established pursuant to the <i>Construction Code</i>, the fees in this or in any volume of the <i>Construction Code</i>, as adjusted according to this section, 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>.</p>	<p>No change to Houston amendment.</p>																												
<p>118.2 Structural. The fees for permits, inspections and licenses established under the Construction Code are payable in the amounts set forth in the city fee schedule.</p>	<p>N/A</p>	<p>118.2 Structural.</p>	<p>No change to Houston amendment.</p>																												
<p>118.2.1 Buildings. Building permit fees, payable in the amounts set forth in the city fee schedule, shall be required under this code for new buildings, additions, <i>alterations</i>, remodels, conversions, and <i>repairs</i>.</p> <p>For one- and two-family dwellings, the building permit fee shall be comprised of two components, the base charge, which shall be determined according to type of construction and size, as shown in Table 118(1), and the incremental charge, which shall be determined according to type of construction and size, as shown in Table 118(2).</p> <p style="text-align: center;">TABLE 118(1) RESIDENTIAL BUILDING PERMIT CONSTRUCTION TYPE AND TIER</p> <table border="1"> <thead> <tr> <th>Type of Construction</th> <th>Tier</th> <th>Square footage greater than</th> <th>Square footage less than or equal to</th> </tr> </thead> <tbody> <tr> <td>IA</td> <td>1</td> <td>0</td> <td>44.9178645</td> </tr> <tr> <td>IA</td> <td>2</td> <td>44.9178645</td> <td>962.5256674</td> </tr> <tr> <td>IA</td> <td>3</td> <td>962.5256674</td> <td>1,283.3675565</td> </tr> <tr> <td>IA</td> <td>4</td> <td>1,283.3675565</td> <td>1,925.0513347</td> </tr> <tr> <td>IA</td> <td>5</td> <td>1,925.0513347</td> <td>3,208.4188912</td> </tr> <tr> <td>IA</td> <td>6</td> <td>3,208.4188912</td> <td>6,416.8377823</td> </tr> </tbody> </table>	Type of Construction	Tier	Square footage greater than	Square footage less than or equal to	IA	1	0	44.9178645	IA	2	44.9178645	962.5256674	IA	3	962.5256674	1,283.3675565	IA	4	1,283.3675565	1,925.0513347	IA	5	1,925.0513347	3,208.4188912	IA	6	3,208.4188912	6,416.8377823	<p>N/A</p>	<p>118.2.1 Buildings. Building permit fees, payable in the amounts set forth in the <i>city fee schedule</i>, shall be required under this code for new buildings, additions, <i>alterations</i>, remodels, conversions, and <i>repairs</i>.</p> <p>For new one- and two-family residential <i>dwellings</i> and townhouses and their detached <i>accessory structures</i>, the building permit fee shall be calculated as specified in Section R108.3.1 and Tables R108.3.1(1) and R108.3.1(2) of the <i>Residential Code</i>, and the <i>city fee schedule</i> based on the total square footage of the <i>building area</i>.</p> <p>Notes:</p> <ol style="list-style-type: none"> New one- and two-family <i>dwellings</i> and townhouses 1,800 square feet or less shall receive a 50 percent discount on permit fees. A historic building that has been designated by the <i>jurisdiction</i> as a landmark or that is located within a historic district designated by the <i>jurisdiction</i>, or for which designation as a landmark or part of a historic district is pending, shall receive a 50 percent discount on permit fees provided that a certificate of appropriateness approved by the Houston Archaeological and Historical Commission pursuant to Chapter 33 of the <i>City Code</i> is submitted with the construction documents. 	<p>Residential building permit table has been relocated to the Houston Residential Code, Section R108.3.1. No other change to Houston amendment.</p>
Type of Construction	Tier	Square footage greater than	Square footage less than or equal to																												
IA	1	0	44.9178645																												
IA	2	44.9178645	962.5256674																												
IA	3	962.5256674	1,283.3675565																												
IA	4	1,283.3675565	1,925.0513347																												
IA	5	1,925.0513347	3,208.4188912																												
IA	6	3,208.4188912	6,416.8377823																												

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IA	7	<u>6,416.8377823</u>	<u>32,084.1889117</u>
IA	8	<u>32,084.1889117</u>	<u>320,841.8891170</u>
IA	9	<u>320,841.8891170</u>	No maximum
IB	1	<u>0</u>	<u>46.1710969</u>
IB	2	<u>46.1710969</u>	<u>989.3806477</u>
IB	3	<u>989.3806477</u>	<u>1,319.1741970</u>
IB	4	<u>1,319.1741970</u>	<u>1,978.7612954</u>
IB	5	<u>1,978.7612954</u>	<u>3,297.9354924</u>
IB	6	<u>3,297.9354924</u>	<u>6,595.8709848</u>
IB	7	<u>6,595.8709848</u>	<u>32,979.3549238</u>
IB	8	<u>32,979.3549238</u>	<u>329,793.5492382</u>
IB	9	<u>329,793.5492382</u>	No maximum
IIA	1	<u>0</u>	<u>47.3516877</u>
IIA	2	<u>47.3516877</u>	<u>1,014.6790232</u>
IIA	3	<u>1,014.6790232</u>	<u>1,352.9053643</u>
IIA	4	<u>1,352.9053643</u>	<u>2,029.3580464</u>
IIA	5	<u>2,029.3580464</u>	<u>3,382.2634107</u>
IIA	6	<u>3,382.2634107</u>	<u>6,764.5268213</u>
IIA	7	<u>6,764.5268213</u>	<u>33,822.6341067</u>
IIA	8	<u>33,822.6341067</u>	<u>338,226.3410674</u>
IIA	9	<u>338,226.3410674</u>	No maximum
IIB	1	<u>0</u>	<u>48.5807481</u>
IIB	2	<u>48.5807481</u>	<u>1,041.0160316</u>
IIB	3	<u>1,041.0160316</u>	<u>1,388.0213755</u>
IIB	4	<u>1,388.0213755</u>	<u>2,082.0320633</u>
IIB	5	<u>2,082.0320633</u>	<u>3,470.0534388</u>
IIB	6	<u>3,470.0534388</u>	<u>6,940.1068776</u>
IIB	7	<u>6,940.1068776</u>	<u>34,700.5343882</u>
IIB	8	<u>34,700.5343882</u>	<u>347,005.3438823</u>
IIB	9	<u>347,005.3438823</u>	No maximum
IIIA	1	<u>0</u>	<u>50.3814596</u>
IIIA	2	<u>50.3814596</u>	<u>1,079.6027062</u>
IIIA	3	<u>1,079.6027062</u>	<u>1,439.4702749</u>

3. Towers other than sign structures shall be charged in the same manner as new buildings.

Permits shall be required for the following items as described in the *city fee schedule*:

1. Demolition of any building or structure.
2. Stationary and floating piers.
3. Incinerators (other than domestic outdoor type).
4. Bulkheads and retaining walls not otherwise exempted from permit.
5. Dredging.
6. Prefabricated fireplaces.
7. Sand blasting or water blasting.
8. Grading permit.
9. Loading docks (uncovered).
10. Barricades for pedestrian walkways.
11. Paint spray booths.
12. Heliports and helistops (interdepartmental inspections—health, structure, fire, and aviation safety).

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IIIA	4	<u>1,439.4702749</u>	<u>2,159.2054124</u>
IIIA	5	<u>2,159.2054124</u>	<u>3,598.6756873</u>
IIIA	6	<u>3,598.6756873</u>	<u>7,197.3513747</u>
IIIA	7	<u>7,197.3513747</u>	<u>35,986.7568735</u>
IIIA	8	<u>35,986.7568735</u>	<u>359,867.5687347</u>
IIIA	9	<u>359,867.5687347</u>	No maximum
IIIB	1	<u>0</u>	<u>51.7483551</u>
IIIB	2	<u>51.7483551</u>	<u>1,108.8933245</u>
IIIB	3	<u>1,108.8933245</u>	<u>1,478.5244326</u>
IIIB	4	<u>1,478.5244326</u>	<u>2,217.7866489</u>
IIIB	5	<u>2,217.7866489</u>	<u>3,696.3110815</u>
IIIB	6	<u>3,696.3110815</u>	<u>7,392.6221631</u>
IIIB	7	<u>7,392.6221631</u>	<u>36,963.1108154</u>
IIIB	8	<u>36,963.1108154</u>	<u>369,631.1081541</u>
IIIB	9	<u>369,631.1081541</u>	No maximum
IV (HT)	1	<u>0</u>	<u>49.3931696</u>
IV (HT)	2	<u>49.3931696</u>	<u>1,058.4250635</u>
IV (HT)	3	<u>1,058.4250635</u>	<u>1,411.2334180</u>
IV (HT)	4	<u>1,411.2334180</u>	<u>2,116.8501270</u>
IV (HT)	5	<u>2,116.8501270</u>	<u>3,528.0835450</u>
IV (HT)	6	<u>3,528.0835450</u>	<u>7,056.1670900</u>
IV (HT)	7	<u>7,056.1670900</u>	<u>35,280.8354502</u>
IV (HT)	8	<u>35,280.8354502</u>	<u>352,808.3545018</u>
IV (HT)	9	<u>352,808.3545018</u>	No maximum
VA	1	<u>0</u>	<u>53.8295909</u>
VA	2	<u>53.8295909</u>	<u>1,153.4912335</u>
VA	3	<u>1,153.4912335</u>	<u>1,537.9883113</u>
VA	4	<u>1,537.9883113</u>	<u>2,306.9824669</u>
VA	5	<u>2,306.9824669</u>	<u>3,844.9707782</u>
VA	6	<u>3,844.9707782</u>	<u>7,689.9415564</u>
VA	7	<u>7,689.9415564</u>	<u>38,449.7077822</u>
VA	8	<u>38,449.7077822</u>	<u>384,497.0778222</u>
VA	9	<u>384,497.0778222</u>	No maximum

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VB	1	0	57.1615221
VB	2	57.1615221	1,224.8897599
VB	3	1,224.8897599	1,633.1863466
VB	4	1,633.1863466	2,449.7795198
VB	5	2,449.7795198	4,082.9658664
VB	6	4,082.9658664	8,165.9317328
VB	7	8,165.9317328	40,829.6586641
VB	8	40,829.6586641	408,296.5866405
VB	9	408,296.5866405	No maximum

**TABLE 118(2)
 SQUARE FOOTAGE INCREMENT BY TYPE OF
 CONSTRUCTION**

Type of Construction	Square footage increment, each incurring additional charge
IA	6.4168378
IB	6.5958710
IIA	6.7645268
IIB	6.9401069
IIIA	7.1973514
IIIB	7.3926222
IV (HT)	7.0561671
VA	7.6899416
VB	8.1659317

For all buildings not included in Tables 118(1) and 118(2), the building permit fee shall be based on the valuation, as described in Section 109.3 and the city fee schedule.

Notes:

1. New one- and two-family *dwelling*s and townhouses 1,800 square feet or less shall receive a 50 percent discount on permit fees.

2. A historic building that has designated by the *jurisdiction* as a landmark or that is located within a historic district designated by the *jurisdiction*, or for which designation as a landmark or part of a historic district is pending, shall receive a 50 percent discount on permit fees provided that

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<p><u>a certificate of appropriateness approved by the Houston Archeological and Historical Commission pursuant to Chapter 33 of the City Code is submitted with the construction documents.</u></p> <p><u>3. Towers other than sign structures shall be charged in the same manner as new buildings.</u></p> <p><u>Permits shall be required for the following items as described in the city fee schedule:</u></p> <ol style="list-style-type: none"> <u>1. Demolition of any building or structure.</u> <u>2. Stationary and floating piers.</u> <u>3. Incinerators (other than domestic outdoor type).</u> <u>4. Bulkheads and retaining walls not otherwise exempted from permit.</u> <u>5. Dredging.</u> <u>6. Prefabricated fireplaces.</u> <u>7. Sand blasting or water blasting.</u> <u>8. Grading permit.</u> <u>9. Loading docks (uncovered).</u> <u>10. Barricades for pedestrian walkways.</u> <u>11. Paint spray booths.</u> <u>12. Heliports and helistops (interdepartmental inspections—health, structure, fire, and aviation safety).</u> 			
<p>118.2.2 Industrial facilities and chemical plants. <u>Permit fees for petroleum processing installations; nuclear reactor complexes and processing facilities; facilities manufacturing, processing, distributing or storing energy; other facilities processing, storing or manufacturing materials or energy, not otherwise covered by a construction permit shall be charged in the same manner as new buildings as set forth in Section 118.2.1 and the city fee schedule.</u></p>	<p>N/A</p>	<p>118.2.2 Industrial facilities and chemical plants. <u>Permit fees for petroleum processing installations; nuclear reactor complexes and processing facilities; facilities manufacturing, processing, distributing or storing energy; other facilities processing, storing or manufacturing materials or energy, not otherwise covered by a construction permit shall be charged in the same manner as new buildings as set forth in Section 118.2.1 and the city fee schedule.</u></p>	<p>No change to Houston amendment.</p>
<p>118.2.3 Occupancy and inspection of existing buildings. <u>Permit and inspection fees in the amounts stated for these provisions in the city fee schedule apply to occupancy and inspection of existing buildings, when required by the Existing Building Code or the Property Maintenance Code.</u></p>	<p>N/A</p>	<p>118.2.3 Occupancy and inspection of existing buildings. <u>Permit and inspection fees in the amounts stated for these provisions in the city fee schedule apply to occupancy and inspection of existing buildings, when required by the Existing Building Code or the Property Maintenance Code.</u></p>	<p>No change to Houston amendment.</p>
<p>118.2.4 Fences. <u>Permit fees for fences shall be as stated for this provision in the city fee schedule.</u></p>	<p>N/A</p>	<p>118.2.4 Fences. <u>Permit fees for fences shall be as stated for this provision in the city fee schedule.</u></p>	<p>No change to Houston amendment.</p>
<p>118.2.5 Fire escapes. <u>Permit fees for fire escapes shall be as stated for this provision in the city fee schedule.</u></p>	<p>N/A</p>	<p>118.2.5 Fire escapes. <u>Permit fees for fire escapes shall be as stated for this provision in the city fee schedule.</u></p>	<p>No change to Houston amendment.</p>

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<p>118.2.6 Public sidewalks, driveway approaches, culverts, curbs and gutters located in the right-of-way. Permit fees for sidewalks, driveways, culverts, curbs and gutters covered by this code shall be as stated for this provision in the city fee schedule.</p>	<p>N/A</p>	<p>118.2.6 Public sidewalks, driveway approaches, culverts, curbs, and gutters located in the right-of-way. Permit fees for sidewalks, driveways, culverts, curbs and gutters covered by this code shall be as stated for this provision in the <i>city fee schedule</i>.</p>	<p>No change to Houston amendment.</p>
<p>118.2.7 Parking lots and paved areas not associated with a one- or two-family dwelling. Permit fees for parking lots (uncovered) and paved areas shall be as stated for this provision in the city fee schedule.</p>	<p>N/A</p>	<p>118.2.7 Parking lots and paved areas not associated with a one- or two-family dwelling. Permit fees for parking lots (uncovered) and paved areas shall be as stated for this provision in the <i>city fee schedule</i>.</p>	<p>No change to Houston amendment.</p>
<p>118.2.8 Plan review fees. Plan review fees, other than the building plan review fee provided for in Section 118.1.12, shall be as stated for this provision in the city fee schedule for review of the following:</p> <p><u>Manufactured home or recreational vehicle parks.</u></p> <p><u>Residential master plans.</u></p> <p><u>Reexamination of plans or deferred submittal of plans:</u></p> <p><u>Where deferred plans are submitted a fee shall be charged based on the minimum permit fee identified in the city fee schedule.</u></p> <p><u>Where previously approved plans are reexamined or revised, the plan review fee shall be as specified in the city fee schedule or 15 percent of the original building permit fee, whichever is greater. The fee for reexamination of partial plans shall be determined by the <i>building official</i> based on the review time involved.</u></p> <p><u>Outside <i>jurisdiction</i> plan review fee:</u></p> <p><u>Plan review for buildings located outside the <i>jurisdiction</i> shall be 65 percent of the building permit fee as calculated in accordance with Section 118 and the city fee schedule. This service shall only be provided at the building owner's request and subject to the availability of personnel to render the service.</u></p> <p><u>Paving plan review:</u></p> <p><u>Paving, other than that which is covered under Section 118.2.6 or 118.2.7, shall require a plan review, for which the fee amount is stated in the city fee schedule, but shall not require a permit or inspection or associated fees.</u></p> <p><u>Exception: A separate plan review and fee shall not be required when the paving is associated with a driveway approach or building permit.</u></p>	<p>N/A</p>	<p>118.2.8 Plan review fees. Plan review fees, other than the building plan review fee provided for in Section 118.1.12, shall be as stated for this provision in the <i>city fee schedule</i> for review of the following:</p> <p><u>Manufactured home or recreational vehicle parks.</u></p> <p><u>Residential master plans.</u></p> <p><u>Reexamination of plans or deferred submittal of plans:</u></p> <p><u>Where deferred plans are submitted a fee shall be charged based on the minimum permit fee identified in the <i>city fee schedule</i>.</u></p> <p><u>Where previously approved plans are reexamined or revised, the plan review fee shall be as specified in the <i>city fee schedule</i> or 15 percent of the original building permit fee, whichever is greater. The fee for reexamination of partial plans shall be determined by the <i>building official</i> based on the review time involved.</u></p> <p><u>Outside <i>jurisdiction</i> plan review fee:</u></p> <p><u>Plan review for buildings located outside the <i>jurisdiction</i> shall be 65 percent of the building permit fee as calculated in accordance with Section 118 and the <i>city fee schedule</i>. This service shall only be provided at the building owner's request and subject to the availability of personnel to render the service.</u></p> <p><u>Paving plan review:</u></p> <p><u>Paving, other than that which is covered under Section 118.2.6 or 118.2.7, shall require a plan review, for which the fee amount is stated in the <i>city fee schedule</i>, but shall not require a permit or inspection or associated fees.</u></p> <p><u>Exception: A separate plan review and fee shall not be required when the paving is associated with a driveway approach or building permit.</u></p>	<p>No change to Houston amendment.</p>

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<p>118.3 HVAC equipment.</p> <p>118.3.1 General. Fees for permits and inspections for the installation, alteration and inspection of heating, ventilating, air-conditioning and refrigeration systems shall be as stated for this provision in the city fee schedule for the following:</p> <ol style="list-style-type: none"> 1. Ventilating systems or heating-only systems (other than boilers). Toilet exhaust, outside air makeup, elevator ventilation, stair pressurization, smoke exhaust or residential ventilation fees shall be included in the air-conditioning tonnage fee. The minimum permit fee shall be as stated for this provision in the city fee schedule. (See Section 118.3.3 for local vent fees.) 2. Repairs or alterations (including cooling tower replacement) to an existing heating, ventilating, air-conditioning or refrigeration system. Exception: Repairs to ducts and grilles in a single tenant lease space that has a total valuation of less than \$500.00 is exempt from permits. 3. Air-handling and duct systems for air-conditioning in buildings that have heating and/or cooling fluid from an external source. 4. Air-conditioning cooling equipment (chillers, compressors and/or absorption units with their auxiliaries) located in a building other than the one being cooled (for instance, a central plant to supply one or more buildings). 5. A complete air-conditioning system where the cooling equipment, the air-handling equipment and duct system are in the same building. For air-conditioning systems that include heating (except boilers), the fee shall be included in the tonnage or horsepower fee at no extra cost, provided such heating is included on the original permit application. 6. Commercial, manufacturing and industrial process refrigeration systems. 	<p>N/A</p>	<p>118.3 HVAC equipment.</p> <p>118.3.1 General. Fees for permits and inspections for the installation, alteration and inspection of heating, ventilating, air-conditioning and refrigeration systems shall be as stated for this provision in the city fee schedule for the following:</p> <ol style="list-style-type: none"> 1. Ventilating systems or heating-only systems (other than boilers). Toilet exhaust, outside air makeup, elevator ventilation, stair pressurization, smoke exhaust or residential ventilation fees shall be included in the air-conditioning tonnage fee. The minimum permit fee shall be as stated for this provision in the city fee schedule. (See Section 118.3.3 for local vent fees.) 2. Repairs or alterations (including cooling tower replacement) to an existing heating, ventilating, air-conditioning or refrigeration system. Exception: Repairs to ducts and grilles in a single tenant lease space that has a total valuation of less than \$500.00 is exempt from permits. 3. Air-handling and duct systems for air-conditioning in buildings that have heating and/or cooling fluid from an external source. 4. Air-conditioning cooling equipment (chillers, compressors and/or absorption units with their auxiliaries) located in a building other than the one being cooled (for instance, a central plant to supply one or more buildings). 5. A complete air-conditioning system where the cooling equipment, the air-handling equipment and duct system are in the same building. For air-conditioning systems that include heating (except boilers), the fee shall be included in the tonnage or horsepower fee at no extra cost, provided such heating is included on the original permit application. 6. Commercial, manufacturing and industrial process refrigeration systems. 	<p>No change to Houston amendment.</p>
<p>118.3.2 Temporary operation inspection. For inspection of a heating, ventilation, refrigeration or air-conditioning system to be used on a temporary basis, the fee stated for this provision in the city fee schedule shall be paid to the jurisdiction by a licensed air-conditioning contractor requesting such inspection. If the system is not approved for temporary operation on the first inspection, the usual reinspection fee will be charged for each subsequent inspection for such purpose.</p>	<p>N/A</p>	<p>118.3.2 Temporary operation inspection. For inspection of a heating, ventilation, refrigeration or air-conditioning system to be used on a temporary basis, the fee stated for this provision in the city fee schedule shall be paid to the jurisdiction by a licensed air-conditioning contractor requesting such inspection. If the system is not approved for temporary operation on the first inspection, the usual reinspection fee will be charged for each subsequent inspection for such purpose.</p>	<p>No change to Houston amendment.</p>
<p>118.3.3 Local vent permit. The fee stated for this provision in the city fee schedule will be charged for local vent permits, central vacuum system permits and permits for ventilation fans</p>	<p>N/A</p>	<p>118.3.3 Local vent permit. The fee stated for this provision in the city fee schedule will be charged for local vent permits, central vacuum system permits, and permits for ventilation fans up to 2,000 cfm. When a licensed air-conditioning contractor</p>	<p>No change to Houston amendment.</p>

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<p><u>up to 2,000 cfm. When a licensed air-conditioning contractor includes local vents in a permit, no additional fee will be required.</u></p>		<p><u>includes local vents in a permit, no additional fee will be required.</u></p>	
<p>118.3.4 Self-contained air-conditioning units. The stated fee for this provision in the city fee schedule shall be paid for buildings using self-contained air-conditioning units. Exception: Self-contained air-conditioning units in Residential Group R-3 occupancies are exempt.</p>	<p>N/A</p>	<p>118.3.4 Self-contained air-conditioning units. The stated for this provision in the <i>city fee schedule</i> shall be paid for buildings using self-contained air-conditioning units. Exception: Self-contained air-conditioning units in Residential Group R-3 occupancies are exempt.</p>	<p>No change to Houston amendment.</p>
<p>118.3.5 Manufactured home inspections. For inspection of heating and ductwork of a manufactured home where no state inspection has been made, the fee shall be as stated for this provision in the city fee schedule.</p>	<p>N/A</p>	<p>118.3.5 Manufactured home inspections. For inspection of heating and ductwork of a manufactured home where no state inspection has been made, the fee shall be as stated for this provision in the <i>city fee schedule</i>.</p>	<p>No change to Houston amendment.</p>
<p>118.3.6 Certificate of approval. In addition to the regular permit fee, the fee started for this provision in the city fee schedule shall be charged for a certificate of approval of air-conditioning for each permit taken out to add heating and/or air-conditioning to an existing residence. The fee shall be paid for at the time the regular permit fee is paid.</p>	<p>N/A</p>	<p>118.3.6 Certificate of approval. In addition to the regular permit fee, the fee stated for this provision in the <i>city fee schedule</i> shall be charged for a certificate of approval of air-conditioning for each permit taken out to add heating and/or air-conditioning to an existing residence. The fee shall be paid for at the time the regular permit fee is paid.</p>	<p>No change to Houston amendment.</p>
<p>118.4 Boilers. Every person desiring to install, maintain or repair boilers shall file an application for a permit with the <i>building official</i>, stating the location and nature of work to be performed, and pay the fees stated in the city fee schedule for the following:</p> <p>1. For boiler installation based on Btu input and/or HP: base charge plus the fee for each BHP or part thereof. The maximum permit fee for installation of a single boiler in excess of 1,200 BHP is stated for this provision in the city fee schedule.</p> <p>Note: For the purpose of this code, 1 BHP equals 33,000 Btu.</p> <p>2. Annual fee.</p> <p>3. Repair permit.</p>	<p>N/A</p>	<p>118.4 Boilers. Every person desiring to install, maintain or repair boilers shall file an application for a permit with the <i>building official</i>, stating the location and nature of work to be performed, and pay the fees stated in the <i>city fee schedule</i> for the following:</p> <p>1. For boiler installation based on Btu input and/or HP: base charge plus the fee for each BHP or part thereof. The maximum permit fee for installation of a single boiler in excess of 1,200 BHP is stated for this provision in the <i>city fee schedule</i>.</p> <p>Note: For the purpose of this code, 1 BHP equals 33,000 Btu.</p> <p>2. Annual fee.</p> <p>3. Repair permit.</p>	<p>No change to Houston amendment.</p>
<p>118.5 Plumbing.</p> <p>118.5.1 General. The fees required for permits for the following are set forth in the city fee schedule, with a minimum amount stated in the city fee schedule, where not otherwise specified:</p> <p><u>Opening in street (street cut, for purpose of connection with utilities).</u></p> <p>(See Chapter 40, <i>City Code</i>, for additional regulations and deposits required.)</p> <p><u>Temporary gas inspection.</u></p> <p><u>Gas permit and inspection (up to 4 openings).</u></p>	<p>N/A</p>	<p>118.5 Plumbing.</p> <p>118.5.1 General. The fees required for permits for the following are set forth in the <i>city fee schedule</i>, with a minimum amount stated in the <i>city fee schedule</i>, where not otherwise specified:</p> <p><u>Opening in street (street cut, for purpose of connection with utilities).</u></p> <p>(See Chapter 40 of the <i>City Code</i> for additional regulations and deposits required.)</p> <p><u>Temporary gas inspection.</u></p> <p><u>Gas permit and inspection (up to 4 openings).</u></p>	<p>No change to Houston amendment.</p>

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<p><u>Additional gas openings, each.</u></p> <p><u>Manufactured home inspection fee (where no state inspection has been made).</u></p> <p><u>Fire-protection fee (fire sprinkler system separate permit required):</u></p> <p><u>For a fire sprinkler system (any head or group of heads up to 25 that is regulated with a valve for any portion of a building), minimum fee.</u></p> <p><u>For each additional head.</u></p> <p><u>For sprinkler system plan review, per head.</u></p> <p><u>Standpipe system (1 to 25 hose connections).</u></p> <p><u>Each additional hose connection.</u></p> <p><u>Irrigation system (1 to 200 heads) per head.</u></p> <p><u>Each additional head.</u></p>		<p><u>Additional gas openings, each.</u></p> <p><u>Manufactured home inspection fee (where no state inspection has been made).</u></p> <p><u>Fire-protection fee (fire sprinkler system separate permit required):</u></p> <p><u>For a fire sprinkler system (any head or group of heads up to 25 that is regulated with a valve for any portion of a building), minimum fee.</u></p> <p><u>For each additional head.</u></p> <p><u>For sprinkler system plan review, per head.</u></p> <p><u>Standpipe system (1 to 25 hose connections).</u></p> <p><u>Each additional hose connection.</u></p> <p><u>Irrigation system (1 to 200 heads) per head.</u></p> <p><u>Each additional head.</u></p>	
<p><u>118.5.2 Heating gas appliances. The fees stated for this provision in the city fee schedule shall apply to the following:</u></p> <p><u>Furnace (nonduct type)</u></p> <p><u>Each additional furnace to be installed in same building under same permit</u></p> <p><u>Floor furnace (nonduct type)</u></p> <p><u>Incinerators (gas fired) (complete with two burners or more)</u></p> <p><u>Infrared heaters (one or two)</u></p> <p><u>Each additional infrared heater installed under the same permit</u></p>	<p>N/A</p>	<p><u>118.5.2 Heating gas appliances. The fees stated for this provision in the city fee schedule shall apply to the following:</u></p> <p><u>Furnace (nonduct type)</u></p> <p><u>Each additional furnace to be installed in same building under same permit</u></p> <p><u>Floor furnace (nonduct type)</u></p> <p><u>Incinerators (gas fired) (complete with two burners or more)</u></p> <p><u>Infrared heaters (one or two)</u></p> <p><u>Each additional infrared heater installed under the same permit</u></p>	<p>No change to Houston amendment.</p>
<p><u>118.5.3 Yard lights or barbecue grills. The fees stated for this provision in the city fee schedule shall apply for the following:</u></p> <p><u>First opening.</u></p> <p><u>Each additional opening installed under the same permit.</u></p>	<p>N/A</p>	<p><u>118.5.3 Yard lights or barbecue grills. The fees stated for this provision in the city fee schedule shall apply for the following:</u></p> <p><u>First opening.</u></p> <p><u>Each additional opening installed under the same permit.</u></p>	<p>No change to Houston amendment.</p>
<p><u>118.5.4 Permanent appliances. The fees stated for this provision in the city fee schedule shall apply for the following:</u></p> <p><u>Wall heater (bath heaters exempt).</u></p> <p><u>Each additional heater installed under same permit.</u></p> <p><u>Gas steam radiator.</u></p> <p><u>Each additional radiator installed under same permit.</u></p> <p><u>Commercial oven.</u></p> <p><u>Commercial dryer.</u></p>	<p>N/A</p>	<p><u>118.5.4 Permanent appliances. The fees stated for this provision in the city fee schedule shall apply for the following:</u></p> <p><u>Wall heater (bath heaters exempt).</u></p> <p><u>Each additional heater installed under same permit.</u></p> <p><u>Gas steam radiator.</u></p> <p><u>Each additional radiator installed under same permit.</u></p> <p><u>Commercial oven.</u></p> <p><u>Commercial dryer.</u></p>	<p>No change to Houston amendment.</p>

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<p><u>Plumbing fixtures (one to three).</u> <u>Each additional fixture installed under same permit.</u></p> <p><u>Warm-air circulators (nonduct), first three.</u> <u>Each additional circulator installed under same permit.</u></p> <p><u>Tie to curb inlet-storm sewer.</u></p> <p><u>Manholes, each.</u></p> <p><u>Roof drain or outside downspout connection to drainage system, one or two.</u> <u>Each additional roof drain or downspout to be installed under the same permit.</u></p> <p><u>Catch basin or outside area drain, one or two.</u> <u>Each additional catch basin or outside area drain to be installed under same permit.</u></p> <p><u>Sewer connections, each.</u></p> <p><u>Ground in plumbing for shell building, 3,000 square feet (279 m²) or less floor area.</u> <u>For each additional 1,000 square feet (93 m²) or part thereof.</u></p> <p><u>Septic tanks or individual sewage treatment plants, each.</u></p> <p><u>Disconnect and plug main sewer connection.</u></p> <p><u>Tanks (not septic tanks). A permit separate from other permits required:</u> <u>Up to and including 1,000 gallons (3,785 L) capacity (including mechanical interceptors).</u> <u>More than 1,000 through 6,000 gallons (3,785 L through 22,712 L).</u> <u>More than 6,000 through 15,000 gallons (22,712 L through 56,781 L).</u> <u>More than 15,000 through 30,000 gallons (56,781 L through 113,562 L).</u> <u>More than 30,000 gallons (113,562 L).</u></p>	<p>N/A</p>	<p><u>Plumbing fixtures (one to three).</u> <u>Each additional fixture installed under same permit.</u></p> <p><u>Warm-air circulators (nonduct), first three.</u> <u>Each additional circulator installed under same permit.</u></p> <p><u>Tie to curb inlet-storm sewer.</u></p> <p><u>Manholes, each.</u></p> <p><u>Roof drain or outside downspout connection to drainage system, one or two.</u> <u>Each additional roof drain or downspout to be installed under the same permit.</u></p> <p><u>Catch basin or outside area drain, one or two.</u> <u>Each additional catch basin or outside area drain to be installed under same permit.</u></p> <p><u>Sewer connections, each.</u></p> <p><u>Ground in plumbing for shell building, 3,000 square feet (279 m²) or less floor area.</u> <u>For each additional 1,000 square feet (93 m²) or part thereof.</u></p> <p><u>Septic tanks or individual sewage treatment plants, each.</u></p> <p><u>Disconnect and plug main sewer connection.</u></p> <p><u>Tanks (not septic tanks). A permit separate from other permits required for:</u> <u>Up to and including 1,000 gallons (3,785 L) capacity (including mechanical interceptors).</u> <u>More than 1,000 through 6,000 gallons (3,785 L through 22,712 L).</u> <u>More than 6,000 through 15,000 gallons (22,712 L through 56,781 L).</u> <u>More than 15,000 through 30,000 gallons (56,781 L through 113,562 L).</u> <u>More than 30,000 gallons (113,562 L).</u></p>	<p>No change to Houston amendment.</p>
<p>118.6 Electrical. Fees for the following permits and related inspections required by the Electrical Code are stated for Sections 118.6.1 through 118.6.5 and the city fee schedule, with a minimum fee also stated in the city fee schedule where not otherwise specified:</p>	<p>N/A</p>	<p>118.6 Electrical. Fees for the following permits and related inspections required by the <i>Electrical Code</i> are stated for Sections 118.6.1 through 118.6.5 and the <i>city fee schedule</i>, with a minimum fee also stated in the <i>city fee schedule</i> where not otherwise specified:</p>	<p>No change to Houston amendment.</p>

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<p>118.6.1 Services.</p> <p><u>Meter loop and service.</u></p> <p><u>Up to and including 50 kW.</u></p> <p><u>More than 50 kW through 250 kW.</u></p> <p><u>More than 250 kW.</u></p> <p><u>Panels with eight or more circuits, each panel.</u></p> <p><u>Outlets, each.</u></p> <p>Note: <u>All light switches, receptacle openings and bell-ringing transformers are classified as outlets.</u></p> <p><u>Electrical vehicle charging outlets identified in this Section (118.6.1) requiring compliance with Section 511.10(B) and Article 625 include:</u></p> <p><u>Level 1 – charging 120 Volts</u></p> <p><u>Level 2 – charging the NEC including 240 Volts</u></p> <p><u>Level 3 – charging 480 Volts</u></p>	<p>N/A</p>	<p>118.6.1 Services.</p> <p><u>Meter loop and service.</u></p> <p><u>Up to and including 50 kW.</u></p> <p><u>More than 50 kW through 250 kW.</u></p> <p><u>More than 250 kW.</u></p> <p><u>Panels with eight or more circuits, each panel.</u></p> <p><u>Outlets, each.</u></p> <p>Note: <u>All light switches, receptacle openings and bell-ringing transformers are classified as outlets.</u></p> <p><u>Electrical vehicle charging outlets identified in this Section (118.6.1) requiring compliance with Section 511.10(B) and Article 625 include:</u></p> <p><u>Level 1 – charging 120 Volts</u></p> <p><u>Level 2 – charging the NEC including 240 Volts</u></p> <p><u>Level 3 – charging 480 Volts</u></p>	<p>No change to Houston amendment.</p>
<p>118.6.2 Fixtures and appliances.</p> <p><u>Fixtures, each.</u></p> <p>Note: <u>Any current-consuming device permanently attached to an outlet for illumination purposes shall be classified as a fixture.</u></p> <p><u>Electrical appliances-domestic.</u></p> <p><u>Range receptacle, each.</u></p> <p><u>Clothes dryer, each.</u></p> <p><u>Stove top, each.</u></p> <p><u>Oven, each.</u></p> <p><u>Garbage disposal, each.</u></p> <p><u>Dishwasher, each.</u></p> <p><u>Window air-conditioning receptacle, each.</u></p>	<p>N/A</p>	<p>118.6.2 Fixtures and appliances.</p> <p><u>Fixtures, each.</u></p> <p>Note: <u>Any current-consuming device permanently attached to an outlet for illumination purposes shall be classified as a fixture.</u></p> <p><u>Electrical appliances-domestic.</u></p> <p><u>Range receptacle, each.</u></p> <p><u>Clothes dryer, each.</u></p> <p><u>Stove top, each.</u></p> <p><u>Oven, each.</u></p> <p><u>Garbage disposal, each.</u></p> <p><u>Dishwasher, each.</u></p> <p><u>Window air-conditioning receptacle, each.</u></p>	<p>No change to Houston amendment.</p>
<p>118.6.3 Motors.</p> <p><u>Motors, permanently installed, each.</u></p> <p><u>Up to and including ≤1 horsepower.</u></p> <p><u>More than 1 horsepower through 10 horsepower.</u></p> <p><u>Each additional horsepower or fraction thereof over 10 horsepower.</u></p> <p><u>Motor control equipment is included in the motor fees.</u></p> <p><u>Outlets for future motor installation shall be charged for at</u></p>	<p>N/A</p>	<p>118.6.3 Motors.</p> <p><u>Motors, permanently installed, each.</u></p> <p><u>Up to and including ≤1 horsepower.</u></p> <p><u>More than 1 horsepower through 10 horsepower.</u></p> <p><u>Each additional horsepower or fraction thereof over 10 horsepower.</u></p> <p><u>Motor control equipment is included in the motor fees.</u></p> <p><u>Outlets for future motor installation shall be charged for at</u></p>	<p>No change to Houston amendment.</p>

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<p>one-half of the applicable, regular motor rates. The other one-half shall be paid at the time the motors are installed.</p> <p>Permanent connection of electrical appliances, equipment and transformers of any nature:</p> <p>Unless another fee is specified in this section for the apparatus to be installed, the fee shall be based on the kW rating of the apparatus. Each kW shall be considered to be one horsepower, and the fees shall be the same as indicated for "motors, permanently installed," above.</p>		<p>one-half of the applicable, regular motor rates. The other one-half shall be paid at the time the motors are installed.</p> <p>Permanent connection of electrical appliances, equipment and transformers of any nature:</p> <p>Unless another fee is specified in this section for the apparatus to be installed, the fee shall be based on the kW rating of the apparatus. Each kW shall be considered to be one horsepower, and the fees shall be the same as indicated for "motors, permanently installed," above.</p>	
<p><u>118.6.4 Signs.</u></p> <p><u>Shop inspection of incandescent electrical signs and gas or vacuum tube signs, each:</u></p> <p><u>0 to k kVA.</u></p> <p><u>Additional for each kVA or fraction thereof exceeding 5 kVA.</u></p> <p><u>Installation inspection of incandescent electrical signs and gas or vacuum tube signs, each:</u></p> <p><u>0 to 5 kVA.</u></p> <p><u>Additional for each kVA or fraction thereof exceeding 5 kVA.</u></p>	<p>N/A</p>	<p><u>118.6.4 Signs.</u></p> <p><u>Shop inspection of incandescent electrical signs and gas or vacuum tube signs, each:</u></p> <p><u>0 to k kVA.</u></p> <p><u>Additional for each kVA or fraction thereof exceeding 5 kVA.</u></p> <p><u>Installation inspection of incandescent electrical signs and gas or vacuum tube signs, each:</u></p> <p><u>0 to 5 kVA.</u></p> <p><u>Additional for each kVA or fraction thereof exceeding 5 kVA.</u></p>	<p>No change to Houston amendment.</p>
<p><u>118.6.5 Outdoor and temporary.</u></p> <p><u>Streamers and festoon lighting per circuit.</u></p> <p><u>Ball park and parking lot light poles (no outlet or fixture charge), 1st pole each.</u></p> <p><u>Each additional pole after the 1st.</u></p> <p><u>Temporary installations, such as wood saws, floor surfacing machines, painting/spray apparatus and the like, per installation.</u></p> <p><u>Temporary installation of commercial sound equipment.</u></p> <p><u>Temporary lighting installations.</u></p> <p><u>Temporary installations such as carnivals or similar installations for amusement show display or similar uses shall be charged for on a kVA basis. For the purpose of this classification, 1 horsepower of motor load shall be considered as one kVA.</u></p> <p><u>0 through 10 kVA</u></p> <p><u>Additional for each kVA or fraction thereof exceeding 10 kVA.</u></p>	<p>N/A</p>	<p><u>118.6.5 Outdoor and temporary.</u></p> <p><u>Streamers and festoon lighting per circuit.</u></p> <p><u>Ball park and parking lot light poles (no outlet or fixture charge), 1st pole each.</u></p> <p><u>Each additional pole after the 1st.</u></p> <p><u>Temporary installations, such as wood saws, floor surfacing machines, painting/spray apparatus and the like, per installation.</u></p> <p><u>Temporary installation of commercial sound equipment.</u></p> <p><u>Temporary lighting installations.</u></p> <p><u>Temporary installations such as carnivals or similar installations for amusement show display or similar uses shall be charged for on a kVA basis. For the purpose of this classification, 1 horsepower of motor load shall be considered as one kVA.</u></p> <p><u>0 through 10 kVA</u></p> <p><u>Additional for each kVA or fraction thereof exceeding 10 kVA.</u></p> <p><u>Temporary saw poles (per installation).</u></p>	<p>No change to Houston amendment.</p>

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<p><u>Temporary saw poles (per installation).</u></p> <p><u>Temporary cut-in made permanent.</u></p> <p><u>Additions to existing work shall be charged for at the same rate as new work.</u></p> <p><u>Reconnection fee.</u></p>		<p><u>Temporary cut-in made permanent.</u></p> <p><u>Additions to existing work shall be charged for at the same rate as new work.</u></p> <p><u>Reconnection fee.</u></p>	
<p>118.7 Elevators.</p> <p>118.7.1 General. <u>Every person proposing to install an elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift shall file a written request for a construction permit with the <i>building official</i> and pay the installation fees for each unit stated for this provision in the city fee schedule for the following:</u></p> <p><u>New installations and alterations:</u></p> <p><u>Passenger or freight elevator, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift, where the equipment is to be installed in other than a private residence, each:</u></p> <p><u>Up to and including \$40,000.00 of valuation.</u></p> <p><u>Each additional \$1,000.00 of valuation or fraction thereof.</u></p> <p><u>Personnel hoist-manufacturing design permit (required in addition to above fee if the hoist is not already permitted).</u></p> <p><u>Same equipment installed in a private residence, each:</u></p> <p><u>Up to and including \$10,000.00 of valuation.</u></p> <p><u>Each additional \$1,000.00 of valuation or fraction thereof.</u></p> <p><u>Installation fees for equipment other than personnel hoists include an operating permit for the first year of operation, where applicable.</u></p> <p><u>Installation fees for personnel hoists include a limited permit for the first 90 days of operation.</u></p>	<p>N/A</p>	<p>118.7 Elevators.</p> <p>118.7.1 General. <u>Every person proposing to install an elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift shall file a written request for a construction permit with the <i>building official</i> and pay the installation fees for each unit stated for this provision in the city fee schedule for the following:</u></p> <p><u>New installations and alterations:</u></p> <p><u>Passenger or freight elevator, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift, where the equipment is to be installed in other than a private residence, each:</u></p> <p><u>Up to and including \$40,000.00 of valuation.</u></p> <p><u>Each additional \$1,000.00 of valuation or fraction thereof.</u></p> <p><u>Personnel hoist-manufacturing design permit (required in addition to above fee if the hoist is not already permitted).</u></p> <p><u>Passenger or freight elevator, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift, where the equipment is to be installed in a private residence, each:</u></p> <p><u>Up to and including \$10,000.00 of valuation.</u></p> <p><u>Each additional \$1,000.00 of valuation or fraction thereof.</u></p> <p><u>Installation fees for equipment other than personnel hoists include an operating permit for the first year of operation, where applicable.</u></p> <p><u>Installation fees for personnel hoists include a limited permit for the first 90 days of operation.</u></p>	<p>No change to Houston amendment.</p>
<p>118.7.2 Inspections. <u>The <i>building official</i> shall not be obliged to perform a test or inspection if the <i>building official</i> does not then have qualified personnel to perform such tests. Where one or more inspections or tests are necessary to verify compliance with this code, the <i>building official</i> may require such inspections or tests to be performed by a city registered third party inspection agency. If the jurisdiction provides the inspections,</u></p>	<p>N/A</p>	<p>118.7.2 Inspections. <u>The <i>building official</i> shall not be obliged to perform a test or inspection if the <i>building official</i> does not then have qualified personnel to perform such tests. Where one or more inspections or tests are necessary to verify compliance with this code, the <i>building official</i> may require such inspections or tests to be performed by a city registered third party inspection agency. If the <i>jurisdiction</i> provides the inspections, fees shall be payable to the <i>building official</i> as stated for this provision in the <i>city fee schedule</i> for all of the following:</u></p>	<p>No change to Houston amendment.</p>

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fees shall be payable to the *building official* as stated for this provision in the city fee schedule for all of the following:

1. Each personnel hoist:

Acceptance load test* (includes two monthly inspections)

Periodic test, three months (includes two monthly inspections)

Addition to tower plus any test fee, single-cage hoist

Addition to tower plus any test fee, twin-cage hoist

2. Acceptance inspection for each elevator (new installation and alteration).

3. Acceptance inspection for each escalator, dumbwaiter, wheelchair lift, manlift or moving walk (new installation or alteration).

4. Annual reinspection for each elevator except where lesser fee is provided below:

Reinspection fee.

5. Escalator annual inspection, each.

6. Moving walk annual inspection, each.

7. Wheelchair lift annual inspection, each.

8. Dumbwaiter annual inspection, each dumbwaiter:

For 2 through 10 landings.

For each additional landing.

9. Manlift or inclined stairway chairlift annual inspection, each.

10. Traction elevator maintenance load test*.

Five-year maintenance load test.

Counter-weight safeties, add.

With reduced stroke buffer, add.

With spring buffer, add.

11. Hydraulic elevator three-year load test*.

12. Rescheduling of test:

Additional fee if *owner* or elevator company cancels, unless notice is given to the *building official* by at least 1:00 p.m. on the preceding working day.

13. If an elevator test cannot be completed within eight hours because the elevator did not comply with the requirements of this code when the test was begun, there shall be charged the additional fee stated for this provision

1. Each personnel hoist:

Acceptance load test* (includes two monthly inspections).

Periodic test, three months (includes two monthly inspections).

Addition to tower plus any test fee, single-cage hoist.

Addition to tower plus any test fee, twin-cage hoist.

2. Acceptance inspection for each elevator (new installation and alteration).

3. Acceptance inspection for each escalator, dumbwaiter, wheelchair lift, manlift or moving walk (new installation or alteration).

4. Annual reinspection for each elevator except where lesser fee is provided elsewhere in Section 118.7:

Reinspection fee.

5. Escalator annual inspection, each.

6. Moving walk annual inspection, each.

7. Wheelchair lift annual inspection, each.

8. Dumbwaiter annual inspection, each dumbwaiter:

For 2 through 10 landings.

For each additional landing.

9. Manlift or inclined stairway chairlift annual inspection, each.

10. Traction elevator maintenance load test*.

Five-year maintenance load test.

Counter-weight safeties, add.

With reduced stroke buffer, add.

With spring buffer, add.

11. Hydraulic elevator three-year load test*.

12. Rescheduling of test:

Additional fee if *owner* or elevator company cancels, unless notice is given to the *building official* by at least 1:00 p.m. on the preceding working day.

13. If an elevator test cannot be completed within eight hours because the elevator did not comply with the requirements of this code when the test was begun, there shall be charged the additional fee stated for this

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p><u>in the city fee schedule for each additional hour or portion thereof.</u></p> <p>* <u>Load test shall be performed by an elevator maintenance/installation company, and the test shall be witnessed by the <i>building official</i> or an approved agency.</u></p>		<p><u>provision in the <i>city fee schedule</i> for each additional hour or portion thereof.</u></p> <p>* <u>Load test shall be performed by an elevator maintenance/installation company, and the test shall be witnessed by the <i>building official</i> or an approved agency.</u></p>	
<p>118.7.3 Reinspection fee. <u>In the event it becomes necessary to make a reinspection of work or equipment due to deficiencies in order to issue an approved inspection report, the applicant shall pay to the <i>building official</i> for each reinspection the fee stated for this provision in the city fee schedule.</u></p>	<p>N/A</p>	<p>118.7.3 Reinspection fee. <u>When reinspection of any work is performed because of faulty materials or workmanship or incomplete work, the permittee shall pay the fee stated for this provision in the <i>city fee schedule</i> for each reinspection, except where a greater fee is specifically required under this code.</u></p>	<p>No change to Houston amendment.</p>
<p>118.7.4 Operating permit or limited permit. <u>An operating permit or limited permit shall be required for each elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift. An operating permit shall be valid for one year, and a limited permit shall be valid for 90 days. Fees stated for this provision in the city fee schedule shall be charged for the following operating permits and limited permits:</u></p> <ul style="list-style-type: none"> <u>Each elevator.</u> <u>Each escalator or moving walk.</u> <u>Each dumbwaiter.</u> <u>Each personnel hoist.</u> <u>Each wheelchair lift.</u> <u>Each manlift.</u> <u>Each inclined stairway chairlift.</u> <u>Each escalator or moving walk unit power by one motor shall be considered as a separate unit.</u> 	<p>N/A</p>	<p>118.7.4 Operating permit or limited permit. <u>An operating permit or limited permit shall be required for each elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift. An operating permit shall be valid for one year, and a limited permit shall be valid for 90 days. Fees stated for this provision in the <i>city fee schedule</i> shall be charged for the following operating permits and limited permits:</u></p> <ul style="list-style-type: none"> <u>Each elevator.</u> <u>Each escalator or moving walk.</u> <u>Each dumbwaiter.</u> <u>Each personnel hoist.</u> <u>Each wheelchair lift.</u> <u>Each manlift.</u> <u>Each inclined stairway chairlift.</u> <u>Each escalator or moving walk unit powered by one motor shall be considered as a separate unit.</u> 	<p>No change to Houston amendment.</p>
<p>118.8 Signs. <u>Fees stated for this provision in the city fee schedule shall be charged for all signs covered by the <i>Houston Sign Code</i> as follows:</u></p> <ol style="list-style-type: none"> <u>1. Site inspections.</u> <u>2. Electrical inspections – install and final.</u> <u>3. Reinspection fee:</u> <ul style="list-style-type: none"> <u>Site, hole and electrical, (all).</u> <u>4. Construction and reconstruction permit:</u> <ul style="list-style-type: none"> <u>For the first 32 square feet (2.9728 m²) of one sign face or fraction thereof.</u> <u>Each square foot or fraction thereof of one sign face exceeding 32 square feet.</u> 	<p>N/A</p>	<p>118.8 Signs. <u>Fees stated for this provision in the <i>city fee schedule</i> shall be charged for all signs covered by the <i>Houston Sign Code</i> as follows:</u></p> <ol style="list-style-type: none"> <u>1. Site inspections.</u> <u>2. Electrical inspections – install and final.</u> <u>3. Reinspection fee:</u> <ul style="list-style-type: none"> <u>Site, hole and electrical, (all).</u> <u>4. Construction and reconstruction permit:</u> <ul style="list-style-type: none"> <u>For the first 32 square feet (2.9728 m²) of one sign face or fraction thereof.</u> <u>Each square foot or fraction thereof of one sign face exceeding 32 square feet.</u> <u>5. Operating permit—on-premise signs. An operating permit for an on-premise sign shall be issued as a renewable</u> 	<p>No change to Houston amendment.</p>

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<p><u>5. Operation permit—on-premise signs. An operating permit for an on-premise sign shall be issued as a renewable permit on an annual basis upon payment of the following fees:</u></p> <p><u>For the first 32 square feet (2.9728 m²) of one sign face of fraction thereof.</u></p> <p><u>Each square foot or fraction thereof of one sign face exceeding 32 square feet (2.9728 m²).</u></p> <p><u>6. Operating permit—off-premise signs. An operating permit for off-premise signs that advertise the sale or rental of real property or direct persons to the location of real property for sale or rent, which signs are limited to 40 square feet (3.7161 m²) in sign face area, shall be a nonrenewable one-year permit as authorized in Section 4612 (b) of the <i>Houston Sign Code</i>.</u></p> <p><u>7. Operating permit. An off-premise operating permit for a sign other than as provided in item 6 above shall be issued as a renewable permit on an annual basis.</u></p> <p><u>8. New registration for changeable message signs/high technology signs (per face).</u></p> <p><u>9. Replacement of lost or damaged operating tag.</u></p> <p><u>10. Plan examination fee.</u></p> <p><u>11. Plan reexamination due to alteration of approved plan.</u></p> <p><u>12. Ground sign exceeding 14 feet (4,267 mm).</u></p> <p><u>All other fees required by Section 118 shall be paid in addition to the fees in Section 118.8.</u></p>		<p><u>permit on an annual basis upon payment of the following fees:</u></p> <p><u>For the first 32 square feet (2.9728 m²) of one sign face or fraction thereof.</u></p> <p><u>Each square foot or fraction thereof of one sign face exceeding 32 square feet (2.9728 m²).</u></p> <p><u>6. Operating permit—off-premise signs. An operating permit for off-premise signs that advertise the sale or rental of real property or direct persons to the location of real property for sale or rent, which signs are limited to 40 square feet (3.7161 m²) in sign face area, shall be a nonrenewable one-year permit as authorized in Section 4612(b) of the <i>Houston Sign Code</i>.</u></p> <p><u>7. Operating permit. An off-premise operating permit for a sign other than as provided in item 6 above shall be issued as a renewable permit on an annual basis.</u></p> <p><u>8. New registration for changeable message signs/high technology signs (per face).</u></p> <p><u>9. Replacement of lost or damaged operating tag.</u></p> <p><u>10. Plan examination fee.</u></p> <p><u>11. Plan reexamination due to alteration of approved plan.</u></p> <p><u>12. Ground sign exceeding 14 feet (4,267 mm).</u></p> <p><u>All other fees required by Section 118 shall be paid in addition to the fees in Section 118.8.</u></p>	
<p>118.9 Medical gas permits. Fees stated for this provision in the city fee schedule shall be charged for each gas outlet, with a minimum fee stated for this provision in the city fee schedule.</p>	<p>N/A</p>	<p>118.9 Medical gas permits. Fees stated for this provision in the city fee schedule shall be charged for each gas outlet, with a minimum fee stated for this provision in the city fee schedule.</p>	<p>No change to Houston amendment.</p>
<p>118.10 Alarms, detectors, electronic locks, central station security and testing. Fees stated for this provision in the city fee schedule shall be charged for alarms, detectors, central station security and testing.</p>	<p>N/A</p>	<p>118.10 Alarms, detectors, electronic locks, central station security and testing. Fees stated for this provision in the city fee schedule shall be charged for alarms, detectors, central station security and testing.</p>	<p>No change to Houston amendment.</p>
<p>118.11 High piled storage review and inspection. The fees stated for this provision in the city fee schedule shall be charged for the plan review and inspection of high piled storage buildings.</p> <p>Onsite reinspection fee. If a third onsite reinspection is necessary, the permittee shall pay the fee stated for this provision in the city fee schedule.</p> <p>Revisions. The fee stated for this provision in the city fee schedule shall be charged for revisions to plans.</p>	<p>N/A</p>	<p>118.11 High-piled storage review and inspection. The fees stated for this provision in the city fee schedule shall be charged for the plan review and inspection of high-piled storage buildings.</p> <p>Onsite reinspection fee. If a third onsite reinspection is necessary, the permit holder shall pay the fee stated for this provision in the city fee schedule.</p> <p>Revisions. The fee stated for this provision in the city fee schedule shall be charged for review of revisions to plans.</p>	<p>No change to Houston amendment.</p>

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<p>118.12 H Occupancy or tank storage review and inspection. The fees stated for this provision in the city fee schedule shall be charged for the plan review and inspection of H occupancy buildings or buildings with tank storage.</p> <p>Onsite reinspection fee. If a third onsite reinspection is necessary, the permittee shall pay the fee stated for this provision in the city fee schedule.</p> <p>Revisions. The stated for this provision in the city fee schedule shall be charged for revisions to plans.</p>	<p>N/A</p>	<p>118.12 Group H occupancy or tank storage review and inspection. The fees stated for this provision in the <i>city fee schedule</i> shall be charged for the plan review and inspection of Group H occupancy buildings, storage tanks or buildings with tank storage.</p> <p>Onsite reinspection fee. If a third onsite reinspection is necessary, the permittee shall pay the fee stated for this provision in the <i>city fee schedule</i>.</p> <p>Revisions. The stated for this provision in the <i>city fee schedule</i> shall be charged for revisions to plans.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION 119 PRIVATE PLAN REVIEW AND INSPECTION SERVICES</p> <p>119.1 Applicability. The application of this section is limited to those Group R-3 occupancy structures that constitute dwellings, as defined in this code, and to those Group U occupancies, such as garages, carports, fences and other structures, that are associated with dwellings.</p>	<p>N/A</p>	<p style="text-align: center;">SECTION 119 PRIVATE PLAN REVIEW AND INSPECTION SERVICES</p> <p>119.1 Applicability. The application of this section is limited to those Group R-3 occupancy structures that constitute <i>dwellings</i>, as defined in this code, and to those Group U occupancies, such as garages, carports, fences and other structures, that are associated with <i>dwellings</i>.</p>	<p>No change to Houston amendment.</p>
<p>119.2 Scope. This section applies to any permit required under the <i>Construction Code</i> for the construction, repair, or renovation of a structure to which this section applies.</p>	<p>N/A</p>	<p>119.2 Scope. This section applies to any permit required under the <i>Construction Code</i> for the construction, repair, or renovation of a structure to which this section applies.</p>	<p>No change to Houston amendment.</p>
<p>119.3 Program established. The <i>building official</i> may establish a private plan review and inspection program under which qualified persons who are not city employees may review plans, conduct certain building inspections, and provide related services for structures to which this section applies to assure compliance with all applicable construction codes. The program shall be conducted in accordance with the regulations and forms promulgated by the <i>building official</i>, which shall, without limitation, address the following:</p> <ol style="list-style-type: none"> 1. Qualifications of the firms and individuals authorized to perform plan reviews, conduct inspections, and provide other related permit services. The qualifications shall include licensing in accordance with any applicable laws and regulations and certification in accordance with state or federally recognized standards. 2. Requirement of appropriate liability coverage in an amount of not less than \$1,000,000.00 per occurrence, with agreements to hold harmless and indemnify the <i>jurisdiction</i>, as an additional insured, for the protection of the <i>jurisdiction</i> and other persons who may be affected by the performance of any services under the program. 3. Provisions to ensure that the firms and individuals participating in the program will act independently of building 	<p>N/A</p>	<p>119.3 Program established. The <i>building official</i> may establish a private plan review and inspection program under which qualified persons who are not city employees may review plans, conduct certain building inspections, and provide related services for structures to which this section applies to assure compliance with all applicable construction codes. The program shall be conducted in accordance with the regulations and forms promulgated by the <i>building official</i>, which shall, without limitation, address the following:</p> <ol style="list-style-type: none"> 1. Qualifications of the firms and individuals authorized to perform plan reviews, conduct inspections, and provide other related permit services. The qualifications shall include licensing requirements in accordance with any applicable laws and regulations and certification requirements in accordance with state or federally recognized standards. 2. Requirement of appropriate liability coverage in an amount of not less than \$1,000,000.00, per occurrence, with agreements to hold harmless and indemnify the <i>jurisdiction</i> and coverage of the <i>jurisdiction</i>, as an additional insured, for the protection of the <i>jurisdiction</i> and other persons who may be affected by the performance of any services under the program. 3. Provisions to ensure that the firms and individuals participating in the program will act independently of 	<p>No change to Houston amendment.</p>

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owners, contractors, and others so as to avoid conflicts of interest.

4. Provisions for any non-building-code-related review of plans and issuance of permits to applicants who utilize plan review, inspection, and other related services under the program.

5. Provision regarding the keeping of records and filing of reports with the *building official*.

6. Administrative provisions for the acceptance, suspension, and revocation of the right of a firm or individual to participate in the program, which shall include elements of due process, including a right of appeal to a hearing officer designated by the director of Houston Public Works, whose decision, notwithstanding any other provision of this code, shall be final and not appealable to the General Appeals Board or city council.

7. Provisions to ensure that no firm or individual may be certified to participate in the program unless qualified to conduct plan reviews and inspections under the codes currently enforced by the *jurisdiction* and/or a nationally recognized uniform or international code.

8. Provisions relating to fees charged by any firm or individual for services rendered under the program, including any fees required by law to be paid directly to the *jurisdiction* and remitted by the *building official* to a firm or individual.

9. Provisions prohibiting any private developer, building, or contractor from employing any firm or individual, including subcontractors, to perform more than 25% of that developer's, builder's or contractor's services under the program in any one calendar year unless a greater amount is approved by the *building official*.

10. Provisions requiring any private developer, builder or contractor utilizing any services under the program and the *building official* to file a report as set forth below:

10.1. Each private developer, builder or contractor utilizing any services under the program shall file a report with the *building official*, supported by affidavit, containing the following information:

10.1.1. The total number of permits received during the preceding calendar year for the construction of any residential structure in connection with which services under the program were rendered;

10.1.2. The name of each firm or individual utilized under the program on each residential structure during the reporting period; and

10.1.3. A statement certifying that the developer, builder or contractor has fully complied with all rules and regulations under the program during the reporting

building owners, contractors, and others so as to avoid conflicts of interest.

4. Provisions for any non-building-code-related review of plans and issuance of permits to applicants who utilize plan review, inspection, and other related services under the program.

5. Provisions regarding the keeping of records and filing of reports with the *building official*.

6. Administrative provisions for the acceptance, suspension, and revocation of the right of a firm or individual to participate in the program, which shall include elements of due process, including a right of appeal to a hearing officer designated by the director of Houston Public Works, whose decision, notwithstanding any other provision of this code, shall be final and not appealable to the General Appeals Board or city council.

7. Provisions to ensure that no firm or individual may be certified to participate in the program unless qualified to conduct plan reviews and inspections under the codes currently enforced by the *jurisdiction* and/or a nationally recognized uniform or international code.

8. Provisions relating to fees charged by any firm or individual for services rendered under the program, including any fees required by law to be paid directly to the *jurisdiction* and remitted by the *building official* to a firm or individual.

9. Provisions prohibiting any private developer, builder, or contractor from employing any firm or individual, including subcontractors, to perform more than 25% of that developer's, builder's or contractor's services under the program in any one calendar year unless a greater amount is approved by the *building official*.

10. Provisions requiring any private developer, builder or contractor utilizing any services under the program and the *building official* to file a report as set forth below:

a. Each private developer, builder or contractor utilizing any services under the program shall file a report with the *building official*, supported by affidavit, containing the following information:

10.1.1. The total number of permits received during the preceding calendar year for the construction of any residential structure in connection with which services under the program were rendered;

10.1.2. The name of each firm or individual utilized under the program on each residential structure during the reporting period; and

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period, including, but not limited to, all rules governing the maximum number of plan reviews and inspections permitted to be performed by any firm or individual, including subcontractors, rendering any services under the program.

The report shall be filed with the *building official* not later than the last day of January and July in each calendar year and shall cover the preceding 6-month period ending on the last day of December and June, respectively, in each year.

10.2. The *building official* shall file a report with the mayor and city council containing the following information:

10.2.1. A listing of the names of all companies or contractors that utilized individuals or firms for services under the program and the name of each firm or individual so utilized;

10.2.2. Names of all firms and individuals approved to perform services under the program;

10.2.3. Total number of plan reviews and inspections performed by firms and individuals for each private developer, builder or contractor operating under the program;

10.2.4. Number of plan rechecks and oversight inspections conducted by the *jurisdiction* for each firm or individual utilized under the program and the percentage of that firm's or individual's work, including subcontractors, so inspected;

10.2.5. The number of code violations found through plan rechecks and oversight inspections, including the name of the firm or individual, including subcontractors, who performed such services;

10.2.6. A list of any firms or individuals removed from the program by the *building official*; and

10.2.7. An assessment of program effectiveness as demonstrated by available data, including comments and complaints received by the *jurisdiction* regarding the program pertaining to work performed by a participating developer, builder or contractor, or any firm or individual, including subcontractors, providing private plan review or inspection services under the program.

The *building official's* report shall be filed with the mayor and city council not later than the last day of August and February in each calendar year and shall cover the preceding 6-month period ending on the last day of July and January, respectively, in each year and may include such additional information relating to the program as the *building official* may deem appropriate.

10.1.3. A statement certifying that the developer, builder or contractor has fully complied with all rules and regulations under the program during the reporting period, including, but not limited to, all rules governing the maximum number of plan reviews and inspections permitted to be performed by any firm or individual, including subcontractors, rendering any services under the program.

The report shall be filed with the *building official* not later than the last day of January and July in each calendar year and shall cover the preceding 6-month period ending on the last day of December and June, respectively, in each year.

b. The *building official* shall submit a report with the mayor and city council containing the following information:

10.2.1. A listing of the names of all companies or contractors that utilized individuals or firms for services under the program and the name of each firm or individual so utilized;

10.2.2. Names of all firms and individuals approved to perform services under the program;

10.2.3. Total number of plan reviews and inspections performed by firms and individuals for each private developer, builder or contractor operating under the program;

10.2.4. Number of plan rechecks and oversight inspections conducted by the *jurisdiction* for each firm or individual utilized under the program and the percentage of that firm's or individual's work, including subcontractors, so inspected;

10.2.5. The number of code violations found through plan rechecks and oversight inspections, including the name of the firm or individual, including subcontractors, who performed such services;

10.2.6. A list of any firms or individuals removed from the program by the *building official*; and

10.2.7. An assessment of program effectiveness as demonstrated by available data, including comments and complaints

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<p>11. Provisions prohibiting any private plan reviewer or inspector from being related to building owners, contractors, and other similarly situated individuals or entities within the third degree of consanguinity or within the second degree of affinity.</p>		<p>received by the jurisdiction regarding the program pertaining to work performed by a participating developer, builder or contractor, or any firm or individual, including subcontractors, providing private plan review or inspection services under the program.</p> <p>The building official's report shall be submitted to the mayor and city council not later than the last day of August and February in each calendar year and shall cover the preceding 6-month period ending on the last day of July and January, respectively, in each year and may include such additional information relating to the program as the building official may deem appropriate.</p> <p>11. Provisions prohibiting any private plan reviewer or inspector from being related to building owners, contractors, and other similarly situated individuals or entities within the third degree of consanguinity or within the second degree of affinity.</p>	
<p>119.4 Oversight inspections. The provisions of this section do not affect the jurisdiction of the building official over any work or preclude oversight inspections by the building official of structures that are subject to the provision of services under the program. For purposes of quality assurance, the building official shall be authorized to recheck plans, perform inspections or reinspections, issue stop work orders, and take any and all actions that are authorized to be taken under Construction Code. No prior notice need be provided to any program firm or individual, contractor, or owner, unless otherwise required by law.</p>	<p>N/A</p>	<p>119.4 Oversight inspections. The provisions of this section do not affect the jurisdiction of the building official over any work or preclude oversight inspections by the building official of structures that are subject to the provision of services under the program. For purposes of quality assurance, the building official shall be authorized to recheck plans, perform inspections or reinspections, issue stop work orders, and take any and all actions that are authorized to be taken under the Construction Code. No prior notice need be provided to any program firm or individual, contractor, or owner, unless otherwise required by law.</p>	<p>No change to Houston amendment.</p>
<p>119.5 Fees. To cover administrative costs, including registration of firms and individuals, management of the program, and oversight inspections, the building official shall assess fees equal to 25 percent of the amount otherwise payable under this code for any permit, but not less than the minimum fee as required in the city fee schedule. In addition to the reduced permit fees charged in connection with the program, an additional fee as stated in the city fee schedule per payment voucher issued shall be assessed to cover the jurisdiction's costs in connection with any fee required to be paid to and remitted by the jurisdiction. If any contractor or owner requests an inspection by the building official of any structure that is subject to private inspection under this section, then the building official may perform the same for the fee stated for this provision in the city fee schedule. The administrative fee that is payable under this code shall be collected in addition to the fees otherwise provided under this section.</p>	<p>N/A</p>	<p>119.5 Fees. To cover administrative costs, including registration of firms and individuals, management of the program, and oversight inspections, the building official shall assess fees equal to 25 percent of the amount otherwise payable under this code for any permit, but not less than the minimum fee as required in the city fee schedule. In addition to the reduced permit fees charged in connection with the program, an additional fee as stated in the city fee schedule per payment voucher issued shall be assessed to cover the jurisdiction's costs in connection with any fee required to be paid to and remitted by the jurisdiction. If any contractor or owner requests an inspection by the building official of any structure that is subject to private inspection under this section, then the building official may perform the same for the fee stated for this provision in the city fee schedule. The administrative fee that is payable under this code shall be collected in addition to the fees otherwise provided under this section.</p>	<p>No change to Houston amendment.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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2015 Houston IBC – Chapter 2 Definitions	2021 IBC – Chapter 2 Definitions	2021 Houston Amendments – Chapter 2 Definitions	Code Analysis
<p style="text-align: center;">SECTION 201 GENERAL</p>	<p style="text-align: center;">SECTION 201 GENERAL</p>	<p style="text-align: center;">SECTION 201 GENERAL</p>	
<p>201.3 Specific construction and terms defined in other codes. Where specific rules of construction or terms are not addressed or defined in this code and are addressed or defined in the <i>City Code</i> or another volume of the <i>Construction Code-International Energy Conservation International Fuel Gas Code, International Fire Code, International Mechanical Code or International Plumbing Code</i>, such terms or specific constructions herein shall have the meanings ascribed to them as in those codes other volumes, as applicable to the construction and proposed scope of work hereunder.</p>	<p style="text-align: center;">No change</p>	<p>201.3 Specific construction and terms defined in other codes. Where specific rules of construction or terms are not addressed or defined in this code and are addressed or defined in the <i>City Code</i> or another volume of the <i>Construction Code-International Energy Conservation International Fuel Gas Code, International Fire Code, International Mechanical Code or International Plumbing Code</i>, such terms or specific constructions herein shall have the meanings ascribed to them as in those codes other volumes, as applicable to the construction and proposed scope of work hereunder.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION 202 DEFINITIONS</p> <p>{EDITORIAL NOTE: ALL PORTIONS OF SECTION 202 NOT SHOWN REMAIN AS SET FORTH IN THE 2015 IBC.}</p>	<p style="text-align: center;">SECTION 202 DEFINITIONS</p> <p>{EDITORIAL NOTE: ALL PORTIONS OF SECTION 202 NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.}</p>	<p style="text-align: center;">SECTION 202 DEFINITIONS</p> <p>{EDITORIAL NOTE: ALL PORTIONS OF SECTION 202 NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.}</p>	<p>No change to Houston amendment.</p>
	<p>[A] ADDITION. An extension or increase in floor area, number of stories or height of a building or structure.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>[F] 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.</p>		<p>New definition for Aerosol Container matches NFPA 30B definition.</p>
	<p>[F] 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.</p> <p style="padding-left: 40px;">Level 1 aerosol products. Those with a total chemical heat of combustion that is less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).</p> <p style="padding-left: 40px;">Level 2 aerosol products. Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).</p>		<p>Edits made to clarify code, no major change to code</p>

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	Level 3 aerosol products. Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30 kJ/g).		
	[F] AEROSOL CONTAINER. A metal can or a glass or plastic bottle designed to dispense an aerosol.		New definition for Aerosol Container matches NFPA 30B definition.
<u>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.</u>	N/A	<u>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.</u>	No change to Houston amendment.
<u>[A] ALTERATION. Any construction or renovation to an existing structure other than repair or addition. Also, a change to an existing building, or an electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.</u>	<u>[A] ALTERATION. Any construction or renovation to an existing structure other than repair or addition.</u>	<u>[A] ALTERATION. Any construction or renovation to an existing structure other than repair or addition. Also, a change to an existing building, or an electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.</u>	No change to Houston amendment.
<u>ANCHOR. Metal rod, wire or strap that secures masonry to its structural support.</u>	N/A	<u>ANCHOR. Metal rod, wire or strap that secures masonry to its structural support.</u>	No change to Houston amendment.
	[BG] 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.		Edits made to clarify code, no major change to code
<u>APPROVAL. Official acknowledgement from the building official that the proposed work or completed work conforms to this code.</u>	N/A		Definition removed.
	<u>[A] APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests or, furnishing inspection services or furnishing product certification where such agency has been approved by the building official.</u>	<u>[A] APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests or, furnishing inspection services or furnishing product certification where such agency has been approved by the building official. Approved Nationally Recognized Testing Laboratory (NRTL) preapproved and listed on OSHA list for testing and certification are preapproved for Houston Construction Code. Agencies not listed with NRTL will require an alternate method.</u>	New amendment added to clarify and expand on types of approved agency's acceptable by the Building Official.
<u>[BS] APPROVED FABRICATOR. An established and qualified person, firm or corporation registered and certified with the jurisdiction and approved by the building official pursuant to Chapter 17 of this code to provide specific products and/or services that document compliance with the Construction Code.</u>	<u>[BS] APPROVED FABRICATOR. An established and qualified person, firm or corporation approved by the building official pursuant to Chapter 17 of this code.</u>	<u>[BS] APPROVED FABRICATOR. An established and qualified person, firm or corporation registered and certified with the jurisdiction and approved by the building official pursuant to Chapter 17 of this code to provide specific products and/or services that document compliance with the Construction Code.</u>	No change.

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	[BG] AREA, BUILDING. The area included within surrounding exterior walls, (or exterior walls and fire walls), exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.		Edits made to clarify code, no major change to code
AS-GRADED. The extent of surface conditions on completion of grading.		AS-GRADED. The extent of surface conditions on completion of grading.	No change to Houston amendment.
ASME CODE. The current <i>ASME/ANSI A17.1 Safety Code for Elevators and Escalators</i> ; an American National Standard published by the American Society of Mechanical Engineers. See Section 3001.2.		ASME CODE. The current <i>ASME/ANSI A17.1 Safety Code for Elevators and Escalators</i> ; an American National Standard published by the American Society of Mechanical Engineers. See Section 3001.2.	No change to Houston amendment.
	ATRIUM. A vertical space that is closed at the top, connecting two or more stories in Group I-2 and I-3 occupancies or three or more stories in all other occupancies.		Updated Atrium Definition
	[BG] ATTIC. The space between the ceiling beams-framing of the top story and the underside of the roof rafters.		Updated Attic Definition
	AUTOCLAVED AERATED CONCRETE (AAC). Low density cementitious product of calcium silicate hydrates, whose material specifications are defined in ASTM C 1386.		
AUTHORITY HAVING JURISDICTION. The director of Houston Public Works. This definition shall include the <i>authority having jurisdiction's</i> authorized representative.		AUTHORITY HAVING JURISDICTION. The City of Houston, Texas. The definition shall include the director of Houston Public Works as the jurisdiction's duly authorized representative.	Minor wordsmithing changes, intent remains unchanged.
AUTHORIZED COMPANY. An established and registered company regularly engaged in the installation or repair of elevators, escalators, dumbwaiters, or moving walks.		AUTHORIZED COMPANY. An established and registered company regularly engaged in the installation or repair of elevators, escalators, dumbwaiters, or moving walks.	No change to Houston amendment.
AUTHORIZED INSPECTOR. An inspector who is qualified as QEI-1 and is registered with the <i>building official.</i>		AUTHORIZED INSPECTOR. An inspector who is qualified as QEI-1 and is registered with the <i>building official.</i>	No change to Houston amendment.

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<p>BATHING ROOM (BATHROOM). A room fully enclosed by exterior walls and/or interior partitions, which contains one or more shower stalls or bathtubs, and which may or may not also contain one or more toilets or urinals and one or more handwashing sinks.</p>		<p>BATHING ROOM (BATHROOM). A room fully enclosed by exterior walls and/or interior partitions, which contains one or more shower stalls or bathtubs, and which may or may not also contain one or more toilets or urinals and one or more handwashing sinks.</p>	<p>No change to Houston amendment.</p>
<p>BEDROCK. In-place solid rock.</p>		<p>BEDROCK. In-place solid rock.</p>	<p>No change to Houston amendment.</p>
	<p>[A] BUILDING. Any structure used utilized or intended for supporting or sheltering any use of occupancy.</p>		<p>Updated Definition of Building</p>
	<p>[BS] BUILDING-INTEGRATED PHOTOVOLTAIC ROOF PANEL (BIPV ROOF PANEL). A building product that incorporates photovoltaic modules and A photovoltaic panel that functions as a component of the building envelope.</p>		<p>New Definition for Building Integrated Photovoltaic Roof Panel</p>
<p>BUILDING CODE. The <i>City of Houston Building Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>		<p>BUILDING CODE. The <i>City of Houston Building Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>No change to Houston amendment.</p>
<p>[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code, or a director of Houston Public Works or the duly authorized representative designated by the director to act as the chief construction code enforcement official of the jurisdiction; also known as chief building official. The term also includes the Houston Airport Systems building official who may be designated by the building official to perform Construction Code permitting and enforcement activities on Houston Airport Systems premises.</p>		<p>[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code, or a director of Houston Public Works or the duly authorized representative designated by the director to act as the chief construction code enforcement official of the jurisdiction; also known as chief building official. The term also includes the Houston Airport Systems building official who may be designated by the building official to perform Construction Code permitting and enforcement activities on Houston Airport Systems premises.</p>	<p>No change to Houston amendment.</p>
<p>BULKHEAD. A retaining wall designed to retard erosion of or prevent sloughing off of the banks along a waterfront or lake</p>		<p>BULKHEAD. A retaining wall designed to retard erosion of or prevent sloughing off of the banks along a waterfront or lake.</p>	<p>No change to Houston amendment.</p>
	<p>[F] 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.</p> <p>Preengineered capacitor energy storage system. A capacitor energy storage system consisting of capacitors.</p>		<p>New Definition of Capacitor Energy Storage System</p>

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	<p>an energy management system, components and modules that are produced in a factory, designed to constitute the system when assembled and shipped to the job site for assembly.</p> <p>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.</p>		
	<p>[F] 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.</p>		New Definition of Carbon Monoxide Alarm
	<p>[F] 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.</p>		New Definition of Carbon Monoxide Detector
	<p>[BF] CEILING RADIATION DAMPER. A listed device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening. Ceiling radiation dampers include air terminal units, ceiling dampers and ceiling air diffusers. Ceiling radiation dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in dynamic systems that continue to operate during a fire. A dynamic ceiling radiation damper is tested and rated for closure under elevated temperature airflow.</p>		Edits made to clarify definition, no major change to code
<p>CERTIFICATE OF COMPLIANCE. A certificate stating that materials and products meet specified standards or that <u>the scope of work under a specific permit</u> was done in compliance with approved construction documents. <u>Any reference in the Construction Code 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.</u></p>		<p>CERTIFICATE OF COMPLIANCE. A certificate stating that materials and products meet specified standards or that <u>the scope of work under a specific permit</u> was done in compliance with approved construction documents. <u>Any reference in the Construction Code 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.</u></p>	No change to Houston amendment.
<p>CERTIFYING ORGANIZATION. An independent organization that is competent and widely recognized to accredit elevator inspectors, has been approved by an organization that is nationally recognized, and is approved or recognized by the <i>building official</i> as competent to certify elevator inspectors.</p>		<p>CERTIFYING ORGANIZATION. An independent organization that is competent and widely recognized to accredit elevator inspectors, has been approved by an organization that is nationally recognized, and is approved or recognized by the <i>building official</i> as competent to certify elevator inspectors.</p>	No change to Houston amendment.
	<p>[A] CHANGE OF OCCUPANCY. A change in the use of a building or a portion a building which results in one of the following: Either of the following shall be considered as a change of occupancy where this code requires a greater degree of safety, accessibility, structural strength, fire protection, means of egress.</p>		Updated Definition for Change of Occupancy, provides more details.

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	<p><u>ventilation or sanitation than is existing in the current building or structure:</u></p> <p>1. A change of occupancy classification. Any change in the occupancy classification of a building or structure.</p> <p>2. A change from one group to another group within an occupancy classification. Any change in the purpose of, or a change in the level of activity within, a building or structure.</p> <p>3. Any change in use within a group for which there is a change in application of the requirements of this code.</p>		
	<p>[BG] CHILDREN'S PLAY STRUCTURE. A structure composed of one or more components, where the user enters a play environment.</p>		New Definition of Children's Play Structure
<p><u>CITY CODE.</u> <i>The Code of Ordinances City of Houston, Texas.</i></p>		<p>CITY CODE. <i>The Code of Ordinances, City of Houston, Texas.</i></p>	No change to Houston amendment.
<p><u>CITY ENGINEER.</u> Has the meaning ascribed in Section 1-2 of the <i>City Code.</i></p>		<p>CITY ENGINEER. Has the meaning ascribed in Section 1-2 of the <i>City Code.</i></p>	No change to Houston amendment.
<p><u>CITY FEE SCHEDULE.</u> The schedule of fees charged by the city for various permits, licenses, authorizations and services, which is maintained on the city's website.</p>		<p>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.</p>	No change to Houston amendment.
<p><u>CIVIL ENGINEER.</u> A professional engineer registered with the State of Texas to practice in the field of civil engineering.</p>		<p>CIVIL ENGINEER. A professional engineer registered with the State of Texas to practice in the field of civil engineering.</p>	No change to Houston amendment.
<p><u>CIVIL ENGINEERING.</u> The application of the knowledge of the forces of nature, principles of mechanics and the properties of materials to the evaluation, design and construction of civil works.</p>		<p>CIVIL ENGINEERING. The application of the knowledge of the forces of nature, principles of mechanics and the properties of materials to the evaluation, design and construction of civil works.</p>	No change to Houston amendment.
<p><u>CLEANOUT.</u> An opening to the bottom of a grout space of sufficient size and spacing to allow the removal of debris.</p>		<p>CLEANOUT. An opening to the bottom of a grout space of sufficient size and spacing to allow the removal of debris.</p>	No change to Houston amendment.

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	<p>[BS] COASTAL HIGH HAZARD AREA. Area within the special flood hazard area extending from offshore to the inland limit of a primary dune along an open coast and any other area that is subject to high-velocity wave action from storms or seismic sources, and shown on a Flood Insurance Rate Map (FIRM) or other flood hazard map as velocity Zone V, VO, VE or V1-30.</p>		<p>Minor Edit in Definition</p>
<p>CODE OFFICIAL. <u>The Building Code Enforcement employees, including but not limited to, the <i>building official</i>, plan analysts, field inspectors, and other technical staff charged with the administration and enforcement of this code as specifically delegated by the authority having jurisdiction. The code official is authorized to approve designs, construction, equipment, materials, installations, processes, procedures, practices, and other duties necessary to administer, verify and document compliance with the Construction Code, ordinances, and other laws and policies as specifically delegated by the chief building official, fire chief, and the authority having jurisdiction.</u></p>		<p>CODE OFFICIAL. <u>The Building Code Enforcement employees, including but not limited to, the <i>building official</i>, plan analysts, field inspectors, and other technical staff charged with the administration and enforcement of this code as specifically delegated by the authority having jurisdiction. The code official is authorized to approve designs, construction, equipment, materials, installations, processes, procedures, practices, and other duties necessary to administer, verify and document compliance with the Construction Code, ordinances, and other laws and policies as specifically delegated by the chief building official, fire chief, and the authority having jurisdiction.</u></p>	<p>No change to Houston amendment.</p>
	<p>[BS] COMBINED PILE RAFT. A geotechnical composite construction that combines the bearing effect of both foundation elements, raft and piles, by taking into account interactions between the foundation elements and the subsoil.</p>		<p>New Definition for Combined Pile Raft</p>
	<p>[F] COMBUSTIBLE LIQUID. A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:</p> <p>The category of combustible liquids does not include <u>compressed gases or cryogenic fluids or liquids that do not have a fire point when tested in accordance with ASTM D92.</u></p> <p>Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).</p> <p>Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).</p> <p>Class IIIB. Liquids having a closed cup flash point at or above 200°F (93°C).</p>		<p>Expanding definition of Combustible Liquid. ASTM D92 is also referenced in NFPA 30.</p>
	<p>[F] COMMERCIAL MOTOR VEHICLE. A motor vehicle used to transport passengers or property where the motor vehicle meets one of the following:</p> <ol style="list-style-type: none"> 1. Has a gross vehicle weight rating of 10,000 pounds (4540 kg) or more, or 2. Is designed to transport 16 or more passengers, including the driver. 		<p>Edits made to clarify definition, no major change to code</p>

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<p>COMMERCIAL PIER. One of more piers, any part of which is used for any of the following:</p> <ol style="list-style-type: none"> 1. Commercial boat livery. 2. Commercial fishing camp. 3. Public pier. 4. Private club. 5. A pier used by the owner of two or more residential lots for access to the lake. 6. A pier at which access to the lake may be provided for the payment of an admission or membership fee. 7. A pier at which vessel are moored for money or other valuable consideration. 8. A pier at which two or more vessels that have a cab, a toilet or a sewage holding tank are moored. 		<p>COMMERCIAL PIER. One of more piers, any part of which is used for any of the following:</p> <ol style="list-style-type: none"> 1. Commercial boat livery. 2. Commercial fishing camp. 3. Public pier. 4. Private club. 5. A pier used by the owner of two or more residential lots for access to the lake. 6. A pier at which access to the lake may be provided for the payment of an admission or membership fee. 7. A pier at which vessel are moored for money or other valuable consideration. 8. A pier at which two or more vessels that have a cab, a toilet or a sewage holding tank are moored. 	<p>No change to Houston amendment.</p>
<p>COMPRESSIVE STRENGTH OF MASONRY. Maximum compressive force resisted per unit of net cross-sectional area of masonry, determined by the testing of masonry prisms.</p>		<p>COMPRESSIVE STRENGTH OF MASONRY. Maximum compressive force resisted per unit of net cross-sectional area of masonry, determined by the testing of masonry prisms.</p>	<p>No change to Houston amendment.</p>
	<p>[BE] COMMON PATH OF EGRESS TRAVEL. That portion of the exit access 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 exits or exit access doorways.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[F] COMPRESSED GAS. A material or mixture of materials that meets both of the following:</p> <ol style="list-style-type: none"> 1. Is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure; and 2. Has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C). <p>The states of a compressed gas are categorized as follows:</p> <ol style="list-style-type: none"> 1. Nonliquefied compressed gases are gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C). 2. Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C). 		<p>Edits made to clarify definition, no major change to code</p>

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	<p>3. Compressed gases in solution are nonliquefied gases that are dissolved in a solvent.</p> <p>4. Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.</p>		
		<p>[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.</p>	<p>New Houston IBC amendment; brought over from existing Houston Fire Code.</p>
<p>CONSTRUCTION CODE. Has the meaning ascribed in Section 1-2 of the <i>City Code</i>.</p>		<p>CONSTRUCTION CODE. Has the meaning ascribed in Section 1-2 of the <i>City Code</i>.</p>	<p>No change to Houston amendment.</p>
	<p>[F] 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.</p>		
	<p>[BF] CONTINUOUS INSULATION (ci). Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior, or is integral to any opaque surface of the building envelope.</p>		<p>Definition expanded and analysis requirement removed.</p>
	<p>[BS] CONVENTIONAL LIGHT-FRAME CONSTRUCTION. A type of construction whose primary structural elements are formed by a system of repetitive wood-framing members. See Section 2308 for conventional light-frame construction provisions.</p>		<p>Edits made to clarify definition, no major change to code</p>
<p>CORROSION RESISTANT or NONCORROSIVE. Refers to a material having a corrosion resistance equal to or greater than a hot-dipped galvanized coating of 1.5 ounces of zinc per square foot (457.75 g/m²) of surface area. When an element is required to be corrosion resistant or noncorrosive, all of its parts, such as screws, nails, wire, dowels, bolts, nuts, washers, shims, anchors, ties and attachments, shall also be corrosion resistant or noncorrosive.</p>		<p>CORROSION RESISTANT or NONCORROSIVE. Refers to a material having a corrosion resistance equal to or greater than a hot-dipped galvanized coating of 1.5 ounces of zinc per square foot (457.75 g/m²) of surface area. When an element is required to be corrosion resistant or noncorrosive, all of its parts, such as screws, nails, wire, dowels, bolts, nuts, washers, shims, anchors, ties and attachments, shall also be corrosion resistant or noncorrosive.</p>	<p>No change to Houston amendment.</p>
<p>[BS] DANGEROUS. Any building meeting the definition of a dangerous building as defined in Chapter 10, Article IX, 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:</p>	<p>[BS] DANGEROUS. Any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:</p>	<p>[BS] DANGEROUS. Any building meeting the definition of a dangerous building as defined in Chapter 10, Article IX, 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:</p> <ol style="list-style-type: none"> The building or structure has collapsed, has partially collapsed, has moved off its foundation, or lacks the 	<p>No change to Houston amendment.</p>

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<p>1. The building or structure has collapsed, has partially collapsed, has moved off its foundation, or lacks the necessary support of ground.</p> <p>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.</p>	<p>1. The building or structure has collapsed, has partially collapsed, has moved off its foundation or lacks the necessary support of the ground.</p> <p>2. There exists a significant risk of collapse, detachment or dislodgment of any portion, member, appurtenance or ornamentation of the building or structure under permanent, routine, or frequent loads; under actual loads already in effect; or under snow, wind, rain, flood, earthquake, or other environmental loads when such loads are imminent.</p>	<p>necessary support of the ground.</p> <p>2. There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under permanent, routine or frequent loads; under actual loads already in effect; or under snow, wind, rain, flood, earthquake, or other environmental loads when such loads are imminent.</p>	
	<p>[BS] DEAD LOAD. The weight of materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, <i>stairways</i>, built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, and the weight of fixed service equipment, including cranes and material handling systems.</p>		
	<p>[BF] DELAYED-ACTION CLOSER. A self-closing device that incorporates a delay prior to the initiation of closing. Delayed-action closers are mechanical devices with an adjustable delay.</p>		New Definition
	<p>[BS] DRILLED SHAFT. A cast-in-place deep foundation element, also referred to as a caisson, drilled pier or bored pile, constructed by drilling a hole (with or without permanent casing or drilling fluid) into soil or rock and filling it with fluid concrete after the drilling equipment is removed.</p> <p>Socketed drilled shaft. A drilled shaft with a permanent pipe or tube casing that extends down to bedrock and an uncased socket drilled into the bedrock.</p>		Edits made to clarify definition, no major change to code
		<p>DRINKING FOUNTAIN. A plumbing fixture that is connected to the potable water distribution system and the drainage system. The fixture allows the user to obtain a drink directly from a stream of flowing water without the use of any accessories.</p>	New Houston amendment accepted during CCM code development. Definition is brought over from 2021 IPC.
<p><u>DRIVEWAY.</u> An approved surface on private premises that is designated for motor vehicle use and connected to the driveway approach either directly or by other improved surfaces. (For purposes of Section 3112, the definition of private street shall be the same as the definition of driveway.)</p>		<p>DRIVEWAY. An approved surface on private premises that is designated for motor vehicle use and connected to the driveway approach either directly or by other improved surfaces. (For purposes of Section 3112, the definition of private street shall be the same as the definition of driveway.)</p>	No change to Houston amendment.
<p><u>DRIVEWAY APPROACH.</u> An entrance to and exit from private premises that is designated for motor vehicle use and is not open for vehicle traffic except by permission of the owner of such private premises. The approach is located entirely in the right-of-way, between the edge of the roadway paving and the property line. This</p>		<p>DRIVEWAY APPROACH. An entrance to and exit from private premises that is designated for motor vehicle use and is not open for vehicle traffic except by permission of the owner of such private premises. The approach is located entirely in the right-of-way, between the edge of the roadway paving and the property line. This definition shall also include the term "driveways" as defined in the <i>Infrastructure Design Manual</i>.</p>	No change to Houston amendment.

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<p><u>definition shall also include the term “driveways” as defined in the Infrastructure Design Manual.</u></p>			
<p>DUPLEX. An individual free-standing structure containing only two dwellings, single-family residences, or households, each containing a separate means of egress.</p>		<p>DUPLEX. An individual free-standing structure containing not more than two dwelling units, single-family dwellings, or households, each containing a separate means of egress.</p>	<p>No change to Houston amendment.</p>
	<p>[BG] DWELLING UNIT, EFFICIENCY. A dwelling unit where all permanent provisions for living, sleeping, eating and cooking are contained in a single room.</p>		<p>New definition</p>
<p>EARTH MATERIAL. Any rock, natural soil or fill or any combination thereof.</p>		<p>EARTH MATERIAL. Any rock, natural soil or fill or any combination thereof.</p>	<p>No change to Houston amendment.</p>
<p>EGRESS COURT. A court or yard with a minimum width of 36 inches (914.4 mm) which provides access to a public way for one or more exits or emergency escape and rescue openings.</p>			<p>Previous Houston amendment for “Egress Court” definition was removed. Covered in base code Section 1029.2.</p>
<p>ELECTRICAL CODE. The City of Houston Electrical Code as adopted and amended by this jurisdiction.</p>		<p>ELECTRICAL CODE. The City of Houston Electrical Code as adopted and amended by this jurisdiction.</p>	<p>No change to Houston amendment.</p>
	<p>[BG] ELECTRIC VEHICLE CHARGING STATION. One or more vehicle spaces served by an electric vehicle charging system.</p>		<p>New definition</p>
	<p>[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.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BF] EMITTANCE. The ratio of radiant heat flux emitted by a specimen to that emitted by a blackbody at the same temperature and under the same conditions.</p>		<p>New definition</p>

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<p>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.</p>		<p>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.</p>	<p>No change to Houston amendment.</p>
	<p>[F] ENERGY STORAGE SYSTEM, ELECTROCHEMICAL. <u>An energy storage system that stores energy and produces electricity using chemical reactions. It includes, among others, battery ESS and capacitor ESS.</u></p>		<p>New definition</p>
<p>ENGINEERING GEOLOGIST. <u>A geologist experienced and knowledgeable in engineering geology.</u></p>		<p>ENGINEERING GEOLOGIST. <u>A geologist experienced and knowledgeable in engineering geology.</u></p>	<p>No change to Houston amendment.</p>
<p>ENGINEERING GEOLOGY. <u>The application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works.</u></p>		<p>ENGINEERING GEOLOGY. <u>The application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works.</u></p>	<p>No change to Houston amendment.</p>
<p>ENTERPRISE. <u>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. 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 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:</u></p> <ol style="list-style-type: none"> <u>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;</u> <u>2. Areas or spaces up to 500 square feet (46.4515 m²) each in research labs operated under the authority of a hospital, college, or university, and classified as H-2, H-3, or H-4, with an aggregate maximum area of ten percent on each floor; or</u> <u>3. Any area or space containing fuel storage for generators, fire pumps, above or underground fuel storage associated with motor fuel-dispensing facilities.</u> 		<p>ENTERPRISE. <u>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. 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 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:</u></p> <ol style="list-style-type: none"> <u>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;</u> <u>2. Areas or spaces up to 500 square feet (46.4515 m²) each in research labs operated under the authority of a hospital, college, or university, and classified as H-2, H-3 or H-4, with an aggregate maximum area of ten percent on each floor; or</u> <u>3. Any area or space containing fuel storage for generators, fire pumps, above or underground fuel storage associated with motor fuel-dispensing facilities.</u> 	<p>No change to Houston amendment.</p>

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<p>ENTERPRISE PERMIT. A current license or document issued by the <i>jurisdiction's</i> 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.</p>		<p>ENTERPRISE PERMIT. A current license or document issued by the <i>jurisdiction's</i> 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.</p>	<p>No change to Houston amendment.</p>
<p>ESCALATOR SKIRT DEFLECTOR DEVICE. A device that reduces the risk of objects coming into contact with the skirt of the elevator.</p>		<p>ESCALATOR SKIRT DEFLECTOR DEVICE. A device that reduces the risk of objects coming into contact with the skirt of the elevator.</p>	<p>No change to Houston amendment.</p>
	<p>[A] EXISTING BUILDING. A building erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.</p>		<p>New definition</p>
<p>EXISTING BUILDING CODE. The <i>City of Houston Existing Building Code</i>, as adopted by this jurisdiction.</p>		<p>EXISTING BUILDING CODE. The <i>City of Houston Existing Building Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>No change to Houston amendment.</p>
<p>EXISTING STRUCTURE. A structure erected prior to the date of adoption of this code, or one for which a legal building permit has been issued. For application of provisions in <i>flood hazard areas</i>, an existing structure is any building or structure for which the start of construction commenced before the effective date of the community's first flood plain management code, ordinance or standard.</p>	<p>[BS] EXISTING STRUCTURE. A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued. For application of provisions in <i>flood hazard areas</i>, an existing structure is any building or structure for which the start of construction commenced before the effective date of the community's first flood plain management code, ordinance or standard.</p>	<p>EXISTING STRUCTURE. A structure erected prior to the date of adoption of this the appropriate code, or one for which a legal building permit has been issued.</p>	<p>Edits made to clarify definition, no major change to code.</p>
	<p>[F] 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.</p> <p>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.</p> <p>High explosive. Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap when unconfined.</p> <p>Low explosive. Explosive material 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 explosives include, but are not</p>		<p>Edits made to clarify definition, no major change to code</p>

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limited to: black powder; safety fuse; igniters; igniter cord; fuse lighters; fireworks; 1.3C and propellants, 1.3C.

Mass-detonating explosives. Division 1.1, 1.2 and 1.5 explosives alone or in combination, or loaded into various types of ammunition or containers, most of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, severe concussion, impact, the impulse of an initiating agent or the effect of a considerable discharge of energy from without. Materials that react in this manner represent a mass explosion hazard. Such an explosive will normally cause severe structural damage to adjacent objects. Explosive propagation could occur immediately to other items of ammunition and explosives stored sufficiently close to and not adequately protected from the initially exploding pile with a time interval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

UN/DOtn Class 1 explosives. The former classification system used by DOtn included the terms "high" and "low" explosives as defined herein. The following terms further define explosives under the current system applied by DOtn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (i.e., the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

Division 1.1. Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.

Division 1.2. Explosives that have a projection hazard but not a mass explosion hazard.

Division 1.3. Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

Division 1.4. Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

Division 1.5. Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard, but that are so insensitive there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Division 1.6. Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

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	[BF] EXTERIOR WALL ENVELOPE. A system or assembly of exterior wall components, including exterior wall covering materials, that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space, from the detrimental effects of the exterior environment.		Edits made to clarify definition, no major change to code
	[BF] F RATING. The time period that the through-penetration firestop system or perimeter fire containment system limits the spread of fire through the penetration or void.		Edits made to clarify definition, no major change to code
FAIL-SAFE. A design condition associated with an electronic locking device or system that incorporates a feature for automatically counteracting the effect of an anticipated possible power source failure; also, a design condition eliminating or mitigating a hazardous condition by compensating automatically for a system or component malfunction, or power failure.		FAIL-SAFE. A design condition associated with an electronic locking device or system that incorporates a feature for automatically counteracting the effect of an anticipated possible power source failure; also, a design condition eliminating or mitigating a hazardous condition by compensating automatically for a system or component malfunction, or power failure.	No change to Houston amendment.
	[BS] FENESTRATION. Skylights, roof windows, vertical windows (fixed or moveable), opaque doors, glazed doors, glazed block and combination opaque/glazed doors. Fenestration includes products with glass and nonglass glazing materials. Products classified as either vertical fenestration or skylights and sloped glazing, installed in such a manner as to preserve the weather-resistant barrier of the wall or roof in which they are installed. Fenestration includes products with glass or other transparent or translucent materials.		Edits made to clarify definition, no major change to code
	[BS] FENESTRATION, VERTICAL. Windows that are fixed or movable, opaque doors, glazed doors, glazed block and combination opaque and glazed doors installed in a wall at less than 15 degrees from the vertical.		New definition
FIRE APPARATUS ACCESS ROAD. A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane and access roadway.		FIRE APPARATUS ACCESS ROAD. A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane and access roadway.	No change to Houston amendment.
FIRE CHIEF. Has the meaning ascribed in Section 34-53 of the City Code.		FIRE CHIEF. Has the meaning ascribed in Section 34-53 of the City Code.	No change to Houston amendment.
FIRE CODE. The City of Houston Fire Code, as adopted by this jurisdiction.		FIRE CODE. The City of Houston Fire Code, as adopted and amended by this jurisdiction.	No change to Houston amendment.

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<p>FIRE CODE OFFICIAL. The jurisdiction's fire marshal, who is charged with the administration and enforcement of the Fire Code, or an authorized representative.</p>		<p>FIRE CODE OFFICIAL. <u>The jurisdiction's fire marshal, who is charged with the administration and enforcement of the Fire Code, or an authorized representative.</u></p>	<p>No change to Houston amendment.</p>
<p>FIRE MARSHAL. The fire marshal of this jurisdiction or such other person as the fire chief of this jurisdiction may designate.</p>		<p>FIRE MARSHAL. <u>The fire marshal of this jurisdiction or such other person as the fire chief of this jurisdiction may designate.</u></p>	<p>No change to Houston amendment.</p>
	<p>[BF] FIRE PROTECTIVE CURTAIN ASSEMBLY. An assembly consisting of a fabric curtain, a bottom bar, guides, a coil, and an operating and closing system.</p>		<p>New definition</p>
	<p>[BS] FIRE-RETARDANT-TREATED WOOD. Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-building characteristics and resist propagation of fire.</p>		<p>New definition</p>
	<p>[F] FLAMMABLE LIQUID. <i>A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:</i></p> <p>Class IA. <i>Liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).</i></p> <p>Class IB. <i>Liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).</i></p> <p>Class IC. <i>Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C). The category of flammable liquids does not include compressed gases or cryogenic fluids, or liquids that do not have a fire point when tested in accordance with ASTM D92.</i></p>		
	<p>[F] FIREWORKS. Any composition or device for the purpose of producing a visible or audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.4G fireworks or 1.3G fireworks.</p> <p>Fireworks, 1.3G. Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyro-technic composition, and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as fireworks, UN0335 by the DOTn.</p>		<p>Edits made to clarify definition, no major change to code</p>

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	<p>Fireworks, 1.4G. Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for fireworks, UN0336, and the U.S. Consumer Product Safety Commission (CPSC) as set forth in CPSC 16 CFR: Parts 1500 and 1507. are not explosive materials for the purpose of this code.</p>		
	<p>[F] FLAMMABLE GAS. A material that is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)], which also meets one of the following:</p> <ol style="list-style-type: none"> 1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or, 2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit. <p>The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[F] 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>		<p>New definition</p>
	<p>[BE] GAMING. To deal, operate, carry on, conduct, maintain or expose for play any game played with cards, dice, equipment or any mechanical, electromechanical or electronic device or machine for money, property, checks, credit or any representative of value except where occurring at private home or operated by a charitable or educational organization.</p>		<p>New definition</p>

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	[BE] GAMING AREA. Single or multiple areas of a building or facility where gaming machines or tables are present and gaming occurs, including but not limited to, primary casino gaming areas, VIP gaming areas, high-roller gaming areas, bar tops, lobbies, dedicated rooms or spaces such as in retail or restaurant establishments, sports books and tournament areas.		New definition
	[BE] GAMING MACHINE TYPE. Categorization of gaming machines per type of game played on them, including, but not limited to, slot machines, video poker and video keno.		New definition
	[BE] GAMING TABLE TYPE. Categorization of gaming tables per the type of game played on them, including, but not limited to, baccarat, bingo, blackjack/21, craps, pai gow, poker, roulette.		New definition
	[F] 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-contained gas detection and alarm device is not classified as a gas detection system.		New definition
	[BS] GLASS MAT GYPSUM PANEL. A gypsum panel consisting of a noncombustible core primarily of gypsum, surface with glass mat partially or completely embedded in the core.		New definition
GOOD CONDITION. Describes materials that have been visually inspected by the <i>building official</i> and determined to be fit for installation. Materials shall be in sufficient condition to reuse without potential harm to the health, safety, and welfare of the public. Materials shall not have any mold or water damage. Wood products shall not contain any holes other than wire or nail holes. Wood products shall not contain rot, splits, buckling, warpage or other deterioration that would prevent the material from functioning in its intended use. The condition shall be determined by the <i>building official</i> .		GOOD CONDITION. Describes materials that have been visually inspected and approved for use by the <i>building official</i> . Materials shall be in sufficient condition to reuse without potential harm to the health, safety, and welfare of the public. Materials shall not have any mold or water damage. Wood products shall not contain any holes other than wire or nail holes. Wood products shall not contain rot, splits, buckling, warpage or other deterioration that would prevent the material from functioning in its intended use. The condition shall be determined by the <i>building official</i> .	No change to Houston amendment.
	[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.		Edits made to clarify definition, no major change to code

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	[BE] GRADE FLOOR OPENING. A window or other opening located such that the sill height of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.		New definition
<u>GRADE, ROUGH.</u> The stage of grading at which the grade approximately conforms to the approved plan.		<u>GRADE, ROUGH.</u> The stage of grading at which the grade approximately conforms to the approved plan.	No change to Houston amendment.
<u>GRADING.</u> The act of leveling to a smooth horizontal or sloping surface. Also see <u>SITE GRADING.</u>		<u>GRADING.</u> The act of leveling to a smooth horizontal or sloping surface. Also see <u>SITE GRADING.</u>	No change to Houston amendment.
<u>GRADING, ENGINEERED.</u> Any <i>grading</i> involving in excess of 1,000 cubic yards (764.5549 m ³) of fill.		<u>GRADING, ENGINEERED.</u> Any <i>grading</i> involving in excess of 1,000 cubic yards (764.5549 m ³) of fill.	No change to Houston amendment.
<u>GRADING, REGULAR.</u> Any <i>grading</i> involving less than or equal to 1,000 cubic yards (764.5549 m ³) of fill.		<u>GRADING, REGULAR.</u> Any <i>grading</i> involving less than or equal to 1,000 cubic yards (764.5549 m ³) of fill.	No change to Houston amendment.
<u>GRUB OR GRUBBING.</u> To clear vegetation from property by digging up roots and stumps to a depth not exceeding 24 inches (609.6 mm).		<u>GRUB OR GRUBBING.</u> To clear vegetation from property by digging up roots and stumps to a depth not exceeding 24 inches (609.6 mm).	No change to Houston amendment.
	[BG] GREENHOUSE. A structure or thermally isolated area of a building that maintains a specialized sunlit environment used for and essential to the cultivation, protection or maintenance of plants.		New definition
	GUEST ROOM [BG] GUESTROOM. A room used or intended to be used by one or more guests for living or sleeping purposes.		New definition
	[BS] GYPSUM PANEL PRODUCT. The general name for a family of sheet products consisting essentially of gypsum <u>complying with the standards specified in Table 2506.2 and Table 2507.2, and Chapter 35. Gypsum board and glass mat gypsum panels are examples of gypsum panel products.</u>		Edits made to clarify definition, no major change to code

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	[BS] GYPSUM SHEATHING. Gypsum panel products specifically manufactured with enhanced water resistance for use as a substrate for exterior surface materials.		New definition
	[BS] GYPSUM WALLBOARD. A gypsum board used primarily as an interior surfacing for building structures.		New definition
	[F] 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 definition
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.		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, 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.		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.	No change to Houston amendment.
	[A] 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.		Edits made to clarify definition, no major change to code
HOUSTON SPECIAL FLOOD HAZARD AREA. The land in the special flood hazard area and in the floodplain within the city that is subject to a 0.2 percent or greater chance of flooding in any given year and is designated as unnumbered A Zones, AE Zones, AO		HOUSTON SPECIAL FLOOD HAZARD AREA. The land in the special flood hazard area and in the floodplain within the city that is subject to a 0.2 percent or greater chance of flooding in any given year and is designated as unnumbered A Zones, AE Zones, AO	No change to Houston amendment.

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<u>Zones, AH Zones, A1 through A99 Zones, VO Zones, V1 through V30 Zones, VE Zones, V Zones, or X Shaded Zones.</u>		<u>Zones, AH Zones, A1 through A99 Zones, VO Zones, V1 through V30 Zones, VE Zones, V Zones, or X Shaded Zones.</u>	
	HPM. See "Hazardous Production Material."		New definition, HPM was previously used in code without a definition.
	[BS] IMPACT PROTECTIVE SYSTEM. Construction that has been shown by testing to withstand the impact of test missiles and that is applied, attached or locked over exterior glazing.		New definition
	[BS] INDIVIDUAL TRUSS MEMBER. A truss chord or truss web.		New definition
INFRASTRUCTURE DESIGN MANUAL. The design manual with latest revision at the time of permit application that sets forth the standards for infrastructure design and construction as approved by the Office of the City Engineer in Houston Public Works.		INFRASTRUCTURE DESIGN MANUAL. The design manual with latest revision at the time of permit application that sets forth the standards for infrastructure design and construction as approved by the Office of the City Engineer in Houston Public Works.	No change to Houston amendment.
	[BF] INSULATING SHEATHING. A rigid panel or board insulation material having a thermal resistance of not less than R-2 of the core material with properties suitable for use on walls, floors, roofs or foundations.		New definition
	[BS] INTERMODAL SHIPPING CONTAINER. A six-sided steel unit originally constructed as a general cargo container used for the transport of goods and materials.		New 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 <i>City of Houston Building Code</i> , as adopted and amended by this jurisdiction.	Minor wordsmithing changes to definition.
INTERNATIONAL ENERGY CONSERVATION CODE. Any reference herein to the <i>International Energy Conservation Code</i> shall be construed as referring to the <i>City of Houston Residential Energy Conservation Code</i> or the <i>City of Houston Commercial Energy Conservation Code</i> , both as adopted and amended by this jurisdiction.		INTERNATIONAL ENERGY CONSERVATION CODE. The <i>City of Houston Residential Energy Conservation Code</i> or the <i>City of Houston Commercial Energy Conservation Code</i> , both as adopted and amended by this jurisdiction.	Minor wordsmithing changes to definition.
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 <i>City of Houston Existing Building Code</i> , as adopted and amended by this jurisdiction.	Minor wordsmithing changes to definition.

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<p>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 <i>jurisdiction</i>.</p>		<p>INTERNATIONAL FIRE CODE. The <i>City of Houston Fire Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>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 by this <i>jurisdiction</i>.</p>		<p>INTERNATIONAL FUEL GAS CODE. The <i>City of Houston Plumbing Code</i>, as adopted by this <i>jurisdiction</i>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>INTERNATIONAL MECHANICAL CODE. Any reference herein to the <i>International Mechanical Code</i> shall be construed as referring to the <i>City of Houston Mechanical Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>		<p>INTERNATIONAL MECHANICAL CODE. The <i>City of Houston Mechanical Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>INTERNATIONAL PLUMBING CODE. Any reference herein to the <i>International Plumbing Code</i> shall be construed as referring to the <i>City of Houston Plumbing Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>		<p>INTERNATIONAL PLUMBING CODE. The <i>City of Houston Plumbing Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>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>.</p>		<p>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>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>INTERNATIONAL RESIDENTIAL CODE. Any reference herein to the <i>International Residential Code</i> shall be construed as referring to the <i>City of Houston Residential Code</i>, adopted and amended by this <i>jurisdiction</i>.</p>		<p>INTERNATIONAL RESIDENTIAL CODE. The <i>City of Houston Residential Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>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>.</p>		<p>INTERNATIONAL SWIMMING POOL AND SPA CODE. The <i>City of Houston Swimming Pool and Spa Code</i>, as adopted and amended by this <i>jurisdiction</i>.</p>	<p>Minor wordsmithing changes to definition.</p>
<p>JETTY. A permanent structure built into a body of water to direct the current or protect a harbor.</p>		<p>JETTY. A permanent structure built into a body of water to direct the current or protect a harbor.</p>	<p>No change to Houston amendment.</p>
	<p>[A] JURISDICTION. The governmental unit that has adopted this code under due legislative authority.</p>		<p>Edits made to clarify definition, no major change to code</p>

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	[F] LABORATORY SUITE. A fire-rated, enclosed laboratory area providing one or more laboratory spaces within a Group B educational occupancy that includes ancillary uses such as offices, bathrooms and corridors that are contiguous with the laboratory area, and are constructed in accordance with Section 428.		New Definition
<u>LAKE HOUSTON. Has the meaning ascribed to it by Chapter 23 of the City Code. The shoreline of an area bounded on the south by the Lake Houston Dam, on the northwest by the West Lake Houston Parkway Bridge and on the northeast by an imaginary line running generally east to west that intersects the confluence of Luce Bayou and the East Fork of the San Jacinto River, and is more particularly described as beginning at a point located at 30° 2' 31.67" N, 95° 7' 12.09" W and running generally west to 30° 2' 32.02" N, 95° 7' 36.14" W.</u>		<u>LAKE HOUSTON. Has the meaning ascribed to it by Chapter 23 of the City Code. The shoreline of an area bounded on the south by the Lake Houston Dam, on the northwest by the West Lake Houston Parkway Bridge and on the northeast by an imaginary line running generally east to west that intersects the confluence of Luce Bayou and the East Fork of the San Jacinto River, and is more particularly described as beginning at a point located at 30° 2' 31.67" N, 95° 7' 12.09" W and running generally west to 30° 2' 32.02" N, 95° 7' 36.14" W.</u>	No change to Houston amendment.
	[F] LIFE SAFETY SYSTEMS. Systems, devices and equipment that enhance or facilitate evacuation, smoke control, compartmentation and isolation.		New definition
<u>LOADING BERTH. A space for the loading, unloading or parking of trucks and motor vehicles other than motor vehicles principally designed for passengers that complies with Section 3112.4.6 and with the requirements of Chapter 26, Article VIII, of the City Code.</u>		<u>LOADING BERTH. A space for the loading, unloading or parking of trucks and motor vehicles other than motor vehicles principally designed for passengers that complies with Section 3112.4.6 and with the requirements of Chapter 26, Article VIII, of the City Code.</u>	No change to Houston amendment.
<u>LOCAL STREET OR ROAD. A street or road primarily intended for access to a residence, business or other abutting property.</u>		<u>LOCAL STREET OR ROAD. A street or road primarily intended for access to a residence, business or other abutting property.</u>	No change to Houston amendment.
	[BE] LOW-ENERGY POWER-OPERATED DOOR. A swinging, sliding or folding door—which that 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 “Power-assisted door” and “Power-operated door”).		Edits made to clarify definition, no major change to code
	[BS] LOWEST FLOOR. The lowest floor of the lowest enclosed area, including basement, but excluding any unfinished or flood-resistant enclosure, usable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the structure in violation of Section 1612.		Edits made to clarify definition, no major change to code
<u>MAJOR THOROUGHFARE. (1) A public street that is designated as a principal thoroughfare, a thoroughfare or a major collector on the most recent “Major Thoroughfare and Freeway Plan” approved by the jurisdiction’s city council; or (2) any street that is designated as an express street pursuant to Section 45-39 of the City Code and is shown in the “Express Street Plan” of the jurisdiction’s traffic engineer.</u>		<u>MAJOR THOROUGHFARE. (1) A public street that is designated as a principal thoroughfare, a thoroughfare or a major collector on the most recent “Major Thoroughfare and Freeway Plan” approved by the jurisdiction’s city council; or (2) any street that is designated as an express street pursuant to Section 45-39 of the City Code and is shown in the “Express Street Plan” of the jurisdiction’s traffic engineer.</u>	No change to Houston amendment.

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<p><u>MANLIFT. A device consisting of a power-driven endless belt provided with steps or platforms and handholds attached to it for transportation of personnel from floor to floor.</u></p>		<p>MANLIFT. A device consisting of a power-driven endless belt provided with steps or platforms and handholds attached to it for transportation of personnel from floor to floor.</p>	<p>No change to Houston amendment.</p>
	<p>[BG] MASS TIMBER. Structural elements of Type IV construction primarily of solid, built-up, panelized or engineered wood products that meet minimum cross-section dimensions of Type IV construction.</p>		<p>New definition</p>
	<p>[BG] MECHANICAL-ACCESS ENCLOSED PARKING GARAGE. An enclosed parking garage that employs parking machines, lifts, elevators or other mechanical devices for vehicle moving from and to street level and in which public occupancy in the garage is prohibited in all areas except the vehicle access bay.</p>		<p>New definition</p>
<p><u>MECHANICAL CODE. The City of Houston Mechanical Code, as adopted and amended by this jurisdiction.</u></p>		<p>MECHANICAL CODE. The City of Houston Mechanical Code, as adopted and amended by this jurisdiction.</p>	<p>No change to Houston amendment.</p>
<p><u>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 City Code. For the purpose of this code, vehicles intended for private recreation shall not be considered a mobile food unit or mobile food preparation vehicles.</u></p>		<p>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 City Code. For the purpose of this code, vehicles intended for private recreation shall not be considered a mobile food unit or mobile food preparation vehicles.</p>	<p>No change to Houston amendment.</p>
<p><u>MOBILE FOOD UNIT. Has the meaning ascribed in Section 20-18 of the City Code.</u></p>		<p>MOBILE FOOD UNIT. Has the meaning ascribed in Section 20-18 of the City Code.</p>	<p>No change to Houston amendment.</p>
<p><u>MULTI-FAMILY RESIDENTIAL STRUCTURE. A structure with three or more attached single-family dwellings, dwelling units, townhouses, apartments or condominiums.</u></p>		<p>MULTI-FAMILY RESIDENTIAL STRUCTURE. A structure, including a townhouse structure, that is constructed with three or more attached single-family residences, dwelling units, apartments or condominiums.</p>	<p>No change to Houston amendment.</p>
	<p>[BF] NAILABLE SUBSTRATE. A product or material such as framing, sheathing or furring, composed of wood, wood-based materials or other materials providing equivalent fastener withdrawal resistance.</p>		<p>New definition</p>
<p><u>NON-ABSORBENT MATERIAL. Any material used as an applied finish material over sheetrock or other substrate or structure and that maintains its resistance to moisture absorption throughout its thickness even if scratched or chipped. Examples of approved non-absorbent materials shall include, but not be limited to: metal, plastic, FRP, Formica, or similar non-wood veneer sheet goods; and</u></p>		<p>NONABSORBENT MATERIAL. Any material that is used as an applied finish material over sheetrock or other substrate or structure and that maintains its resistance to moisture absorption throughout its thickness even if scratched or chipped. Examples of approved non-absorbent materials shall include, but not be limited to: metal, plastic, FRP, Formica, or similar non-wood veneer sheet goods; and</p>	<p>No change to Houston amendment.</p>

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<p>non-absorbent stone, ceramic, porcelain, or similar tile products. Epoxy paint or other similarly-applied surface coating products that can be scratched or chipped to reveal underlying absorbent substrate shall not be considered approved non-absorbent materials.</p>		<p>non-absorbent stone, ceramic, porcelain, or similar tile products. Epoxy paint or other similarly-applied surface coating products that can be scratched or chipped to reveal underlying absorbent substrate shall not be considered approved non-absorbent materials.</p>	
	<p>[BF] NONCOMBUSTIBLE PROTECTION (FOR MASS TIMBER). Noncombustible materials, in accordance with Section 703.6, designed to increase the fire-resistance rating and delay the combustion of mass timber.</p>		<p>New definition</p>
<p>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, duplex</i> or single-family dwelling depending on the number of <i>dwelling units</i> within.</p>		<p>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, duplex</i> or single-family dwelling depending on the number of <i>dwelling units</i> within.</p>	<p>No change to Houston amendment.</p>
	<p>[F] 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.</p>		<p>New definition</p>
<p>OPEN BUILDING (For Chapter 9). A building having each wall at least 80 percent open.</p>		<p>OPEN BUILDING (For Chapter 9). A building having each wall at least 80 percent open.</p>	<p>No change to Houston amendment.</p>
	<p>[BF] OPENING PROTECTIVE. A fire door assembly, fire shutter assembly, fire window assembly or glass-block assembly in a fire-resistance-rated wall or partition.</p>		<p>New definition</p>
<p>PARKING LOT. A paved, surfaced or leveled area designed and ordinarily used for accessory or public parking of motor vehicles, including commercial parking areas available for lease and leased premises available for public parking. The term shall not include parking garages.</p>		<p>PARKING LOT. A paved, surfaced or leveled area designed and ordinarily used for accessory or public parking of motor vehicles, including commercial parking areas available for lease and leased premises available for public parking in accordance with Ordinance 26-581. The term shall not include parking garages.</p>	<p>No change to Houston amendment.</p>
<p>PAVING. All firm flat surfaces made of stone, brick, concrete, or other material that are located inside private property and not defined as a driveway or parking lot.</p>		<p>PAVING. All firm flat surfaces made of stone, brick, concrete, or other material that are located inside private property and not defined as a driveway or parking lot.</p>	<p>No change to Houston amendment.</p>
<p>PEDESTRIAN. Any person afoot.</p>		<p>PEDESTRIAN. Any person afoot.</p>	<p>No change to Houston amendment.</p>

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	[BG] PENTHOUSE. An enclosed, unoccupied rooftop structure used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, stairways , and vertical <i>shaft</i> openings.		Edits made to clarify definition, no major change to code
	[BF] PERIMETER FIRE CONTAINMENT SYSTEM. An assemblage of specific materials or products that is designed to resist for a prescribed period of time the passage of fire through voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor or floor/ceiling assemblies.		New definition
	[BS] PERMANENT INDIVIDUAL TRUSS MEMBER DIAGONAL BRACING (PITMDB). Structural member or assembly intended to permanently stabilize the <i>PITMRs</i> .		New definition
	[BS] PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT (PITMR). Restraint that is used to prevent local buckling of an individual truss chord or web member because of the axial forces in the <i>individual truss member</i> .		New definition
PERSONNEL HOIST. A special-purpose elevator or hoist erected outside a building or structure for transporting workers or materials in connection with the construction, alteration, maintenance or demolition of a building, structure, or other works.		PERSONNEL HOIST. A special-purpose elevator or hoist erected outside a building or structure for transporting workers or materials in connection with the construction, alteration, maintenance or demolition of a building, structure, or other works.	No change to Houston amendment.
PIER. Any pier, wharf, boat dock, boat shed, gangway or other platform or structure in or adjoining the water to which vessels may be moored, from which vessels may be boarded, or on which persons may walk or sit.		PIER. Any pier, wharf, boat dock, boat shed, gangway or other platform or structure in or adjoining the water to which vessels may be moored, from which vessels may be boarded, or on which persons may walk or sit.	No change to Houston amendment.
	[BF] PLASTIC COMPOSITE. A generic designation that refers to wood/plastic composites and plastic lumber and similar materials .		Edits made to clarify definition, no major change to code
	[BF] PLASTIC GLAZING. Plastic materials that are glazed or set in a frame or sash and not held by mechanical fasteners that pass through the glazing material or are otherwise supported .		Edits made to clarify definition, no major change to code
	[BG] PLAY STRUCTURE. A structure composed of one or more components, where the user enters a play environment.		Edits made to clarify definition, no major change to code

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<p>PLUMBING CODE. <u>The City of Houston Plumbing Code, as adopted by this jurisdiction.</u></p>		<p>PLUMBING CODE. <u>The City of Houston Plumbing Code, as adopted and amended by this jurisdiction.</u></p>	<p>No change to Houston amendment.</p>
	<p>[BS] PORCELAIN TILE. Ceramic tile having an absorption of 0.5 percent or less in accordance with Table 10 of ANSI A137.1, or Tables 4 or 5 of ANSI A137.3.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BS] POSITIVE ROOF DRAINAGE. A design that accounts for deflections from all design loads and has sufficient additional slope to ensure that drainage of the roof occurs within 48 hours of precipitation.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BS] PRESERVATIVE-TREATED WOOD. Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced susceptibility to damage by fungi, insects or marine borers.</p>		<p>New definition</p>
	<p>[BG] PRIMARY STRUCTURAL FRAME. The primary structural frame shall include all of the following structural members:</p> <ol style="list-style-type: none"> 1. The columns. 2. Structural members having direct connections to the columns, including girders, beams, trusses and spandrels. 3. Members of the floor construction and roof construction having direct connections to the columns. 4. Members that are essential to the vertical stability of the <i>primary structural frame</i> under gravity loading. 		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BG] 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.</p>		<p>Edits made to clarify definition, no major change to code</p>
<p>PRIVATE PIER. <u>A pier other than a commercial pier.</u></p>		<p>PRIVATE PIER. <u>A pier other than a commercial pier.</u></p>	<p>No change to Houston amendment.</p>
<p>PROFESSIONAL INSPECTION. <u>The inspection required by this code to be performed by the civil engineer, soils engineer or engineering geologist. Such inspections include those performed by persons supervised by such engineers or geologists and shall be sufficient to form an opinion relating to the conduct of the work.</u></p>		<p>PROFESSIONAL INSPECTION. <u>The inspection required by this code to be performed by the civil engineer, soils engineer or engineering geologist. Such inspections include those performed by persons supervised by such engineers or geologists and shall be sufficient to form an opinion relating to the conduct of the work.</u></p>	<p>No change to Houston amendment.</p>

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<p>PROPERTY MAINTENANCE CODE. Chapter 10, Article IX, of the <u>City Code relating to abatement of dangerous buildings, also known as the <i>Houston Building Standards Code</i>, as adopted and amended by this jurisdiction.</u></p>		<p>PROPERTY MAINTENANCE CODE. Chapter 10, Article IX, of the <u>City Code relating to abatement of dangerous buildings, also known as the <i>Houston Building Standards Code</i>, as adopted and amended by this jurisdiction.</u></p>	<p>No change to Houston amendment.</p>
	<p>PUBLIC-USE AREAS. Interior or exterior rooms or spaces that are made available to the general public.</p>		
<p>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 <u>6,096</u> mm).</p>			<p>Previous amendment removed.</p>
	<p>[BE] PUBLIC-USE AREAS. Interior or exterior rooms or spaces that are made available to the general public.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BG] PUZZLE ROOM. A puzzle room is a type of <u>special amusement area</u> in which occupants are encouraged to solve a challenge to escape from a room or series of rooms.</p>		<p>New definition</p>
<p>RECYCLING. A series of activities by which materials that would become or otherwise remain waste are diverted from the solid waste stream by collection, separation, and processing and are used as raw materials in the manufacture of goods sold or distributed in commerce or the reuse of such materials as substitutes for goods made of virgin materials.</p>		<p>RECYCLING. A series of activities by which materials that would become or otherwise remain waste are diverted from the solid waste stream by collection, separation, and processing and are used as raw materials in the manufacture of goods sold or distributed in commerce or the reuse of such materials as substitutes for goods made of virgin materials.</p>	<p>No change to Houston amendment.</p>
	<p>[A] RELOCATABLE BUILDING. A partially or completely assembled building constructed and designed to be reused multiple times and transported to different building sites.</p>		<p>New definition</p>
<p>[A] REPAIR. The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage <u>using like for like materials.</u></p>	<p>[A] REPAIR. The reconstruction, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.</p>		<p>Previous amendment removed.</p>
	<p>[BG] REPAIR GARAGE. A building, structure or portion thereof used for servicing or repairing motor vehicles.</p>		<p>New definition</p>

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<p>RESIDENTIAL CODE. <u>The City of Houston Residential Code, as adopted and amended by this jurisdiction.</u></p>		<p>RESIDENTIAL CODE. <u>The City of Houston Residential Code, as adopted and amended by this jurisdiction.</u></p>	<p>No change to Houston amendment.</p>
<p>RESTROOM. <u>A room fully enclosed by exterior walls and/or interior partitions, which contains one or more toilets or urinals and one or more handwashing sinks, but no shower stalls or bathtubs.</u></p>		<p>RESTROOM. <u>A room fully enclosed by exterior walls and/or interior partitions, which contains one or more toilets or urinals and one or more handwashing sinks, but no shower stall or bathtub.</u></p>	<p>No change to Houston amendment.</p>
<p>REUSED MATERIALS. <u>Materials that are used more than once in their original form for their original purpose or for another purpose without any special processing. The term includes materials that contain post-industrial or post-consumer waste as defined by the Federal Trade Commission as well as approved materials identified in Appendix R of this code.</u></p>		<p>REUSED MATERIALS. <u>Materials that are used more than once in their original form for their original purpose or for another purpose without any special processing. The term includes materials that contain post-industrial or post-consumer waste as defined by the Federal Trade Commission as well as approved materials identified in Appendix R of this code.</u></p>	<p>No change to Houston amendment.</p>
<p>RIGHT-OF-WAY. <u>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 jurisdiction for public use.</u></p>		<p>RIGHT-OF-WAY. <u>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 jurisdiction for public use.</u></p>	<p>No change to Houston amendment.</p>
<p>ROADWAY (GENERAL). <u>The portion of a highway, including shoulder, for vehicular use</u></p>		<p>ROADWAY (GENERAL). <u>The portion of a highway, including shoulder, for vehicular use.</u></p>	<p>No change to Houston amendment.</p>
	<p>[BS] ROOF ASSEMBLY (For application to Chapter 15 only). A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly can include the roof deck, vapor retarder, substrate or an underlayment, thermal barrier, insulation, or a vapor retarder and roof covering.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BS] ROOF COATING. A fluid-applied, adhered coating used for roof maintenance or roof repair, or as a component of a roof covering system or roof assembly.</p>		<p>New Definition</p>
	<p>[BG] SECONDARY STRUCTURAL MEMBERS. The following structural members shall be considered secondary members and not part of the <i>primary structural frame</i>:</p> <ol style="list-style-type: none"> 1. Structural members not having direct connections to the columns. 		<p>Edits made to clarify definition, no major change to code</p>

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	<p>2. Members of the floor construction and roof construction not having direct connections to the columns.</p> <p>3. Bracing members that are not designated as part of a primary structural frame or bearing wall.</p>		
<p>SIDEWALK. That portion of a street between the curb lines or the lateral lines of a roadway and the adjacent property lines that is intended for the use of pedestrians.</p>		<p>SIDEWALK. That portion of a street between the curb lines or the lateral lines of a roadway and the adjacent property lines that is intended for the use of pedestrians.</p>	No change to Houston amendment.
<p>SIGN CODE. The <i>Houston Sign Code</i>, which is Chapter 46 of this code but is published as a separate document.</p>		<p>SIGN CODE. The <i>Houston Sign Code</i>, which is Chapter 46 of this code but is published as a separate document.</p>	No change to Houston amendment.
<p>SINGLE-FAMILY DWELLING. An individual free-standing residential structure intended to serve a single-family, or household, as a dwelling and/or other uses authorized by the <i>Building Code</i> and <i>Residential Code</i>.</p>		<p>SINGLE-FAMILY DWELLING. An individual free-standing residential structure intended to serve a single-family, or household, as a dwelling and/or other uses authorized by the <i>Building Code</i> and <i>Residential Code</i>.</p>	No change to Houston amendment.
<p>SITE GRADING. Any lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.</p>		<p>SITE GRADING. Any lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.</p>	No change to Houston amendment.
	<p>[BS] SKYLIGHTS AND SLOPED GLAZING. Glass or other transparent or translucent glazing material installed at a slope of 15 degrees (0.26 rad) or more from vertical. Glazing material in Unit skylights, including unit skylights, tubular daylighting devices, glazing materials, solariums, sunrooms, roofs and sloped walls, are included in this definition.</p>		Edits made to clarify definition, no major change to code
	<p>[A] SLEEPING UNIT. A room or space in which people sleep, which can also include permanent single unit that provides rooms or spaces for one or more persons, includes permanent provisions for sleeping and can include provisions for living, eating, and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.</p>		Edits made to clarify definition, no major change to code
<p>SLOPE. An inclined ground surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance.</p>		<p>SLOPE. An inclined ground surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance.</p>	No change to Houston amendment.
	<p>[BG] SMOKE COMPARTMENT. A space within a building separated from other interior areas of the building by smoke barriers, including interior walls and horizontal assemblies.</p>		Edits made to clarify definition, no major change to code

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	[BF] 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.		Edits made to clarify definition, no major change to code
	SMOKE-PROTECTED ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure.		
	[BE] 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.		New definition
	[BG] SOFT CONTAINED PLAY EQUIPMENT STRUCTURE. A children's play structure containing one or more components where the user enters a play environment that utilizes pliable materials.		New definition
<u>SOIL. Naturally occurring superficial deposits overlying bedrock.</u>		<u>SOIL. Naturally occurring superficial deposits overlying bedrock.</u>	No change to Houston amendment.
<u>SOILS ENGINEER (GEOTECHNICAL ENGINEER). An engineer experienced and knowledgeable in the practice of soils engineering (geotechnical engineering).</u>		<u>SOILS ENGINEER (GEOTECHNICAL ENGINEER). An engineer experienced and knowledgeable in the practice of soils engineering (geotechnical engineering).</u>	No change to Houston amendment.
<u>SOILS ENGINEERING (GEOTECHNICAL ENGINEERING). The application of the principles of soils mechanics in the investigation, evaluation and design of civil works involving the use of earth materials and the inspection or testing of the construction thereof.</u>		<u>SOILS ENGINEERING (GEOTECHNICAL ENGINEERING). The application of the principles of soils mechanics in the investigation, evaluation and design of civil works involving the use of earth materials and the inspection or testing of the construction thereof.</u>	No change to Houston amendment.
<u>SOUND TRANSMISSION CLASS (STC). An integer rating relating to the quality of sound attenuation for building partitions such as walls, ceilings, doors, and windows.</u>			Previous amendment removed.
	[BG] SPECIAL AMUSEMENT AREA. A special amusement area is any temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and is arranged in a manner that: 1. Makes the means of egress path not readily apparent due to visual or audio distractions.		Edits made to clarify definition, no major change to code

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	<p>2. Intentionally confounds identification of the means of egress path.</p> <p>3. Otherwise makes the means of egress path not readily available because of the nature of the attraction or mode of conveyance through the building or structure.</p>		
	<p>[BG] SPECIAL EVENT STRUCTURE. Any ground-supported structure, platform, stage, stage scaffolding or rigging, canopy, tower or similar structure supporting entertainment-related equipment or signage.</p>		New definition
<p>[BS] SPECIAL INSPECTOR. A qualified person employed or retained by an <i>approved</i> agency registered and/or certified with the <i>jurisdiction</i> and <i>approved</i> by the <i>building official</i> as having the competence necessary to inspect a particular type of construction requiring <i>special inspection</i>.</p>		<p>[BS] SPECIAL INSPECTOR. A qualified person employed or retained by an <i>approved</i> agency registered and/or certified with the <i>jurisdiction</i> and <i>approved</i> by the <i>building official</i> as having the competence necessary to inspect a particular type of construction requiring <i>special inspection</i>.</p>	No change to Houston amendment.
	<p>[F] SPRAY ROOM. A room designed to accommodate spraying operations.</p>		New definition
	<p>[BF] SPRAY-APPLIED FOAM PLASTIC. Single- and multiple-component, spray-applied foam plastic insulation used in nonstructural applications that are installed at locations wherein the material is applied in a liquid or frothed state, permitted to free rise and cure in situ.</p>		New Definition
<p>STAIRWAY. One or more <i>flights</i> of <i>stairs</i>, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another. <u>A stair or ladder used only to attend equipment or to access an attic or window well shall not be considered a stairway.</u></p>		<p>STAIRWAY. One or more <i>flights</i> of <i>stairs</i>, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another. <u>A stair or ladder used only to attend equipment or to access an attic or window well shall not be considered a stairway.</u></p>	No change to Houston amendment.
	<p>[BS] START OF CONSTRUCTION. The date of permit issuance for new construction and substantial improvements to existing structures, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement or other improvement is within 180 days after the date of issuance. The actual start of construction means the first placement of permanent construction of a building (including a manufactured home) on a site, such as the pouring of a slab or footings, installation of pilings or construction of columns.</p>		Edits made to clarify definition, no major change to code
	<p>[BF] STEEP SLOPE. A roof slope 2 units vertical in 12 units horizontal (17-percent slope) or greater.</p>		Edits made to clarify definition, no major change to code

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	<p>[BS] STORAGE RACKS, STEEL. Cold-formed or hot-rolled steel structural members which are formed into <i>steel storage racks</i>, including pallet storage racks, movable-shelf racks, rack-supported systems, automated storage and retrieval systems (stacker racks), push-back racks, pallet-flow racks, case-flow racks, pick modules and rack-supported platforms. Other types of racks, such as drive-in or drive-through racks, cantilever racks, portable racks or racks made of materials other than steel, are not considered storage racks for the purpose of this code.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BS] STORAGE RACKS, STEEL CANTILEVERED. <u>A framework or assemblage composed of cold-formed or hot-rolled steel structural members, primarily in the form of vertical columns, extended bases, horizontal arms projecting from the faces of the columns, and longitudinal (down-aisle) bracing between columns. There may be shelf beams between the arms, depending on the products being stored; this definition does not include other types of racks such as pallet storage racks, drive-in racks, drive-through racks, or racks made of materials other than steel.</u></p>		<p>New definition</p>
	<p>[BS] STRENGTH. This item is defined two ways, the first for use in Chapter 16 and the second for use in Chapter 21.</p> <p>For Chapter 16:</p> <p>Nominal strength. <u>The capacity of a structure or member to resist the effects of loads, as determined by computations using specified material strengths and dimensions and equations derived from accepted principles of structural mechanics or by field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.</u></p> <p>Required strength. <u>Strength of a member, cross section or connection required to resist factored loads or related internal moments and forces in such combinations as stipulated by these provisions.</u></p> <p>Strength design. <u>A method of proportioning structural members such that the computed forces produced in the members by factored loads do not exceed the member design strength [also called "load and resistance factor design" (LRFD)]. The term "strength design" is used in the design of concrete and masonry structural elements.</u></p> <p>For Chapter 21:</p> <p>Design strength. <u>Nominal strength multiplied by a strength reduction factor.</u></p>		<p>New definitions</p>

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	<p>Nominal strength. Strength of a member or cross section calculated in accordance with these provisions before application of any strength-reducing factors.</p> <p>Required strength. Strength of a member or cross section required to resist factored loads.</p>		
	<p>[BS] SUBSTANTIAL STRUCTURAL DAMAGE. A condition where one or both of the following apply:</p> <p>1. The vertical elements of the lateral force resisting system have suffered damage such that the lateral load carrying capacity of any story in any horizontal direction has been reduced by more than 33 percent from its predamage condition.</p> <p>2. The capacity of any vertical component carrying gravity load, or any group of such components, that supports more than 30 percent of the total area of the structure's floors and roofs has been reduced more than 20 percent from its predamage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.</p>		
	<p>[BS] SUSCEPTIBLE BAY. A roof or portion thereof with either of the following:</p> <p>1. A slope less than 1/4-inch per foot (0.0208 rad); or</p> <p>2. On which water is impounded, in whole or in part, and the secondary drainage system is functional but the primary drainage system is blocked.</p> <p>A roof surface with a slope of 1/4-inch per foot (0.0208 rad) or greater towards points of free drainage is not a susceptible bay.</p>		Edits made to clarify definition, no major change to code
<p><u>SWIMMING POOL AND SPA CODE.</u> The City of Houston Swimming Pool and Spa Code, as adopted and amended by this jurisdiction.</p>		<p><u>SWIMMING POOL AND SPA CODE.</u> The City of Houston Swimming Pool and Spa Code, as adopted and amended by this jurisdiction.</p>	No change to Houston amendment.
	<p>[F] TENT. A structure, enclosure, umbrella structure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported in any manner except by air or the contents it protects (see "Umbrella structure").</p>		Edits made to clarify definition, no major change to code
	<p>[BF] TERMINATED STOPS. Factory feature of a door frame where the stops of the door frame are terminated not more than 6 inches (152 mm) from the bottom of the door frame. Terminated stops are also known as "hospital stops" or "sanitary stops."</p>		New definition

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<p>TEXAS ACCESSIBILITY STANDARDS (TAS). The accessibility standards 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 Chapter 469.</i></p>		<p>TEXAS ACCESSIBILITY STANDARDS (TAS). The accessibility standards 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 Chapter 469.</i></p>	<p>No change to Houston amendment.</p>
	<p>[BS] TIE-DOWN (HOLD-DOWN). A device used to resist uplift of the chords of shear walls.</p>		
	<p>[BS] TIE-DOWN (HOLD-DOWN). A device used to resist uplift of the chords of shear walls.</p>		<p>Moved to after Tie, Wall.</p>
<p>TOILET ROOM. A room fully enclosed by exterior walls and/or interior partitions, which contains one or more toilets (water closets) or urinals, but no handwashing sink, shower stall, or bathtub.</p>		<p>TOILET ROOM. A room fully enclosed by exterior walls and/or interior partitions, which contains one or more toilets (water closets) or urinals, but no handwashing sink, shower stall, or bathtub.</p>	<p>No change to Houston amendment.</p>
<p>TOWER STRUCTURE. A structure other than a building as defined previously in this chapter that has a height normally greater than its largest horizontal dimension. Examples of tower structures include antenna supports, chimneys, tank supports, sign supports, equipment supports, and other structures as determined by the <i>building official.</i></p>		<p>TOWER STRUCTURE. A structure other than a building as defined previously in this chapter that has a height normally greater than its largest horizontal dimension. Examples of tower structures include antenna supports, chimneys, tank supports, sign supports, equipment supports, and other structures as determined by the <i>building official.</i></p>	<p>No change to Houston amendment.</p>
<p>[A] TOWNHOUSE. A multi-family residential structure constructed in a group of 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 a <i>yard</i> or public way on and least not less than two sides, which may or may not include lot lines or property lines separating each dwelling unit.</p>		<p>[A] TOWNHOUSE. A multi-family residential structure constructed in a group of 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 a yard or public way on and least not less than two sides, which may or may not include lot lines or property lines separating each dwelling unit.</p>	<p>No change to Houston amendment.</p>
<p>TRANSIT SHED. A covered structure erected on a wharf or quay for the temporary storage of goods in transit between ship and land carrier or warehouse.</p>		<p>TRANSIT SHED. A covered structure erected on a wharf or quay for the temporary storage of goods in transit between ship and land carrier or warehouse.</p>	<p>No change to Houston amendment.</p>
	<p>TREATED WOOD. See "Fire-retardant-treated wood" and "Preservative-treated wood".</p>		<p>Reference</p>

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	[BS] TSUNAMI DESIGN GEODATABASE. The ASCE database (version 2016-1.0) of Tsunami Design Zone maps and associated design data for the states of Alaska, California, Hawaii, Oregon and Washington.		New definition
	[BS] TSUNAMI DESIGN ZONE. An area identified on the Tsunami Design Zone map between the shoreline and the inundation limit, within which certain structures designated in Chapter 16 are designed for or protected from inundation		New definition
<u>UL.</u> Means Underwriters Laboratories Inc., a product testing laboratory for safety and performance		<u>UL.</u> Means Underwriters Laboratories Inc., a product testing laboratory for safety and performance.	No change to Houston amendment.
	[F] 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 definition
	[BS] UNDERLAYMENT. One or more layers of felt, sheathing paper, nonbituminous saturated felt or other approved material over which a steep-slope roof covering is applied. a material that is applied to a steep-slope roof covering deck under the roof covering and resists liquid water that penetrates the roof covering.		Edits made to clarify definition, no major change to code
	[BS] UNDERPINNING. The alteration of an existing foundation to transfer loads to a lower elevation using new piers, piles or other permanent structural support elements installed below the existing foundation.		New definition
<u>UNSAFE.</u> Buildings, structures or equipment that are unsanitary, or that are deficient due to inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or in which the structure or individual structural members meet the definition of "Dangerous," or that are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed unsafe. A vacant structure that is not secured against entry shall be deemed unsafe.			Previous amendment removed.
<u>UTILITY OFFICIAL.</u> The director of Houston Public Works and the director's designee. The term primarily relates to those Houston Public Works employees who are engaged in activities relating to the delivery of water and wastewater services.		<u>UTILITY OFFICIAL.</u> The director of Houston Public Works and the director's designee. The term primarily relates to those Houston Public Works employees who are engaged in activities relating to the delivery of water and wastewater services.	No change to Houston amendment.

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<p><u>VALUATION. The total cost of construction to the end user, excluding the land purchase costs and the overhead attributed to the land purchase. The value of donated goods and services is included.</u></p>		<p><u>VALUATION. The total cost of construction to the end user, excluding the land purchase costs and the overhead attributed to the land purchase. The value of donated goods and services is included.</u></p>	
	<p>[BG] VAPOR DIFFUSION PORT. An assembly constructed or installed within a roof assembly at an opening in the roof deck to convey water vapor from an unvented attic to the outside atmosphere.</p>		<p>New definition</p>
	<p>[BF] VAPOR PERMEABLE-Membrane. The property of having a moisture vapor permeance rating of 5 perms (2.9 x 10⁻¹⁰kg/Pa x s x m²) or greater, when tested in accordance with Procedure A or Procedure B of ASTM E96. A vapor permeable material permits the passage of moisture vapor.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BF] VAPOR RETARDER CLASS. A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E96 as follows: Class I: 0.1 perm or less. Class II: 0.1 < perm □ 1.0 perm. Class III: 1.0 < perm □ 10 perm.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BS] VEGETATIVE ROOF. An assembly of interacting components designed to waterproof and normally insulate a building's top surface that includes, by design, vegetation and related landscape elements.</p>		<p>Edits made to clarify definition, no major change to code</p>
	<p>[BS] WALL, LOAD-BEARING. Any wall meeting either of the following classifications: 1. Any metal or wood stud wall that supports more than 100 pounds per linear foot (1459 N/m) of vertical load in addition to its own weight. 2. Any masonry, concrete or mass timber wall that supports more than 200 pounds per linear foot (2919 N/m) of vertical load in addition to its own weight.</p>		<p>Edits made to clarify definition, no major change to code</p>
		<p>WATER COOLER. A drinking fountain that incorporates a means of reducing the temperature of the water supplied to it from the potable water distribution system.</p>	<p>New Houston amendment accepted during CCM code development. Definition is brought over from 2021 IPC.</p>

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		WATER DISPENSER. A plumbing fixture that is manually controlled by the user for the purpose of dispensing potable drinking water into a receptacle such as a cup, glass or bottle. Such fixture is connected to the potable water distribution system of the premises.	New Houston amendment accepted during CCM code development. Definition is brought over from 2021 IPC.
WHEELCHAIR LIFT. A vertical wheelchair lift or an inclined wheelchair lift as governed by the <i>Elevator Safety Code</i> , whether in a commercial, multi-family residential, or single-family dwelling.		WHEELCHAIR LIFT. A vertical wheelchair lift or an inclined wheelchair lift as governed by the <i>Elevator Safety Code</i> , whether in a commercial, multi-family residential, or single-family dwelling.	No change to Houston amendment.
[BS] WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions located: <ol style="list-style-type: none"> 1. Within 1 mile (1.61 km) of the coastal mean high-water line where the ultimate design wind speed, V_{ult}, is 130 mph (58 m/s) or greater; or 2. In areas where the ultimate design wind speed is 140 mph (63.6 m/s) or greater; or Hawaii. <p>For <i>Risk Category</i> II buildings and structures and <i>Risk Category</i> III buildings and structures, except health care facilities, the windborne debris region shall be based on Figure 1609.3(1) the windspeed associated with <i>Risk Category</i> II. For <i>Risk Category</i> IV buildings and structures and <i>Risk Category</i> III health care facilities, the windborne debris region shall be based on Figure 1609.3(2) the windspeed associated with <i>Risk Category</i> III and IV.</p>	[BS] WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions located: <ol style="list-style-type: none"> 1. Within 1 mile (1.61 km) of the mean high-water high-water line where an Exposure D condition exists upwind at the waterline and the ultimate basic design wind speed, V_{ult}, is 130 mph (58 m/s) or greater; or 2. In areas where the ultimate basic design wind speed is 140 mph (63 m/s) or greater. <p>For <i>Risk Category</i> II buildings and structures and <i>Risk Category</i> III buildings and structures, except health care facilities, the windborne debris region shall be based on Figure 1609.3(1). For <i>Risk Category</i> IV building and structures and <i>Risk Category</i> III health care facilities, the windborne debris region shall be based on Figure 1609.3(2).</p>	[BS] WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions located: <ol style="list-style-type: none"> 1. Within 1 mile (1.61 km) of the coastal mean high-water line where an Exposure D condition exists upwind at the waterline and the ultimate design wind speed, V_{ult}, is 130 mph (58 m/s) or greater; or 2. In areas where the ultimate design wind speed is 140 mph (63.6 m/s) or greater. <p>For <i>Risk Category</i> II buildings and structures and <i>Risk Category</i> III buildings and structures, except health care facilities, the windborne debris region shall be based on Figure 1609.3(1) the windspeed associated with <i>Risk Category</i> II. For <i>Risk Category</i> IV buildings and structures and <i>Risk Category</i> III health care facilities, the windborne debris region shall be based on Figure 1609.3(2) the windspeed associated with <i>Risk Category</i> III and IV.</p>	Edits made to clarify definition, no major change to code. No change to Houston amendment.
	[BS] WIND SPEED, V_{ult}. Ultimate-Basic design wind speeds.		Edits made to clarify definition, no major change to code
	[BS] WIND SPEED, V_{asd}. Nominal-Allowable stress design wind speeds.		Edits made to clarify definition, no major change to code
		[BS] WIND DESIGN GEODATABASE. The ASCE database (version 2022-1.0) of geocoded wind speed design data. The ASCE Wind Design Geodatabase of geocoded wind speed design data is available at https://asce7hazardtool.online/	New amendment to coincide with ASCE 7-22 update.

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<p><u>WORK OF ART. Paintings, mural decorations, stained glass, statues, bas-reliefs or other sculptures, monuments, fountains, arches or other structures of a permanent or temporary character intended for ornament or commemoration.</u></p>		<p><u>WORK OF ART. Paintings, mural decorations, stained glass, statues, bas-reliefs or other sculptures, monuments, fountains, arches or other structures of a permanent or temporary character intended for ornament or commemoration.</u></p>	<p>No change to Houston amendment.</p>
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2015 Houston IBC – Chapter 3 Use and Occupancy Classification	2021 IBC – Chapter 3 Use and Occupancy Classification and Use	2021 Houston Amendments – Chapter 3 Occupancy Classification and Use	Code Analysis
	<p style="text-align: center;">SECTION 301 GENERAL SCOPE</p> <p>301.1 Scope General. The provisions of this chapter shall control the classification of all buildings and structures as to use and occupancy and use. Different classifications of occupancy and use represent varying levels of hazard and risk to building occupants and adjacent properties.</p>		Edits made to clarify code, no major change to code
	<p style="text-align: center;">SECTION 302 OCCUPANCY CLASSIFICATION AND USE DESIGNATION</p> <p>302.1 General Occupancy classification. Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed in this section. A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied. Structures with multiple occupancies or uses shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically provided for in this code, such structure shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved. Occupancy classification is the formal designation of the primary purpose of the building, structure or portion thereof. Structures shall be classified into one or more of the occupancy groups listed in this section based on the nature of the hazards and risks to building occupants generally associated with the intended purpose of the building or structure. An area, room or space that is intended to be occupied at different times for different purposes shall comply with all applicable requirements associated with such potential multipurpose. Structures containing multiple occupancy groups shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically listed in this section, such structure shall be classified in the occupancy it most nearly resembles based on the fire safety and relative hazard. Occupied roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with Section 503.1.4.</p> <ol style="list-style-type: none"> 1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5. 2. Business (see Section 304): Group B. 3. Educational (see Section 305): Group E. 4. Factory and Industrial (see Section 306): Groups F-1 and F-2. 		Edits made to clarify code, no major change to code

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	<p>5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5.</p> <p>6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4.</p> <p>7. Mercantile (see Section 309): Group M.</p> <p>8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4.</p> <p>9. Storage (see Section 311): Groups S-1 and S-2.</p> <p>10. Utility and Miscellaneous (see Section 312): Group U.</p>		
	<p>302.2 Use designation. Occupancy groups contain subordinate uses having similar hazards and risks to building occupants. Uses include, but are not limited to, those functional designations listed within the occupancy group descriptions in Section 302.1. Certain uses require specific limitations and controls in accordance with the provisions of Chapter 4 and elsewhere in this code.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>SECTION 303 ASSEMBLY GROUP A</p>		
	<p>303.1.5 Special amusement areas. <i>Special amusement areas shall comply with Section 411.</i></p>		<p>New code for special amusement areas</p>
	<p>303.4 Assembly Group A-3. Group A-3 occupancy includes assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:</p> <ul style="list-style-type: none"> Amusement arcades Art galleries Bowling alleys Community halls Courtrooms Dance halls (not including food or drink consumption) Exhibition halls Funeral parlors Greenhouses for the conservation and exhibition of plants that provide public access. Gymnasiums (without spectator seating) Indoor swimming pools (without spectator seating) 		<p>Edits made to clarify code, no major change to code</p>

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	<p>Indoor tennis courts (without spectator seating)</p> <p>Lecture halls</p> <p>Libraries</p> <p>Museums</p> <p>Places of religious worship</p> <p>Pool and billiard parlors</p> <p>Waiting areas in transportation terminals</p>		
	<p>SECTION 304</p> <p>BUSINESS GROUP B</p>		
	<p>304.2 Definitions. Airport traffic control towers. The following terms are defined in Chapter 2: Airport traffic control towers shall comply with Section 412.2.</p> <p>AMBULATORY CARE FACILITY.</p> <p>CLINIC, OUTPATIENT.</p>		Edits made to clarify code, no major change to code
	<p><u>304.3 Ambulatory care facilities. Ambulatory care facilities shall comply with Section 422.</u></p>		Ambulatory care now complies with Section 422
	<p><u>304.4 Higher education laboratories. Higher education laboratories shall comply with Section 428.</u></p>		Higher Ed is more in line with NFPA 45 now.
<p>SECTION 305</p> <p>EDUCATIONAL GROUP E</p>	<p>SECTION 305</p> <p>EDUCATIONAL GROUP E</p>	<p>SECTION 305</p> <p>EDUCATIONAL GROUP E</p>	
<p><u>305.3 Specific requirements. Daycare and educational occupancies shall not allow children of second grade or lower above the level of exit discharge unless the following provisions are met.</u></p> <p><u>1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1; and</u></p> <p><u>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.</u></p> <p><u>Moved to 305.4</u></p>	<p><u>305.3 Storm shelters in Group E occupancies. Storm shelters shall be provided for Group E occupancies where required by Section 423.5.</u></p>		New requirement for Group E occupancies

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	N/A	<p>305.4 Specific requirements. <u>Daycare and educational occupancies shall not allow children of second grade or lower above the level of exit discharge unless the following provisions are met:</u></p> <ol style="list-style-type: none"> <u>1. The building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1; and</u> <u>2. When children above the second grade are located on the same floor level as children of second grade or lower, the children of the second grade or lower shall have access to and exclusive use of at least two means of egress to the exterior.</u> 	Minor change to clarify intent.
	<p>305.3 Storm shelters in Group E occupancies. Storm shelters shall be provided for Group E occupancies where required by Section 423.5.</p>		New requirement for Group E occupancies
	<p>SECTION 306 FACTORY GROUP F</p>		
	<p>306.2 Moderate-hazard factory industrial, Group F-1. 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:</p> <ul style="list-style-type: none"> Aircraft (manufacturing, not to include repair) Appliances Athletic equipment Automobiles and other motor vehicles Bakeries Beverages: over 16-percent alcohol content Bicycles Boats Brooms or brushes Business machines Cameras and photo equipment Canvas or similar fabric Carpets and rugs (includes cleaning) Clothing Construction and agricultural machinery Disinfectants 		Edits made to clarify code, no major change to code

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Dry cleaning and dyeing
 Electric generation plants
 Electronics
Energy storage systems (ESS) in dedicated use buildings
 Engines (including rebuilding)
 Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities more than 2,500 square feet (232 m²) in area
 Furniture
 Hemp products
 Jute products
 Laundries
 Leather products
 Machinery
 Metals
 Millwork (sash and door)
 Motion pictures and television filming (without spectators)
 Musical instruments
 Optical goods
 Paper mills or products
 Photographic film
 Plastic products
 Printing or publishing
 Recreational vehicles
 Refuse incineration
 Shoes
 Soaps and detergents
 Textiles
 Tobacco
 Trailers
 Upholstering
Water/sewer treatment facilities
 Wood; distillation
 Woodworking (cabinet)

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	<p>306.2.1 Aircraft manufacturing facilities. Aircraft manufacturing facilities shall comply with Section 412.6.</p>		New requirement for Aircraft manufacturing facilities.
	<p>SECTION 307 HIGH-HAZARD GROUP H</p>	<p>SECTION 307 HIGH-HAZARD GROUP H</p>	
	<p>Table 307.1(1)</p>		Change in numbering
	<p>TABLE 307.1(1) MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD^{a, j, m, n, p}</p>		Edits made to clarify code, no major change to code
<p>[F] 307.1.1 Uses other than Group H. An occupancy that stores, uses or handles hazardous materials as described in one or more of the following items shall not be classified as Group H, but shall be classified as the occupancy that it most nearly resembles.</p> <ol style="list-style-type: none"> 1. Buildings and structures occupied for the application of flammable finishes, provided that such building or areas conform to the requirements of Section 416, <u>NFPA 33, NFPA 34</u> and the International Fire Code. 2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the International Fire Code. 3. Closed piping system containing flammable or combustible liquids or gases utilized for the operation of machinery or equipment. 4. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems 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> constructed in accordance with Section 707 or 1-hour <i>horizontal assemblies</i> constructed in accordance with Section 711, or both. 5. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200°F (93°C). 6. Liquor stores and distributors without bulk storage. 	<p>[F] 307.1.1 Uses other than Group H. An occupancy that stores, uses or handles hazardous materials as described in one or more of the following items shall not be classified as Group H, but shall be classified as the occupancy that it most nearly resembles.</p> <ol style="list-style-type: none"> 1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Section 416 and the International Fire Code. 2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the International Fire Code. 3. Closed piping system containing flammable or combustible liquids or gases utilized for the operation of machinery or equipment. 4. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems 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 fire barriers constructed in accordance with Section 707 or 1-hour horizontal assemblies constructed in accordance with Section 711, or both. 	<p>[F] 307.1.1 Uses other than Group H. An occupancy that stores, uses or handles <i>hazardous materials</i> as described in one or more of the following items shall not be classified as Group H, but shall be classified as the occupancy that it most nearly resembles.</p> <ol style="list-style-type: none"> 1. Buildings and structures occupied for the application of flammable finishes, provided that such building or areas conform to the requirements of Section 416, <u>NFPA 33, NFPA 34</u> and the International Fire Code. 2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the International Fire Code. 3. Closed piping system containing flammable or combustible liquids or gases utilized for the operation of machinery or equipment. 4. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems 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> constructed in accordance with Section 707 or 1-hour <i>horizontal assemblies</i> constructed in accordance with Section 711, or both. 5. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200°F (93°C). 6. Liquor stores and distributors without bulk storage. 7. Refrigeration systems. 	<p>Edits made to clarify code, no major change to code. No change to Houston amendment.</p>

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- 7. Refrigeration systems.
- 8. The storage or utilization of materials for agricultural purposes on the premises.
- 9. Stationary batteries utilized for facility emergency power, uninterruptable power supply or telecommunication facilities, provided that the batteries are provided with safety venting caps and *ventilation* is provided in accordance with the ~~International Mechanical Code~~.
- 10. Corrosive personal or household products in their original packaging used in retail display.
- 11. Commonly used corrosive 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 the ~~International Fire Code~~.
- 13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per *control area* in Group M or S occupancies complying with Section 414.2.5.
- 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 prescribed in the ~~International Fire Code~~.
- 15. Any building owned by the jurisdiction, located on any jurisdiction 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. Certified air carrier 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 Section 40109, 41102, 41103, or 41302, and certificates or exemptions issued by the United States Federal Aviation Administration pursuant to 14 CFR Part 121, 125, 129 or 135.
- 2. City airport is defined in Chapter 9 of the City Code.
- 3. In-transit storage 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.

- 5. Cleaning establishments that utilize a liquid solvent having a flash point 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, uninterruptable power supply or telecommunication facilities, provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the International Mechanical Code.~~ **Stationary battery systems installed in accordance with the International Mechanical Fire Code.**
- 10. Corrosive personal or household products in their original packaging used in retail display.
- 11. Commonly used corrosive 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 the International Fire Code.
- 13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 414.2.5.
- 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 prescribed in the International Fire Code.
- 15. **Stationary fuel cell power systems installed in accordance with the International Fire Code.**
- 16. **Capacitor energy storage systems in accordance with the International Fire Code.**
- 17. **Group B higher education laboratory occupancies complying with Section 428 and Chapter 38 of the International Fire Code.**
- 18. **Distilling or brewing of beverages conforming to the requirements of the International Fire Code.**

- 8. The storage or utilization of materials for agricultural purposes on the premises.
- 9. Stationary storage batteries systems installed in accordance with the ~~International Fire Code~~.
- 10. Corrosive personal or household products in their original packaging used in retail display.
- 11. Commonly used corrosive 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 the ~~International Fire Code~~.
- 13. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per *control area* in Group M or S occupancies complying with Section 414.2.5.
- 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 prescribed in the ~~International Fire Code~~.
- 15. Any building owned by the jurisdiction, located on any jurisdiction 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. Certificated air carrier 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 Section 40109, 41102, 41103, or 41302, and certificates or exemptions issued by the United States Federal Aviation Administration pursuant to 14 CFR Part 121, 125, 129 or 135.
- 2. City airport is defined in Chapter 9 of the City Code.
- 3. In-transit storage is defined as: the storage of materials which will be on-loaded onto or off-loaded from an aircraft

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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		<p>19. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of the International Fire Code.</p>	<p>owned, leased or operated by a <i>certificated air carrier</i>.</p> <p>16. Stationary fuel cell power systems installed in accordance with the International Fire Code. 17. Capacitor energy storage systems in accordance with the International Fire Code. 18. Group B higher education laboratory occupancies complying with Section 428 and Chapter 38 of the International Fire Code. 19. Distilling or brewing of beverages conforming to the requirements of the International Fire Code. 20. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of the International Fire Code.</p>	
<p>[F] 307.1.2 Hazardous materials. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the International Fire Code.</p> <p><u>Exception:</u> The exempt amounts of hazardous materials stored in any building exempted pursuant to Section 307.1.1, Item 15.</p> <p>Amendment Moved to 307.2</p>	N/A	<p>307.1.2 Enterprise permit. Businesses and facilities storing or utilizing hazardous materials exceeding the maximum allowable quantity limits per <i>control area</i> identified in Section 307 and Tables 307.1(1) and 307.1(2) shall comply with Chapter 28, Article VII, of the <i>City Code</i> for a <i>hazardous enterprise</i>.</p>	<p>Previous amendment moved to 307.2. Amendment for 307.1.3, Enterprise Permit, has been relocated accordingly. No change to Houston amendment.</p>	
<p>307.1.3 Enterprise Permit. Businesses and facilities storing or utilizing hazardous materials exceeding the Maximum Allowed Quantities identified in Tables 307.1(1) and 307.1(2) of this code shall comply with Chapter 28, Article VII, of the <i>City Code</i> for a <i>hazardous enterprise</i>.</p> <p>Amendment Moved to 307.1.2</p>	N/A			
	<p>[F] 307.1.2 307.2 Hazardous materials</p>	<p>[F] 307.2 Hazardous materials. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the International Fire Code.</p> <p><u>Exception:</u> The exempt amounts of hazardous materials stored in any building identified as exempted pursuant to the provisions of Section 307.1.1, Item 15.</p>	<p>Previous amendment moved from 307.1.2. No change to Houston amendment.</p>	
	<p>[F] 307.2 Definitions. The following terms are defined in Chapter 2:</p> <p>AEROSOL</p> <p>Level 1 aerosol products.</p> <p>Level 2 aerosol products.</p>			<p>Definitions relocated</p>

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	<p>Level 3 aerosol products.</p> <p>AEROSOL CONTAINER.</p> <p>BALED COTTON.</p> <p>BALED COTTON, DENSELY PACKED.</p> <p>BARRICADE.</p> <p>Artificial barricade.</p> <p>Natural barricade.</p> <p>BOILING POINT.</p> <p>CLOSED SYSTEM.</p> <p>COMBUSTIBLE DUST.</p> <p>COMBUSTIBLE FIBERS.</p> <p>COMBUSTIBLE LIQUID.</p> <p>Class II.</p> <p>Class IIIA.</p> <p>Class IIIB.</p> <p>COMPRESSED GAS.</p> <p>CONTROL AREA.</p> <p>CORROSIVE.</p> <p>CRYOGENIC FLUID.</p> <p>DAY BOX.</p> <p>DEFLAGRATION.</p> <p>DETONATION.</p> <p>DISPENSING.</p> <p>EXPLOSION.</p> <p>EXPLOSIVE.</p> <p>High explosive.</p> <p>Low explosive.</p> <p>Mass detonating explosives.</p> <p>UN/DOTn Class 1 explosives.</p> <p>Division 1.1.</p> <p>Division 1.2.</p> <p>Division 1.3.</p> <p>Division 1.4.</p> <p>Division 1.5.</p>		
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	<p>Division 1.6.</p> <p>FIREWORKS.</p> <p>Fireworks, 1.3G.</p> <p>Fireworks, 1.4G.</p> <p>FLAMMABLE GAS.</p> <p>FLAMMABLE LIQUEFIED GAS.</p> <p>FLAMMABLE LIQUID.</p> <p>Class IA.</p> <p>Class IB.</p> <p>Class IC.</p> <p>FLAMMABLE MATERIAL.</p> <p>FLAMMABLE SOLID.</p> <p>FLASH POINT.</p> <p>HANDLING.</p> <p>HAZARDOUS MATERIALS.</p> <p>HEALTH HAZARD.</p> <p>HIGHLY TOXIC.</p> <p>INCOMPATIBLE MATERIALS.</p> <p>INERT GAS.</p> <p>OPEN SYSTEM.</p> <p>OPERATING BUILDING.</p> <p>ORGANIC PEROXIDE.</p> <p>Class I.</p> <p>Class II.</p> <p>Class III.</p> <p>Class IV.</p> <p>Class V.</p> <p>Unclassified detonable.</p> <p>OXIDIZER.</p> <p>Class 4.</p> <p>Class 3.</p> <p>Class 2.</p> <p>Class 1.</p> <p>OXIDIZING GAS.</p>		
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	<p>PHYSICAL HAZARD.</p> <p>PYROPHORIC.</p> <p>PYROTECHNIC COMPOSITION.</p> <p>TOXIC.</p> <p>UNSTABLE (REACTIVE) MATERIAL.</p> <p>Class 4.</p> <p>Class 3.</p> <p>Class 2.</p> <p>Class 1.</p> <p>WATER REACTIVE MATERIAL.</p> <p>Class 3.</p> <p>Class 2.</p> <p>Class 1.</p>		
	<p>[F] 307.3 High-hazard Group H-1. Buildings and structures containing materials that pose a detonation hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:</p> <p>Detonable pyrophoric materials</p> <p>Explosives:</p> <p>Division 1.1</p> <p>Division 1.2</p> <p>Division 1.3</p> <p>Division 1.4</p> <p>Division 1.5</p> <p>Division 1.6</p> <p>Organic peroxides, unclassified detonable</p> <p>Oxidizers, Class 4</p> <p>Unstable (reactive) materials, Class 3 detonable and Class 4</p>		<p>Edits made to clarify code, no major change to code</p>
	<p style="text-align: center;">SECTION 308</p> <p style="text-align: center;">INSTITUTIONAL GROUP I</p>	<p style="text-align: center;">SECTION 308</p> <p style="text-align: center;">INSTITUTIONAL GROUP I</p>	
	<p>308.2 Definitions. The following terms are defined in Chapter 2:</p> <p>24 HOUR BASIS.</p> <p>CUSTODIAL CARE.</p> <p>DETOXIFICATION FACILITIES.</p>	<p>308.2 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 <i>24-hour basis</i> in a supervised environment and receive <i>custodial care by persons other than parents or guardians or relatives by blood, marriage or adoption, including but not limited to facilities that provide care to</i></p>	<p>Edits made to clarify code, no major change to base code.</p> <p>No change to Houston amendment.</p>

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	<p>FOSTER CARE FACILITIES. HOSPITALS AND PSYCHIATRIC HOSPITALS. INCAPABLE OF SELF-PRESERVATION. MEDICAL CARE. NURSING HOMES.</p> <p>308.3 308.2 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 <i>24-hour basis</i> in a supervised environment and receive <i>custodial care</i>. Buildings of Group I-1 shall be classified as one of the occupancy conditions specified in Section 308.3.1 or 308.3.2 308.2.1 or 308.2.2 and shall comply with Section 420. This group shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> Alcohol and drug centers Assisted living facilities Congregate care facilities <i>Group homes</i> Halfway houses Residential board and care facilities Social rehabilitation facilities 	<p>children older than <u>2½ years of age</u> and younger than <u>15 years of age</u>. Buildings of Group I-1 shall be classified as one of the occupancy conditions specified in Section 308.2.1 or 308.2.2 and shall comply with Section 420. This group shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> Alcohol and drug centers Assisted living facilities Congregate care facilities <i>Group homes</i> Halfway houses Residential board and care facilities Social rehabilitation facilities 	
	<p>308.3.1 308.2.1 Condition 1.</p>		<p>Numbering</p>
	<p>308.3.2 308.2.2 Condition 2.</p>		<p>Numbering</p>
	<p>308.3.3 308.2.3 Six to 16 persons receiving custodial care.</p>		<p>Numbering</p>
	<p>308.3.4 308.2.4 Five or fewer persons receiving custodial care.</p>		<p>Numbering</p>
<p>308.3 Institutional Group I-1. This 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 <i>custodial care</i> by</p>	<p>308.4 308.3 Institutional Group I-2.</p>		<p>numbering</p>

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<p><u>persons other than parents or guardians, relatives by blood, marriage or adoption, including but not limited to facilities that provide care to children greater than 2 ½ to 15 years of age. The persons receiving care are capable of self-preservation.</u> Buildings of Group I-1 shall be classified as one of the occupancy conditions specified in Section 308.3.1 or 308.3.2. This group shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> Alcohol and drug centers Assisted living facilities Congregate care facilities Group homes Halfway houses Residential board and care facilities Social rehabilitation facilities <p>Moved to 308.2</p>			
	<p>308.4.1 308.3.1 Occupancy conditions. Buildings of Group I-2 shall be classified as one of the occupancy conditions specified in Section 308.3.1.1 or 308.3.1.2 308.3.1.1 or 308.3.1.2 and shall comply with Section 407.</p>		<p>Edits made to clarify code, no major change to code</p>
	<p>308.4.1.1 308.3.1.1 Condition 1.</p>		<p>Numbering</p>
	<p>308.4.1.2 308.3.1.2 Condition 2.</p>		<p>Numbering</p>
	<p>308.4.2 308.3.2 Five or fewer persons receiving medical care.</p>		<p>Numbering</p>
	<p>308.5 308.4 Institutional Group I-3. Institutional Group I-3 occupancy shall include buildings and structures that are inhabited by more than five persons who are under restraint or security. A Group I-3 facility is occupied by persons who are general <i>incapable of self-preservation</i> due to security measures not under the occupants' control. This group shall include, but is not limited to, the following:</p> <ul style="list-style-type: none"> Correction centers Detention centers 		<p>Edits made to clarify code, no major change to code</p>

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	<p>Jails Prerelease centers Prisons Reformatories</p> <p>Buildings of Group I-3 shall be classified as one of the occupancy conditions specified in Section 308.5.1 through 308.5.5 308.4.1 through 308.4.5 (see Section 408) and shall comply with Section 408.</p>		
	<p>308.5.1 308.4.1 Condition 1.</p>		Numbering
	<p>308.5.2 308.4.2 Condition 2.</p>		Numbering
	<p>308.5.3 308.4.3 Condition 3.</p>		Numbering
	<p>308.5.4 308.4.4 Condition 4.</p>		Numbering
	<p>308.5.5 308.4.5 Condition 5.</p>		Numbering
	<p>308.6 308.5 Institutional Group I-4, day care facilities.</p>		Numbering
	<p>308.6.1 308.5.1 Classification as Group E.</p>		Numbering

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	308.6.2 308.5.2 Within a place of religious worship.		Numbering
	308.6.3 308.5.3 Five or fewer persons receiving care.		Numbering
	308.6.4 308.5.4 Five or fewer persons receiving care in a dwelling unit.		Numbering
	<p style="text-align: center;">SECTION 309 MERCANTILE GROUP M</p> <p>309.1 Mercantile Group M. 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 stock of goods, wares or merchandise incidental to such purposes and where the public has access accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> Department stores Drug stores Markets Greenhouses for display and sale of plants that provide public access Motor fuel-dispensing facilities Retail or wholesale stores Sales rooms 		Edits made to clarify code, no major changes to code.
	309.3 Motor fuel-dispensing facilities. Motor fuel-dispensing facilities shall comply with Section 406.7.		New reference
	<p style="text-align: center;">SECTION 310 RESIDENTIAL GROUP R</p> <p>310.1 Residential Group R. 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>. Group R occupancies not constructed in accordance with the <i>International</i></p>		Edits made to clarify code, no major changes to code.

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	<p>Residential Code as permitted by Sections 310.4.1 and 310.4.2 shall comply with Section 420.</p>		
	<p>310.4.2 Lodging houses. Owner-occupied <i>lodging houses</i> with five or fewer <i>guest rooms</i> 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>.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>310.2 Definitions. The following terms are defined in Chapter 2:</p> <p>BOARDING HOUSE.</p> <p>CONGREGATE LIVING FACILITIES.</p> <p>DORMITORY.</p> <p>GROUP HOME.</p> <p>GUEST ROOM.</p> <p>LODGING HOUSE.</p> <p>PERSONAL CARE SERVICE.</p> <p>TRANSIENT.</p>		<p>Moved definitions</p>
	<p>310.3 310.2 Residential Group R-1.</p>		<p>Numbering</p>
	<p>310.4 310.3 Residential Group R-2. Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:</p> <ul style="list-style-type: none"> 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 		<p>Numbering</p>

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	<p>Hotels (nontransient) Live/work units Monasteries Motels (nontransient) Vacation timeshare properties</p>		
	<p>310.5 310.4 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:</p> <p>Buildings that do not contain more than two dwelling units Boarding houses (nontransient) with 16 or fewer occupants Boarding houses (transient) with 10 or fewer occupants</p> <p>Care facilities that provide accommodations for five or fewer persons receiving care</p> <p>Congregate living facilities (nontransient) with 16 or fewer occupants</p> <p style="padding-left: 40px;">Boarding houses (nontransient) Convents Dormitories Fraternities and sororities Monasteries</p> <p>Congregate living facilities (transient) with 10 or fewer occupants</p> <p style="padding-left: 40px;">Boarding houses (transient)</p> <p>Lodging houses (transient) with five or fewer guest rooms and 10 or fewer occupants</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>310.5.1 310.4.1 Care facilities within a dwelling.</p>		<p>Numbering</p>
	<p>310.5.2 310.4.2 Lodging houses. Owner-occupied lodging houses with five or fewer guest rooms and 10 or fewer total occupants shall be permitted to be constructed in accordance with the International Residential Code.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>310.6 310.5 Residential Group R-4. Residential Group R-4 occupancy shall include buildings, structures or portions thereof for more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive custodial care. Buildings of Group R-4 shall be classified as one of the occupancy conditions specified in Section</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>310.6.1 or 310.6.2 310.5.1 or 310.5.2. This group shall include, but not be limited to, the following:</p> <ul style="list-style-type: none"> Alcohol and drug centers Assisted living facilities Congregate care facilities Group homes Halfway houses Residential board and care facilities Social rehabilitation facilities <p>Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.</p>		
	<p>310.6.4 310.5.1 Condition 1.</p>		<p>Numbering</p>
	<p>310.6.2 310.5.2 Condition 2.</p>		<p>Numbering</p>
	<p style="text-align: center;">SECTION 311 STORAGE GROUP S</p>		
	<p>311.1.1 Accessory storage spaces. A room or space used for storage purposes that is less than 100 square feet (9.3 m²) in area and accessory to another occupancy shall be classified as part of that occupancy. The aggregate area of such rooms or spaces shall not exceed the allowable area limits of Section 508.2.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>311.1.2 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.</p>		<p>New reference, no major change to code.</p>
	<p>311.2 Moderate-hazard storage, Group S-1. 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:</p> <ul style="list-style-type: none"> Aerosol products, Levels 2 and 3 Aircraft hangar (storage and repair) 		<p>Edits made to clarify code, no major changes to code.</p>

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Bags: cloth, burlap and paper
 Bamboos and rattan
 Baskets
 Belting: canvas and leather
Beverages over 16-percent alcohol content
 Books and paper in rolls or packs
 Boots and shoes
 Buttons, including cloth covered, pearl or bone
 Cardboard and cardboard boxes
 Clothing, woolen wearing apparel
 Cordage
 Dry boat storage (indoor)
 Furniture
 Furs
 Glues, mucilage, pastes and size
 Grains
 Horns and combs, other than celluloid
 Leather
 Linoleum
 Lumber
 Motor vehicle *repair garages* complying with the maximum allowable quantities of *hazardous materials* specified in Table 307.1(1) (see Section 406.8)
 Photo engravings
 Resilient flooring
Self-service storage facility (mini-storage)
 Silks
 Soaps
 Sugar
 Tires, bulk storage of
 Tobacco, cigars, cigarettes and snuff
 Upholstery and mattresses
 Wax candles

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	<p>311.2.1 Aircraft hangers. Aircraft hangers used for storage or repair shall comply with Section 412.3.</p>		<p>New reference</p>
	<p>311.2.2 Motor vehicle repair garages. Motor vehicle repair garages shall comply with Section 406.8.</p>		<p>New reference</p>
	<p>311.3 Low-hazard storage, Group S-2. 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. Group S-2 storage uses shall include, but not be limited to, storage of the following:</p> <ul style="list-style-type: none"> Asbestos Beverages up to and including 16-percent alcohol Cement in bags Chalk and crayons Dairy products in nonwaxed coated paper containers Dry cell batteries Electrical coils Electrical motors Empty cans Food products Foods in noncombustible containers Fresh fruits and vegetables in nonplastic trays or containers Frozen foods Glass Glass bottles, empty or filled with noncombustible liquids Gypsum board Inert pigments Ivory Meats Metal cabinets Metal desks with plastic tops and trim 		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>Metal parts Metals Mirrors Oil-filled and other types of distribution transformers Public parking garages, open or enclosed Porcelain and pottery Stoves Talc and soapstones Washers and dryers</p>		
	<p>311.3.1 Public parking garages. Public parking garages shall comply with Section 406.4 and the additional requirements of Section 406.5 for open parking garages or Section 406.6 for enclosed parking garages.</p>		<p>New reference</p>
		<p>SECTION 312 UTILITY AND MISCELLANEOUS GROUP U</p>	
<p>312.1 General. 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:</p> <ul style="list-style-type: none"> Agricultural buildings Aircraft hangars, accessory to a one- or two-family residence (see Section 412.5) Barns Carports Fences <u>(other than masonry)</u> more than 6 feet (1829 mm) <u>8 feet (2438 mm)</u> high Grain silos, accessory to a residential occupancy Greenhouses Livestock shelters Private garages Retaining walls Sheds Stables Tanks 	<p>312.1 General. 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:</p> <p><i>Agricultural buildings</i></p> <p>Aircraft hangars, accessory to a one- or two-family residence (see Section 412.4)</p> <p>Barns</p> <p>Carports</p> <p>Communication equipment structures with a gross floor area of less than 1,500 square feet (139 m²)</p> <p>Fences more than 6 feet (1829 mm) 7 feet (2134 mm) in height</p> <p>Grain silos, accessory to a residential occupancy</p> <p>Greenhouses</p> <p>Livestock shelters</p> <p><i>Private garages</i></p> <p>Retaining walls</p> <p>Sheds</p> <p>Stables</p>	<p>312.1 General. 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:</p> <ul style="list-style-type: none"> Agricultural buildings Aircraft hangars, accessory to a one- or two-family residence (see Section 412.5) Barns Carports Communication equipment structures with a gross floor area of less than 1,500 square feet (139 m²) Fences <u>(other than masonry)</u> more than 6 feet (1829 mm) 7 feet (2134 mm) 8 feet (2,438 mm) 8 feet (2,134 mm) in height Grain silos, accessory to a residential occupancy Livestock shelters <i>Private garages</i> Retaining walls Sheds Stables Tanks 	<p>Edits made to clarify code, no major changes to base code. No change to Houston amendment.</p>

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Towers	Tanks Towers	Towers	
	312.1.1 Greenhouses. Greenhouses not classified as another occupancy shall be classified as Use Group U.		Edits made to clarify code, no major changes to code.
312.2 Fences. <u>312.2.1 Location.</u> Fence location is not restricted on property, but its foundation shall be subject to the same regulations on extensions onto public property as building foundations. Moved to 312.4.1	312.2 Private garages and carports. Private garages and carports shall comply with Section 406.3.		Edits made to clarify code, no major changes to code. Houston amendment moved to Section 312.4.1
<u>312.2.2 Barbed wire fencing.</u> Barbed wire fencing is prohibited. <u>Exception:</u> Fences constructed in part of barbed wire shall be permitted where all the barbed-wire is located six-feet or more from any adjacent ground; and provided further, a plot of ground containing one-acre or more may be fenced with barbed wire where such barbed wire does not abut to any extent whatsoever on a sidewalk or on an unimproved path or trail which is used by pedestrians for sidewalk purposes. Moved to 312.4.2			Houston amendment moved to Section 312.4.2.
<u>312.2.3 Electric fencing.</u> The construction and use of electrified fencing shall be allowed in the city only as provided in this section subject to the following, or the <i>City Code</i> , whichever is more restrictive: <u>1. Electrification:</u> 1.1. No electrified fence shall be installed or operated with a power source other than a storage battery not exceeding 12 volts direct current, charged primarily with a solar panel; provided, however, in case of inclement weather or other conditions that inhibit the ability of the solar panel to fully recharge the battery, a charging device may be utilized for such purpose, if connected in a manner that ensures that the charging device cannot provide a source of power to the fence. In no case shall an electrified fence be connected to any other electric power source. 1.2. The electric charge produced by the fence upon contact shall not exceed energizer characteristics set forth in paragraph 20.108 and depicted in Figure 102 of <i>International Electrotechnical Commission (IEC)</i>			Houston amendment moved to Section 312.4.3.

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Standard No. 60335-2-76, as such standard exists upon January 30, 2008.

To the extent that the construction or installation of an electrified fence does not conflict with the requirements of this section, and unless otherwise specified herein, such fence shall be constructed or installed in conformance with the specifications set forth in IEC Standard 60335-2-76, as such standard exists upon January 30, 2008.

2. Perimeter fence or wall: No electrified fence shall be installed or used unless it is completely surrounded by a non-electrical fence or wall that is not less than six feet and not more than eight feet in height. The perimeter fence or wall shall be separated from the electrified fence by not less than one foot at its closest point, and by not more than five feet at its farthest point, except at gate openings, which shall be installed in conformance with the specifications set forth in Annex CC of IEC Standard 60335-2-76, as such standard existed upon January 30, 2008. The area between the perimeter wall or fence and the electrified fence shall be kept completely clear of landscaping, shrubbery, other fences, or any material of any kind. The lowest part of the perimeter fence or wall shall be constructed to follow the natural terrain to prevent penetration of such fence or wall at ground level. No part of a perimeter fence or wall shall be allowed to be in contact with an electrified fence by any means at any time. Perimeter fences adjacent to residential lots at the time of installation of the electric fence shall be either a wood privacy fence, a chain link fence with wood or plastic slats inserted into each weave of the fence, or an equivalent solid barrier fence.

3. Location of Electric Fencing:

- 3.1. Limited to commercial outdoor storage areas only.
- 3.2. Prohibited within five feet of any public right-of-way or sidewalk, unless the barrier fence is a wood privacy fence, a chain link fence with a wood or plastic slats inserted into each weave of the fence, or an equivalent solid barrier fence.
- 3.3. Prohibited within 25 feet of any outdoor area utilized for the storage, use, or handling of hazardous materials as defined in the *Fire Code*.

4. Height: Shall be not less than six feet and not more than ten feet in height.

5. Signage; other markings: Shall be clearly identified with warning signs in English, Spanish and Vietnamese that read: "Warning—Electric Fence" placed along the non-electrical perimeter fence or wall at intervals of not less than 50 feet, however, in no instance may there be less than one sign on each side of the non-electrical perimeter fence or wall. In addition to the required signs, the top or uppermost

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<p><u>horizontal frame member of any entry gate providing access to any property upon which an electrified fence is located, shall be marked by the placement or addition of a yellow reflective paint, tape or other permanent weatherproof marking along the full length of the gate frame, which marking shall be at least 3 inches wide and be kept in good condition to ensure its continued visibility.</u></p> <p>6. Hours of activation: Shall not be activated between the hours of 8:00 a.m. and 5:00 p.m., except:</p> <p>6.1. <u>On days when the business is closed, such as weekends and holidays; or</u></p> <p>6.2. <u>When security personnel are available on-site to deactivate the electrical fence.</u></p> <p>7. Key box: Shall be installed in accordance with Houston Fire Department Life Safety Bureau Standards.</p> <p>8. Registration: Prior to the installation or use of any electrified fence, the property owner or lessee of the property upon which such fencing will be installed or used shall submit a completed registration for such fencing to the fire department using the form promulgated for that purpose by the fire chief. The property owner or lessee shall certify that the energizer of the fence complies with characteristics set forth in paragraph 22.108 and depicted in Figure 102 of IEC Standard No. 60335-2-76, as such standard exists upon January 30, 2008. No fee shall be charged in connection with the registration required by this item.</p> <p>It shall be unlawful for any person to install, maintain, or operate an electrified fence in violation of this section. The provisions of this section shall not be applicable to any fence on zoological gardens owned by a political subdivision of the state.</p> <p>Moved to 312.4.3</p>			
	<p>312.3 Residential aircraft hangars. Aircraft hangars accessory to a one- or two-family residence shall comply with Section 412.4.</p>		<p>New reference for provisions regulating residential aircraft hangars.</p>
<p>N/A</p>		<p>313.4 Fences.</p> <p>313.4.1 Location. Fence location is not restricted on property, but its foundation shall be subject to the same regulations on extensions onto public property as building foundations.</p>	<p>No change to Houston amendment.</p>
<p>N/A</p>		<p>313.4.2 Barbed wire fencing. Barbed wire fencing is prohibited.</p> <p>Exception: Fences constructed in part of barbed wire shall be permitted where all the barbed-wire is located six-feet or more from any adjacent ground; and provided further, a plot of ground containing one-acre or more may be fenced with barbed wire where such barbed wire does not abut to any</p>	<p>No change to Houston amendment.</p>

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		<p>extent whatsoever on a sidewalk or on an unimproved path or trail which is used by pedestrians for sidewalk purposes.</p>	
	<p><u>N/A</u></p>	<p>313.4.3 Electric fencing. The construction and use of electrified fencing shall be allowed in the city only as provided in this section subject to the following, or the <i>City Code</i>, whichever is more restrictive:</p> <p>1. Electrification:</p> <p>1.1 No electrified fence shall be installed or operated with a power source other than a storage battery not exceeding 12 volts direct current, charged primarily with a solar panel; provided, however, in case of inclement weather or other conditions that inhibit the ability of the solar panel to fully recharge the battery, a charging device may be utilized for such purpose, if connected in a manner that ensures that the charging device cannot provide a source of power to the fence. In no case shall an electrified fence be connected to any other electric power source.</p> <p>1.2 The electric charge produced by the fence upon contact shall not exceed energizer characteristics set forth in paragraph 22.108 and depicted in Figure 102 of <i>International Electrotechnical Commission (IEC) Standard No. 60335-2-76</i>, as such standard exists upon January 30, 2008.</p> <p>To the extent that the construction or installation of an electrified fence does not conflict with the requirements of this section, and unless otherwise specified herein, such fence shall be constructed or installed in conformance with the specifications set forth in IEC Standard 60335-2-76, as such standard existed upon January 30, 2008.</p> <p>2. Perimeter fence or wall: No electrified fence shall be installed or used unless it is completely surrounded by a non-electrical fence or wall that is not less than six feet and not more than eight feet in height. The perimeter fence or wall shall be separated from the electrified fence by not less than one foot at its closest point, and by not more than five feet at its farthest point, except at gate openings, which shall be installed in conformance with the specifications set forth in Annex CC of <i>IEC Standard 60335-2-76</i>, as such standard</p>	<p>No change to Houston amendment.</p>

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existed upon January 30, 2008. The area between the perimeter wall or fence and the electrified fence shall be kept completely clear of landscaping, shrubbery, other fences, or any material of any kind. The lowest part of the perimeter fence or wall shall be constructed to follow the natural terrain to prevent penetration of such fence or wall at ground level. No part of a perimeter fence or wall shall be allowed to be in contact with an electrified fence by any means at any time. Perimeter fences adjacent to residential lots at the time of installation of the electric fence shall be either a wood privacy fence, a chain link fence with wood or plastic slats inserted into each weave of the fence, or an equivalent solid barrier fence.

3. Location of Electric Fencing:

- 3.1. Limited to commercial outdoor storage areas only.
- 3.2. Prohibited within five feet of any public right-of-way or sidewalk, unless the barrier fence is a wood privacy fence, a chain link fence with wood or plastic slats inserted into each weave of the fence, or an equivalent solid barrier fence.
- 3.3. Prohibited within 25 feet of any outdoor area utilized for the storage, use, or handling of hazardous materials as defined in the *Fire Code*.

4. Height: Shall be not less than six feet and not more than ten feet in height.

5. Signage; other markings: Shall be clearly identified with warning signs in English, Spanish and Vietnamese that read: "Warning—Electric Fence" placed along the non-electrical perimeter fence or wall at intervals of not less than 50 feet, however, in no instance may there be less than one sign on each side of the non-electrical perimeter fence or wall. In addition to the required signs, the top or uppermost horizontal frame member of any entry gate providing access to any property upon which an electrified fence is located, shall be marked by the placement or addition of a yellow reflective paint, tape or other permanent weatherproof marking along the full length of the gate frame, which marking shall be at least 3 inches wide and be kept in good condition to ensure its continued visibility.

6. Hours of activation: Shall not be activated between the hours of 8:00 a.m. and 5:00 p.m., except:

- 6.1 On days when the business is closed, such as weekends and holidays; or

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6.2 ~~When security personnel are available on-site to deactivate the electrical fence.~~

7. **Key box:** Shall be installed in accordance with Houston Fire Department Life Safety Bureau Standards.

8. **Registration:** Prior to the installation or use of any electrified fence, the property owner or lessee of the property upon which such fencing will be installed or used shall submit a completed registration for such fencing to the fire department using the form promulgated for that purpose by the fire chief. The property owner or lessee shall certify that the energizer of the fence complies with characteristics set forth in paragraph 22.108 and depicted in Figure 102 of IEC Standard No. 60335-2-76, as such standard exists upon January 30, 2008. No fee shall be charged in connection with the registration required by this item.

It shall be unlawful for any person to install, maintain, or operate an electrified fence in violation of this section. The provisions of this section shall not be applicable to any fence on zoological gardens owned by a political subdivision of the state.

SECTION 313

CARE FACILITY CLASSIFICATION

313.1 Classification. Adult and child care facilities shall be classified in accordance with Tables 313.1 and 313.2, and Sections 305, 308 and 310, as applicable. **Note:** The following Tables are general requirements and are subordinate to the specific provisions of applicable sections.

N/A

SECTION 314

CARE FACILITY CLASSIFICATION

314.1 Classification. Adult and child care facilities shall be classified in accordance with Tables 314.1 and 314.2, and Sections 305, 308 and 310, as applicable. **Note:** The following Tables are general requirements and are subordinate to the specific provisions of applicable sections.

No change to Houston amendment.

TABLE 313.1

CLASSIFICATION OF CARE FACILITIES

Occupancy	Occupant Load	Occupancy																		
		B (100)	B (100) (1)	B (100) (2)	B (100) (3)	B (100) (4)	B (100) (5)	B (100) (6)	B (100) (7)	B (100) (8)	B (100) (9)									
Child Care	0-5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	6-19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Adult Care	0-19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	20-50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Capacity of Care Facilities	0-19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	20-50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Age	<18 years	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	18-65 years	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

1. Child Care.
 2. Medical Care.

N/A

TABLE 314.1

CLASSIFICATION OF CARE FACILITIES

Occupancy	Occupant Load	Occupancy																		
		B (100)	B (100) (1)	B (100) (2)	B (100) (3)	B (100) (4)	B (100) (5)	B (100) (6)	B (100) (7)	B (100) (8)	B (100) (9)									
Child Care	0-5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	6-19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Adult Care	0-19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	20-50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Capacity of Care Facilities	0-19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	20-50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Age	<18 years	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	18-65 years	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

1. Child Care.
 2. Medical Care.

No change to Houston amendment.

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TABLE 313.2
CLASSIFICATION OF CARE FACILITIES (LESS THAN 24-HOUR CARE)

Type of Care (and/or use)	Capability of Residents	Number of Care Residents		
		1-5	6-15	Over 15
Medical	Capable of self-protection	B	B	B
Medical	Incapable of self-protection	B (ACF) ¹	B (ACF)	B (ACF)
Personal Care Services				
Over 21 years	Capable of self-protection	Part of primary occupancy ²	E1	E1
Custodial		Part of primary occupancy ²	E4C	E4C
Custodial		Part of primary occupancy ²	E4C	E4C
21 years or less	Capable of self-protection	Part of primary occupancy ²	E4C or E4	E4C or E4

B (ACF) = Group B Ambulatory Care Facilities
 1. Group B ambulatory care facilities have certain additional requirements that apply when there are four or more care recipients who are not capable of self-protection.
 2. If located within a dwelling unit, classified as R-3 or exempt, with IRC.
 3. Within places of religious worship, care provided during religious functions shall be classified as part of the primary occupancy.
 4. See Section 308.6.1, Child day care for more than five but no more than 100 shall be classified as a Group E when the rooms are located on the level of exit discharge and each care room has an exit door directly to the exterior.

N/A

TABLE 314.2
CLASSIFICATION OF CARE FACILITIES (LESS THAN 24-HOUR CARE)

Type of Care (and/or use)	Capability of Residents	Number of Care Residents		
		1-5	6-15	Over 15
Medical	Capable of self-protection	B	B	B
Medical	Incapable of self-protection	B (ACF) ¹	B (ACF)	B (ACF)
Personal Care Services				
Over 21 years	Capable of self-protection	Part of primary occupancy ²	E2	E2
Custodial		Part of primary occupancy ²	E4C	E4C
Custodial		Part of primary occupancy ²	E4C	E4C
21 years or less	Capable of self-protection	Part of primary occupancy ²	E4C or E4	E4C or E4

B (ACF) = Group B Ambulatory Care Facilities
 1. Group B ambulatory care facilities have certain additional requirements that apply when there are four or more care recipients who are not capable of self-protection.
 2. If located within a dwelling unit, classified as R-3 or exempt, with IRC.
 3. Within places of religious worship, care provided during religious functions shall be classified as part of the primary occupancy.
 4. See Section 308.6.1, Child day care for more than five but no more than 100 shall be classified as a Group E when the rooms are located on the level of exit discharge and each care room has an exit door directly to the exterior.

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2015 Houston IBC – Chapter 4 Special Detailed Requirements Based on Use and Occupancy	2021 IBC – Chapter 4 Special Detailed Requirements Based on Use and Occupancy and Use	2021 Houston Amendments– Chapter 4 Special Detailed Requirements Based on Occupancy and Use	Code Analysis
	<p style="text-align: center;">SECTION 401 SCOPE</p> <p>401.1 Detailed use and occupancy and use requirements. In addition to the occupancy and construction requirements in this code, the provisions of this chapter apply to the special uses and occupancies and use described herein.</p>		Edits made to clarify code, no major changes to code.
	<p>402.1.4 402.2 Open space.</p>		Numbering
	<p>402.1.2 402.1.1 Open mall building perimeter line.</p>		Numbering
	<p>402.2 Definitions. The following terms are defined in Chapter 2:</p> <p>ANCHOR BUILDING.</p> <p>COVERED MALL BUILDING.</p> <p>Mall.</p> <p>Open mall.</p> <p>Open mall building.</p> <p>FOOD COURT.</p> <p>GROSS LEASABLE AREA.</p>		Relocated definitions
	<p>402.1 Applicability. The provisions of this section shall apply to buildings or structures defined herein as <i>covered</i> or <i>open mall buildings</i> not exceeding three floor levels at any point nor more than three <i>stories above grade plane</i>. Except as specifically required by this section, <i>covered</i> and <i>open mall buildings</i> shall meet applicable provisions of this code.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Foyers and lobbies of Group B, R-1 and R-2 occupancies are not required to comply with this section. 2. Buildings need not comply with the provisions of this section where they totally comply with other applicable provisions of this code. 		Edits made to clarify code, no major changes to code.

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	<p>402.2 Open space. A covered mall building and attached anchor buildings and parking garages shall be surrounded on all sides by a permanent open space or not less than 60 feet (18 288 mm). An open mall building and anchor buildings and parking garages adjoining the perimeter line shall be surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm).</p> <p>Exception: The permanent open space of 60 feet (18 288 mm) shall be permitted to be reduced to not less than 40 feet (12 192 mm), provided that the following requirements are met:</p> <ol style="list-style-type: none"> 1. The reduced open space shall not be allowed for more than 75 percent of the perimeter of the covered or open mall building and anchor buildings. 2. The exterior wall facing the reduced open space shall have a fire-resistance rating of not less than 3 hours. 3. Openings in the exterior wall facing the reduced open space shall have opening protectives with a fire protection rating of not less than 3 hours. 4. Group E, H, I or R occupancies are not located within the covered or open mall building or anchor buildings. 		<p>New requirement for malls.</p>
	<p>402.2 Open space. Each owner of a covered mall building or of an open mall building shall provide both the building and fire departments with a lease plan showing the location of each occupancy and its exits after the certificate of occupancy has been issued. No Modifications or changes in occupancy or use shall be made from that shown on the lease plan shall not be made without prior approval of the building official.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.4.1.1 Covered and open mall buildings. The building area of any covered mall or open mall building shall not be limited provided that the covered mall or open mall building does not exceed three floor levels at any point nor three stories above grade plane, and is of Type I, II, III or IV construction.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.4.1.2 Anchor buildings. The building area and building height of any anchor building shall be based on the type of construction as required by Section 503 as modified by Sections 504 and 506.</p> <p>Exception: The building area of any anchor building shall not be limited provided that the anchor</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>building is not more than three stories above grade plane, and is of Type I, II, III or IV construction.</p>		
	<p>402.4.1.3 Parking garage. The building area and building height of any parking garage, open or enclosed, shall be based on the type of construction as required by Sections 406.5 and 406.6, respectively.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.4.2.2 Anchor building separation. An anchor building shall be separated from the covered or open mall building by fire walls complying with Section 706.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Anchor buildings of not more than three stories above grade plane that have an occupancy classification the same as that permitted for tenants of the mall building shall be separated by 2-hour fire-resistance-rated fire barriers complying with Section 707. 2. The exterior walls of anchor buildings separated from an open mall building by an open mall shall comply with Table 705.5. 		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.4.2.3 Parking garages. An attached garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered or open mall building or anchor building by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.</p> <p>Parking garages, open or enclosed, which are separated from covered mall buildings, open mall buildings or anchor buildings, shall comply with the provisions of Table 705.5.</p> <p>Pedestrian walkways and tunnels that connect garages to mall buildings or anchor buildings shall be constructed in accordance with Section 3104.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>402.6.3 Children's Play structures. Children's Play structures located within the mall of a covered mall building or within the perimeter line of an <i>open mall building</i> shall comply with Section 424. The horizontal separation between children's play structures, kiosks and similar structures within the <i>mall</i> shall be not less than 20 feet (6096 mm).</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.6.4.4 Plastics other than foam plastics. Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with Section 2606.4 or shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D1929, and a flame spread index not greater than 75 and smoke-developed index not greater than 450 when tested in the manner intended for use in accordance with ASTM E84 or UL 723 or meet the acceptance criteria of Section 803.1.2.1 803.1.1.1 when tested in accordance with NFPA 286.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 402.7.2 Smoke control. Where a covered mall building contains an atrium Atriums connecting three or more stories in a covered mall building shall be provided with a smoke control system in accordance with Section 404.5 Section 909.</p> <p>Exception: A smoke control system is not required in covered mall buildings where an atrium connects only two stories.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 402.7.4 Emergency voice/alarm communication system.</p> <p>Where the total floor area is greater than 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.</p> <p>The fire department shall have access to any emergency voice/alarm communication systems serving a mall, required or otherwise, shall be accessible to the fire department. The systems shall be provided in accordance with Section 907.5.2.2.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 402.7.5 Fire department access to equipment. Rooms or areas containing controls for air-conditioning systems, automatic fire extinguishing system, automatic sprinkler systems or other detection, suppression or control elements or fire protection systems shall be identified for use by the fire department.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.8.1.1 Minimum width. The aggregate clear egress width of the mall in either a covered or open mall building shall be not less than 20 feet (6096 mm). The mall width shall be sufficient to accommodate the occupant load served. No Any portion of the minimum required aggregate</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>egress width shall be not less than 10 feet (3048 mm) measured to a height of 8 feet (2438 mm) between any projection of a tenant space bordering the mall and the nearest kiosk, vending machine, bench, display opening, food court or other obstruction to means of egress travel.</p>		
	<p>402.8.2.4 Food courts. The occupant load of a food court shall be determined in accordance with Section 1004. For the purposes of determining the means of egress requirements for the mall, the food court occupant load shall be added to the occupant load of the covered or open mall building as calculated above in Section 402.8.2.1.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.8.3 Number of means of egress. Wherever the distance of travel to the mall from any location within a tenant space used by persons other than employees is greater than 75 feet (22 860 mm) or the tenant space has an occupant load of 50 or more, no fewer than two means of egress shall be provided.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.8.4.1 Anchor building means of egress. Required means of egress for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in determining means of egress requirements for the mall. The path of egress travel of malls shall not exit through anchor buildings. Malls terminating at an anchor building where no other means of egress has not been provided shall be considered as a dead-end mall.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.8.6 Access to exits. Where more than one exit is required, they shall be so arranged that it is possible to travel in either direction from any point in a mall of a covered mall building to separate exits or from any point in an open mall of an open mall building to two separate locations on the perimeter line, provided that neither location is an exterior wall of an anchor building or parking garage. The width of an exit passageway or corridor from a mall shall be not less than 66 inches (1676 mm).</p> <p>Exception: Access to exits is permitted by way of a dead-end mall that does not exceed a length equal to twice the width of the mall measured at the narrowest location within the dead-end portion of the mall.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>402.8.6.1 Exit passageways. Where exit passageways provide a secondary means of egress from a tenant space, the exit passageways shall be protected by 1-hour fire door assemblies that are self- or automatic-closing by smoke detection in accordance with Section 716.5.9.3.1024.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>402.8.7 Service areas fronting on exit passageways. Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into exit passageways, provided that the exit passageway is separated from such rooms with not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire protection rating of openings in the fire barriers shall be not less than 1 hour.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p style="text-align: center;">SECTION 403 HIGH-RISE BUILDINGS</p> <p>403.1 Applicability. High-rise buildings shall comply with Sections 403.2 through 403.6.</p> <p>Exception: The provisions of Sections 403.2 through 403.6 shall not apply to the following buildings and structures:</p> <ol style="list-style-type: none"> 1. Airport traffic control towers in accordance with Section 412.3 412.2. 2. Open parking garages in accordance with Section 406.5. 3. The portion of a building containing a Group A-5 occupancy in accordance with Section 303.6. 4. Special industrial occupancies in accordance with Section 503.1.1. 5. Buildings with containing any one of the following: <ol style="list-style-type: none"> 5.1. A Group H-1 occupancy ; 5.2. A Group H-2 occupancy in accordance with Section 415.8, 415.9.2, 415.9.3 or 426.1 ; or, 5.3. A Group H-3 occupancy in accordance with Section 415.8. 		<p>Edits made to clarify code, no major changes to code.</p>
	<p>403.2.1.1 Type of construction. The following reductions in the minimum fire-resistance rating of the building elements in Table 601 shall be permitted as follows:</p> <ol style="list-style-type: none"> 1. For buildings not greater than 420 feet (128 000 mm) in building height, the fire-resistance rating of the building elements in Type IA construction shall be permitted to be reduced to the minimum fire-resistance ratings for the building elements in Type IB. 		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>Exception: The required fire-resistance rating of columns supporting floors shall not be reduced.</p> <p>2. In other than Group F-1, H-2, H-3, H-5, M and S-1 occupancies, the fire-resistance rating of the building elements in Type IB construction shall be permitted to be reduced to the fire-resistance ratings in Type IIA.</p> <p>3. The building height and building area limitations of a building containing building elements with reduced fire-resistance ratings shall be permitted to be the same as the building without such reductions.</p>		
	<p>403.2.2 Seismic considerations. For seismic considerations, see Chapter 16 Removed</p>		
	<p>[BS] 403.2.3 403.2.2 Structural integrity of interior exit stairways and elevator hoistway enclosures. For high-rise buildings of Risk Category III or IV in accordance with Section 1604.5, and for all buildings that are more than 420 feet (128 000 m) in building height, enclosures for interior exit stairways and elevator hoistway enclosures shall comply with Sections 403.2.3.1 through 403.2.3.4.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[BS] 403.2.3.4 403.2.2.1 Wall assembly materials—soft body impact. The wall assemblies panels making up the enclosures for interior exit stairways and elevator hoistway enclosures shall meet or exceed Soft Body Impact Classification Level 2 as measured by the test method described in ASTM C1629/C1629M.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[BS] 403.2.3.2 403.2.2.2 Wall assembly materials—hard body impact. The face of the wall assemblies panels making up the enclosures for interior exit stairways and elevator hoistway enclosures that are not exposed to the interior of the enclosures for interior exit stairways or elevator hoistway enclosure shall be considered in accordance with one of the following methods:</p> <ol style="list-style-type: none"> 1. The wall assembly shall incorporate no fewer than two layers of impact-resistant construction board panels, each of which meets or exceeds Hard body Impact Classification Level 2 as measured by the test method described in ASTM C1629/C1629M. 2. The wall assembly shall incorporate no fewer than one layer of impact-resistant construction materials panels that meet or exceed which meets 		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>or exceeds Hard Body Impact Classification Level 3 as measured by the test method described in ASTM C1629/C1629M.</p> <p>3. The wall assembly incorporates multiple layers of any material, tested in tandem, that meets or exceeds Hard Body Impact Classification Level 3 as measured by the test method described in ASTM C1629/C1629M.</p>		
	[BS] 403.2.3.3 403.2.2.3 Concrete and masonry walls.		Numbering
	[BS] 403.2.3.4 403.2.2.4 Other wall assemblies.		Numbering
	403.2.4 403.2.3 Sprayed fire-resistance materials (SFRM).		Numbering
	Table 403.2.4 TABLE 403.2.3 MINIMUM BOND STRENGTH		Numbering
	<p>[F] 403.3 Automatic sprinkler system. Buildings and structures shall be equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 403.3.3.</p> <p>Exception: An <i>automatic sprinkler system</i> shall not be required in spaces or areas of telecommunications equipment 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 <i>automatic fire detection system</i> 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 or not less than 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711, or both.</p> <p>1. Open parking garages in accordance with Section 406.5.</p> <p>2. Telecommunications equipment buildings used exclusively for telecommunications equipment,</p>		Edits made to clarify code, no major changes to code.

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	<p>associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire 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.</p>		
	<p>[F] 403.3.1 Number of sprinkler risers and system design. Each sprinkler system zone in buildings that are more than 420 feet (128 000 m) in building 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.</p>		Edits made to clarify code, no major changes to code.
	<p>[F] 403.3.2 Water supply to required fire pumps. In <u>all</u> buildings that are more than 420 feet (128 000 m) in <u>building height and buildings of Type IVA and IVB construction that are more than 120 feet (36 576mm) in building height.</u> 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.</p> <p>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.</p>		New requirement for tall timber buildings.
	<p>[F] 403.4.1 Smoke detection. Smoke detection shall be provided in accordance with Section 907.2.13.1 907.2.12.1.</p>		Numbering
	<p>[F] 403.4.2 Fire alarm system. A fire alarm system shall be provided in accordance with Section 907.2.13 907.2.12.</p>		Numbering
	<p>[F] 403.4.6 Fire command. A fire command center complying with Section 911 shall be provided in a location approved by the fire department code official.</p>		Edits made to clarify code, no major changes to code.

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	<p>[F] 403.4.5 Emergency responder radio communication coverage. In-building, two-way emergency Emergency responder radio communication coverage shall be provided in accordance with Section 510 of the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 403.4.8.2 Fuel line piping protection. Fuel lines supplying a generator set inside a building shall be separated from areas of the building other than the room the generator is located in by an approved method or one of the following methods:</p> <ol style="list-style-type: none"> 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> installed 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 or 903.3.1.2, the required fire-resistance rating shall be reduced to 1 hour. 3. Other approved methods. 		<p>Additional method of design for fuel line piping</p>
	<p>[F] 403.4.8.3 Standby power loads. The following are classified as standby power loads:</p> <ol style="list-style-type: none"> 1. Power and lighting for the fire command center required by Section 403.4.6. 2. 1. Ventilation and automatic fire detection equipment for smokeproof enclosures. 3. 2. 2. Elevators. 4. 3. Where elevators are provided in a high-rise building for accessible means of egress, fire service access or occupant self-evacuation, the standby power system shall also comply with Sections 1009.4, 3007 or 3008, as applicable. 		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 403.4.8.4 Emergency power loads. The following are classified as emergency power loads:</p> <ol style="list-style-type: none"> 1. Exit signs and means of egress illumination required by Chapter 10. 2. Elevator car lighting. 		

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	<p>3. Emergency voice/alarm communications systems.</p> <p>4. Automatic fire detection systems.</p> <p>5. Fire alarm systems.</p> <p>6. Electrically powered fire pumps.</p> <p>7. Power and lighting for the fire command center required by Section 403.4.6.</p>		
	<p>403.5.2 Additional interior exit stairway. For buildings other than Group R-2 and their ancillary spaces that are more than 420 feet (128 000 m) in building height, one additional interior exit stairway meeting the requirements of Sections 1011 and 1023 shall be provided in addition to the minimum number of exits required by Section 1006.3. The total width capacity of any combination of remaining interior exit stairways with one interior exit stairway removed shall be not less than the total width capacity required by Section 1005.1. Scissor stairways shall not be considered the additional interior exit stairway required by this section.</p> <p>Exceptions:</p> <p>1. An additional interior exit stairway shall not be required to be installed in buildings having elevators used for occupant self-evacuation in accordance with Section 3008.</p> <p>2. An additional interior exit stairway shall not be required for other portions of the building where the highest occupiable floor level in those areas is less than 420 feet (128 m) in building height.</p>		<p>Edits made to clarify code, no major changes to code.</p>
<p><u>403.5.3.1.1 Stairway communications system re-entry signage.</u> A sign shall be provided directly above the communications system device that shall read: <u>PUSH/LIFT TO CALL FOR RE-ENTRY.</u></p>	<p>N/A</p>	<p><u>403.5.3.1.1 Stairway communications system re-entry signage.</u> A sign shall be provided directly above the communications system device that shall read: <u>PUSH/LIFT TO CALL FOR RE-ENTRY.</u></p>	<p>No change to Houston amendment.</p>
<p><u>403.5.3.2 Stairway re-entry doors.</u> Stairway re-entry doors in exit enclosures shall be provided on every fifth-floor level, as well as the top occupiable floor level. Re-entry stairway doors shall be located on the same floor as each <u>approved</u> communications system in accordance with 403.5.3.1.</p>	<p>N/A</p>	<p><u>403.5.3.2 Stairway re-entry doors.</u> Stairway re-entry doors in exit enclosures shall be provided on every fifth-floor level, as well as the uppermost (top) floor level. Re-entry stairway doors shall be located on the same floor as each <u>approved</u> communications system re-entry sign in accordance with 403.5.3.1.</p>	<p>No change to Houston amendment.</p>
	<p>403.5.6 Emergency escape and rescue. Emergency escape and rescue openings specified in Section 1031 are not required. Removed</p>		

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	<p>403.6.1 Fire service access elevator. In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, not fewer than two fire service access elevators, or all elevators, whichever is less, shall be provided in accordance with Section 3007. Each fire service access elevator shall have a capacity of not less than 3,500 pounds (1588 kg) and shall comply with Section 3002.4.</p>		
	<p style="text-align: center;">SECTION 404 ATRIUMS</p> <p>404.1 General. In other than Group H occupancies, and where permitted by Section 712.1.7, The provisions of Sections 404.1 through 404.11 shall apply to buildings containing atriums. Atriums are not permitted in buildings or structures classified as Group H, containing vertical openings defined as "Atriums."</p> <p>Exception: Vertical openings that comply with Sections 712.1.1 through 712.1.3, and Sections 712.1.9 through 712.1.14.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>404.1.1 Definition. The following term is defined in Chapter 2:</p> <p>ATRIUM.</p>		
	<p>[F] 404.4 Fire alarm system. A fire alarm system shall be provided in accordance with Section 907.2.14 907.2.13.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>404.5 Smoke control. A smoke control system shall be installed in accordance with Section 909.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In other than Group I-2, and Group I-1, Condition 2, smoke control is not required for <i>atriums</i> that connect only two <i>stories</i>. 2. A smoke control system is not required for <i>atriums</i> connecting more than two <i>stories</i> when all of the following are met: <ol style="list-style-type: none"> 2.1. Only the two lowest <i>stories</i> shall be permitted to be open to the <i>atrium</i>. 2.2. All <i>stories</i> above the lowest two <i>stories</i> shall be separated from the <i>atrium</i> in accordance with the provisions for a <i>shaft</i> in Section 713.4. 		<p>Expanded smoke control exceptions for atriums</p>

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404.6 Enclosure of atriums. *Atrium* spaces shall be separated from adjacent spaces by a 1-hour *fire barrier* constructed in accordance with Section 707 or a *horizontal assembly* constructed in accordance with Section 711, or both.

Exceptions:

1. A *fire barrier* is not required where a glass wall forming a smoke partition is provided. The glass wall shall comply with all of the following:

1.1. Automatic sprinklers are provided along both sides of the separation wall and doors, or on the room side only if there is not a walkway on the atrium side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction;

1.2. The glass wall 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; and

1.3. Where glass doors are provided in the glass wall, they shall be either self-closing or automatic-closing.

2. A fire barrier is not required where a glass-block wall assembly complying with Section 2110 and having a 3/4-hour fire protection rating is provided.

3. A fire barrier is not required between the atrium and the adjoining spaces of any up to three floors of the atrium provided that such spaces are accounted for in the design of the smoke control system.

4. A fire barrier is not required between the atrium and the adjoining spaces where the atrium is not required to be provided with a smoke control system.

5. A *horizontal assembly* is not required between the *atrium* and openings for escalators complying with Section 712.1.3.

6. A *horizontal assembly* is not required between the *atrium* and openings for *exit access stairways* and *ramps* complying with Item 4 of Section 1019.3.

404.8 Interior finish. The interior finish of walls and ceilings of the atrium shall be not less than Class B, with no Sprinkler protection shall not result in a reduction in class for sprinkler protection.

Edits made to clarify code, no major changes to code.

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	<p>404.9 Exit access travel distance. <i>Exit access</i> travel distance for areas open to an <i>atrium</i> shall comply with the requirements of this section. Section 1017.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>404.9.1 Egress not through the atrium. Where required access to the exits is not through the atrium, exit access travel distance shall comply with Section 1017. Removed</p>		
	<p>404.9.2 Exit access travel distance at the level of exit discharge. Where the path of egress travel is through an atrium space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017. Removed</p>		
	<p>404.9.3 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 atrium, that portion of the total permitted exit access travel distance that occurs within the atrium shall be not greater than 200 feet (60 960 mm). Removed</p>		
	<p>404.10 Exit stairways in an atrium. Where an <i>atrium</i> contains an <i>interior exit stairway</i> all the following shall be met:</p> <ol style="list-style-type: none"> 1. The entry to the <i>exit stairway</i> is the edge of the closest riser of the <i>exit stairway</i>. 2. The entry of the <i>exit stairway</i> shall have access from a minimum of two directions. 3. The distance between the entry to an <i>exit stairway</i> in an <i>atrium</i> and the entrance to a minimum of one <i>exit stairway</i> enclosed in accordance with Section 1023.2 shall comply with the separation required by Section 1007.1.1. 4. <i>Exit access</i> travel distance shall be measured to the closest riser of the <i>exit stairway</i>. 5. Not more than 50 percent of the <i>exit stairways</i> shall be located in the same <i>atrium</i>. 		<p>New requirement for interior exit stairs in atriums</p>
	<p>404.10 404.11 Interior exit stairway discharge. A maximum of Not greater than 50 percent Discharge of <i>interior exit stairways</i> are permitted to egress through an <i>atrium</i> on the level of exit discharge shall be in accordance with Section 1028.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p style="text-align: center;">SECTION 405 UNDERGROUND BUILDINGS</p>		

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	<p>405.4.1 Number of compartments. A building having a floor level more than 60 feet (18 288 mm) below the finished floor of the lowest level of exit discharge shall be divided into not fewer than two compartments of approximately equal size. Such compartmentation shall extend through the highest level of exit discharge serving the underground portions of the building and all levels below.</p> <p>Exception: The lowest story need not be compartmented where the area is not greater than 1,500 square feet (139 m²) and has an occupant load of less than 10.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>405.4.2 Smoke barrier penetration. The compartments shall be separated from each other by a smoke barrier in accordance with Section 709. Penetrations between the two compartments shall be limited to plumbing and electrical piping and conduit that are firestopped in accordance with Section 714. Doorways shall be protected by fire door assemblies that are comply with Section 716, automatic-closing by smoke detection in accordance with Section 716.5.9.3 716.2.6.6 and installed in accordance with NFPA 105 and Section 716.5.3 716.2.2.1. Where provided, each compartment shall have an air supply and an exhaust system independent of the other compartments.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>405.4.3 Elevators. Where elevators are provided, each compartment shall have direct access to an elevator. Where an elevator serves more than one compartment, an enclosed elevator lobby shall be provided and shall be separated from each compartment by a smoke barrier in accordance with Section 709. Doors shall be gasketed, have a drop sill and Doorways in the smoke barrier shall be protected by fire door assemblies that comply with Section 716, shall comply with the smoke and draft control assembly requirements of Section 716.2.2.1 with the UL 1784 test conducted without an artificial bottom seal, and shall be automatic-closing by smoke detection in accordance with Section 716.5.9.3 716.2.6.6.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>405.5.2 Compartment smoke control system. Where compartmentation is required, each compartment shall have an independent smoke control system. The system shall be automatically activated and capable of manual operation in accordance with Sections 907.2.18 and 907.2.19 907.2.17 and 907.2.18.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 405.6 Fire alarm systems. A fire alarm system shall be provided where required by Sections 907.2.18 and 907.2.19 907.2.17 and 907.2.18.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>405.7.1 Number of exits. Each floor level shall be provided with no fewer than two exits. Where compartmentation is required by Section 405.4, each compartment shall have not fewer than one exit and shall also have not fewer than one exit access doorway into the adjoining compartment.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 405.8.1 Standby power loads. The following loads are classified as standby power loads:</p> <ol style="list-style-type: none"> 1. Smoke control system. 2. Ventilation and automatic fire detection equipment for smokeproof enclosures. 3. Fire pumps. 4. 3. Elevators, as required in Section 3003. 		<p>Edits made to clarify code, no major changes to code.</p>
	<p>[F] 405.8.2 Emergency power loads. The following loads are classified as emergency power loads:</p> <ol style="list-style-type: none"> 1. Emergency voice/alarm communications systems. 2. Fire alarm systems. 3. Automatic fire detection systems. 4. Elevator car lighting. 5. Means of egress and exit sign illumination as required by Chapter 10. 6. Fire pumps. 		<p>Edits made to clarify code, no major changes to code.</p>
	<p style="text-align: center;">SECTION 406</p> <p style="text-align: center;">MOTOR-VEHICLE-RELATED OCCUPANCIES</p> <p>406.1 General. All motor-vehicle-related occupancies shall comply with Section 406.1 through 406.8 406.2. Private garages and carports shall also comply with Section 406.3. Open public parking garages shall also comply with Sections 406.4 and 406.5. Enclosed public parking garages shall also comply with Sections 406.4 and 406.6. Motor fuel-dispensing facilities shall also comply with Section 406.7. Repair garages shall also comply with Section 406.8.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.2 Definitions. The following terms are defined in Chapter 2:</p> <p>MECHANICAL ACCESS OPEN PARKING GARAGES.</p> <p>OPEN PARKING GARAGE.</p> <p>PRIVATE GARAGE.</p> <p>RAMP ACCESS OPEN PARKING GARAGES.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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~~406.3 Private garages and carports. Private garages and carports shall comply with Sections 406.3.1 through 406.3.6.~~

~~406.3.1 Classification. Private garages and carports shall be classified as Group U occupancies. Each private garage shall be not greater than 1,000 square feet (93 m2) in area. Multiple private garages are permitted in a building where each private garage is separated from the other private garages by 1-hour fire barriers in accordance with Section 707, or 1-hour horizontal assemblies in accordance with Section 711, or both.~~

~~406.3.2 Clear height. In private garages and carports, the clear height in vehicle and pedestrian traffic areas shall be not less than 7 feet (2134 mm). Vehicle and pedestrian areas accommodating van-accessible parking shall comply with Section 1106.5.~~

~~406.3.3 Garage floor surfaces. Garage floor surfaces shall be of approved noncombustible material. The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.~~

~~406.3.4 Separation. For other than private garages adjacent to dwelling units, the separation of private garages from other occupancies shall comply with Section 508. Separation of private garages from dwelling units shall comply with Sections 406.3.4.1 through 406.3.4.3.~~

~~406.3.4.1 Dwelling unit separation. The private garage shall be separated from the dwelling unit and its attic area by means of gypsum board, not less than 1/2 inch (12.7 mm) in thickness, applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than a 5/8 inch (15.9 mm) Type X gypsum board or equivalent and 1/2 inch (12.7 mm) gypsum board applied to structures supporting the separation from habitable rooms above the garage. Door openings between a private garage and the dwelling unit shall be equipped with either solid wood doors or solid or honeycomb core steel doors not less than 13/8 inches (34.9 mm) in thickness, or doors in compliance with Section 716.5.3 with a fire~~

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	<p>protection rating of not less than 20 minutes. Doors shall be self-closing and self-latching.</p> <p>406.3.4.2 Openings prohibited. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted.</p> <p>406.3.4.3 Ducts. Ducts in a private garage and ducts penetrating the walls or ceilings separating the dwelling unit from the garage, including its attic area, shall be constructed of sheet steel of not less than 0.019 inch (0.48 mm) in thickness and shall have no openings into the garage.</p> <p>406.3.5 Carports. Carports shall be open on at least two sides. Carport floor surfaces shall be of an approved noncombustible material. Carports not open on at least two sides shall be considered a garage and shall comply with the requirements for private garages.</p> <p>Exception: Asphalt surfaces shall be permitted at ground level in carports.</p> <p>The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.</p> <p>406.3.5.1 Carport separation. A separation is not required between a Group R-3 and U carport, provided the carport is entirely open on two or more sides and there are not enclosed areas above.</p> <p>406.3.6 Automatic garage door openers. Automatic garage door openers, where provided, shall be listed in accordance with UL 325.</p> <p>406.4 Public parking garages. Parking garages, other than private garages, shall be classified as public parking garages and shall comply with the provisions of Sections 406.4.2 through 406.4.8 and shall be classified as either an open parking garage or an enclosed parking garage. Open parking garages shall also comply with Section 406.5. Enclosed parking garages shall also comply with Section 406.6. See Section 510 for special provisions for parking garages.</p> <p>406.4.1 Clear height. The clear height of each floor level in vehicle and pedestrian traffic areas shall be not less than 7 feet (2134 mm). Vehicle and pedestrian areas</p>		
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	<p>accommodating van accessible parking shall comply with Section 1106.5.</p> <p>406.4.2 Guards. Guards shall be provided in accordance with Section 1015. Guards serving as vehicle barriers shall comply with Sections 406.4.3 and 1015.</p> <p>406.4.3 Vehicle barriers. Vehicle barriers not less than 2 feet 9 inches (835 mm) in height shall be placed where the vertical distance from the floor of a drive lane or parking space to the ground or surface directly below is greater than 1 foot (305 mm). Vehicle barriers shall comply with the loading requirements of Section 1607.8.3.</p> <p>Exception: Vehicle barriers are not required in vehicle storage compartments in a mechanical access parking garage.</p> <p>406.4.4 Ramps. Vehicle ramps shall not be considered as required exits unless pedestrian facilities are provided. Vehicle ramps that are utilized for vertical circulation as well as for parking shall not exceed a slope of 1:15 (6.67 percent).</p> <p>406.4.5 Floor surface. Parking surfaces shall be of concrete or similar noncombustible and nonabsorbent materials.</p> <p>The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Asphalt parking surfaces shall be permitted at ground level. 2. Floors of Group S-2 parking garages shall not be required to have a sloped surface. <p>406.4.6 Mixed occupancy separation. Parking garages shall be separated from other occupancies in accordance with Section 508.1.</p> <p>406.4.7 Special hazards. Connection of a parking garage with any room in which there is a fuel fired appliance shall be by means of a vestibule providing a two doorway separation.</p>		
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	<p>Exception: A single door shall be allowed provided the sources of ignition in the appliance are not less than 18 inches (457 mm) above the floor.</p> <p>406.4.8 Attached to rooms. Openings from a parking garage directly into a room used for sleeping purposes shall not be permitted.</p>		
	<p>406.2 Design. Private garages and carports, open and enclosed public parking garages, motor fuel-dispensing facilities and repair garages shall comply with Sections 406.2.1 through 406.2.9.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.2.1 Automatic garage door openers and vehicular gates. Automatic garage door openers shall be listed and labeled in accordance with UL 325. Where provided, automatic vehicular gates shall comply with Section 3110.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.2.2 Clear height. The clear height of each floor level in vehicle and pedestrian traffic areas shall be not less than 7 feet (2134 mm). Canopies under which fuels are dispensed shall have a clear height in accordance with Section 406.7.2.</p> <p>Exception: A lower clear height is permitted for a parking tier in mechanical-access open parking garages where approved by the building official.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.2.3 Accessible parking spaces. Where parking is provided, accessible parking spaces, access aisles and vehicular routes serving accessible parking shall be provided in accordance with Section 1106.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.2.4 Floor surfaces. Floor surfaces shall be of concrete or similar approved noncombustible and nonabsorbent materials. The area of floor used for the parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway. The surface of vehicle fueling pads in motor fuel-dispensing facilities shall be in accordance with Section 406.7.1.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Asphalt parking surfaces shall be permitted at ground level for public parking garages and private carports. 2. Floors of Group S-2 parking garages shall not be required to have a sloped surface. 		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>32. Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 0.45 W/cm², as determined by ASTM E648 or NFPA 253, shall be permitted in repair garages.</p>		
	<p>406.2.5 Sleeping rooms. Openings between a motor vehicle-related occupancy and a room used for sleeping purposes shall not be permitted.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.6 Fuel dispensing. The dispensing of fuel shall only be permitted in motor fuel-dispensing facilities in accordance with Section 406.7.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.7 Electric vehicle charging stations and systems. Where provided, electric vehicle charging stations systems shall be installed in accordance with NFPA 70. Electric vehicle charging system equipment shall be listed and labeled in accordance with UL 2202. Electric vehicle supply equipment shall be listed and labeled in accordance with UL 2594. Accessibility to electric vehicle charging stations shall be provided in accordance with Chapter 11 Section 1108.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.8 Mixed occupancies and uses. Mixed uses shall be allowed in the same building as public parking garages and repair garages in accordance with Section 508.1. Mixed uses in the same building as an open parking garage are subject to Sections 402.4.2.3, 406.5.11, 508.1, 510.3, 510.4 and 510.7.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.9 Equipment and appliances. Equipment and appliances shall be installed in accordance with Sections 406.2.9.1 through 406.2.9.3 and the International Mechanical Code, International Fuel Gas Code and NFPA 70.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.9.1 Elevation of ignition sources. Equipment and appliances having an ignition source and located in hazardous locations and public garages, private garages, repair garages, automotive motor fuel-dispensing facilities and parking garages shall be elevated such that the source of ignition is not less than 18 inches (457 mm) above the floor surface on which the equipment or appliance rests. For the purpose of this section, rooms or spaces that are not part of the living space of a dwelling unit and that communicate directly with a private garage through</p>		Edits made to clarify code, no major changes to code.

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	<p>openings shall be considered to be part of the private garage.</p> <p>Exception: Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant.</p>		
	<p>406.2.9.1.1 Parking garages. Connection of a parking garage with any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation, except that a single door is permitted where the sources of ignition in the appliance are elevated in accordance with Section 406.2.9.</p> <p>Exception: This section shall not apply to appliance installations complying with Section 406.2.9.2 or 406.2.9.3.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.9.2 Public garages. Appliances located in public garages, motor fuel-dispensing facilities, repair garages or other areas frequented by motor vehicles shall be installed not less than 8 feet (2438 mm) above the floor. Where motor vehicles are capable of passing under an appliance, the appliance shall be installed at the clearances required by the appliance manufacturer and not less than 1 foot (305 mm) higher than the tallest vehicle garage door opening.</p> <p>Exception: The requirements of this section shall not apply where the appliances are protected from motor vehicle impact and installed in accordance with Section 406.2.9.1 and NFPA 30A.</p>		Edits made to clarify code, no major changes to code.
	<p>406.2.9.3 Private garages. Appliances located in private garages and carports shall be installed with a minimum clearance of 6 feet (1829 mm) above the floor.</p> <p>Exception: The requirements of this section shall not apply where the appliances are protected from motor vehicle impact and are installed in accordance with Section 406.2.9.1.</p>		Edits made to clarify code, no major changes to code.
	<p>406.3 Private garages and carports. Private garages and carports shall comply with Sections 406.3.1 through 406.3.6 406.2 and 406.3, or they shall comply with Sections 406.2 and 406.4.</p>		Edits made to clarify code, no major changes to code.

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	<p>406.3.1 Classification. Private garages and carports shall be classified as Group U occupancies. Each private garage shall be not greater than 1,000 square feet (93 m2) in area. Multiple private garages are permitted in a building where each private garage is separated from the other private garages by 1-hour fire barriers in accordance with Section 707, or 1-hour horizontal assemblies in accordance with Section 711, or both.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.3.2 Separation. For other than private garages adjacent to dwelling units, the separation of private garages from other occupancies shall comply with Section 508. Separation of private garages from dwelling units shall comply with Sections 406.3.2.1 and 406.3.2.2.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.3.2.1 Dwelling unit separation. The private garage shall be separated from the dwelling unit and its attic area by means of gypsum board, not less than ½ inch (12.7 mm) in thickness, applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than a 5/8-inch (15.9 mm) Type X gypsum board or equivalent and 1/2-inch (12.7 mm) gypsum board applied to structures supporting the separation from habitable rooms above the garage. Door openings between a private garage and the dwelling unit shall be equipped with either solid wood doors or solid or honeycomb core steel doors not less than 13/8 inches (34.9 mm) in thickness, or doors in compliance with Section 716.2.2.1 with a fire protection rating of not less than 20 minutes. Doors shall be self-closing and self-latching.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.3.2.2 Ducts. Ducts in a private garage and ducts penetrating the walls or ceilings separating the dwelling unit from the garage, including its attic area, shall be constructed of sheet steel of not less than 0.019 inch (0.48 mm) in thickness and shall not have openings into the garage.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.3.5 406.3.3 Carports. Carports shall be open on at least not fewer than two sides. Carport floor surfaces shall be of an approved non-combustible material. Carports not open on at least open on fewer than two sides shall be considered a garage and shall comply with the requirements for private garages.</p> <p>Exception: Asphalt surfaces shall be permitted at ground level in carports.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.		
	406.3.3.1 Carport separation. A separation is not required between a Group R-3 and U carport, provided that the carport is entirely open on two or more sides and there are not enclosed areas above.		Edits made to clarify code, no major changes to code.
406.3.4.1 Dwelling unit separation. The private garage shall be separated from the <i>dwelling unit</i> and its <i>attic</i> area by means of gypsum board, not less than 1/2 inch (12.7 mm) in thickness, applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than a 5/8-inch (15.9 mm) Type X gypsum board or equivalent and 1/2-inch (12.7 mm) gypsum board applied to structures supporting the separation from habitable rooms above the garage. Door openings between a private garage and the <i>dwelling unit</i> shall be equipped with either solid wood doors or solid or honeycomb core steel doors not less than 1 3/8 inches (34.9 mm) in thickness, or doors in compliance with Section 716.5.3 with a fire protection rating of not less than 20 minutes. Doors shall be <i>self-closing</i> and self-latching. Attic disappearing stairs may be installed in the garage ceiling provided the garage side exposed panel is not less than 3/8-inch thick fire retardant-treated plywood, untreated plywood protected with 1/2-inch-thick gypsum board, or untreated plywood protected with 60-minute rated intumescent paint. In all cases, the opening protection material is applied to the garage side of the plywood.	N/A	Amendment removed.	
	406.4.1 Guards. Guards shall be provided in accordance with Section 1015. Guards serving as vehicle barriers shall comply with Sections 406.4.2 and 1015.		Edits made to clarify code, no major changes to code.
	406.4.2 Vehicle barriers. Vehicle barriers not less than 2 feet 9 inches (835 mm) in height shall be placed where the vertical distance from the floor of a drive lane or parking space to the ground or surface directly below is greater than 1 foot (305 mm). Vehicle barriers shall comply with the loading requirements of Section 1607.8.3. Exception: Vehicle barriers are not required in vehicle storage compartments in a mechanical access parking garage.		Edits made to clarify code, no major changes to code.

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	<p>406.4.3 Ramps. Vehicle ramps shall not be considered as required exits unless pedestrian facilities are provided. Vehicle ramps that are utilized for vertical circulation as well as for parking shall not exceed a slope of 1:15 (6.67 percent).</p>		<p>Edits made to clarify code, no major changes to code.</p>
<p>406.4.9 Garage screening. Any part of an abutting development, as defined by Section 42-1 of the <i>City Code</i>, used as a parking garage structure shall provide an exterior cover for each floor of the structure where parking occurs that directly faces property in use for or restricted to single family residential use. The exterior cover shall be made of an opaque surface or screen mesh material of sufficient rating to block headlights as defined in this Code. The exterior cover shall be at least 42 inches in height measured from the finished floor where parking occurs and shall not be required on any floor of the parking garage structure which has a finished floor over 50 feet in height from grade. For ramps and other sloped surfaces, the exterior cover shall be positioned to block headlights from emitting any light into adjacent properties in use for or restricted to single-family residential use.</p> <p>Now 406.4.4</p>	<p>N/A</p>	<p>406.4.4 Garage screening. Any parking garage structure shall provide an exterior cover for each floor of the structure where parking occurs that directly abuts property in use for or restricted to residential use or which is located across the street from property in use for or restricted to residential use. The exterior cover of such a parking garage structure shall be made of an opaque surface or be constructed of other material in a manner that blocks or redirects the light from headlights on vehicles located within the garage, so as to not create light trespass onto adjacent residential property. The exterior cover shall be at least 48 inches (1219.2 mm) in height measured vertically from each finished floor where parking occurs. Where an applicant provides evidence to the building official that a 48 inch exterior cover will require the garage to have a mechanical ventilation system, the applicant may reduce the exterior cover enough to meet open ventilation requirements but in no instance may it be less than 42 inches. For ramps and other sloped surfaces, the exterior cover shall be positioned to block light from headlights from crossing property lines onto adjacent properties in use for or restricted to residential use or across the street from residentially used properties.</p> <p>When a parking garage structure abuts a public street or land used for or restricted to residential development, one of the following is required to minimize light trespass from internal garage ceiling lighting:</p> <ul style="list-style-type: none"> a. A photometric plan showing all internal garage luminaires, demonstrating that no light trespass occurs beyond the property line that exceeds 0.2-foot candles measured at grade on the property line; or, b. Screening for the entire height of the garage facing the street or abutting residential development to prevent light trespass beyond the property line that exceeds 0.2-foot candles measured at grade on the property line. 	<p>Amendment change by Planning Ordinance No. 2023-064.</p>
	<p>406.5 Open parking garages. Open parking garages shall comply with Sections 406.5.1 through 406.5.11 406.2, 406.4 and 406.5.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.5.1 Construction.</p> <p>Open parking garages shall be of Type I, II or IV construction. Open parking garages shall meet the design requirements of Chapter 16. For vehicle barriers, see Section 406.4.3 406.4.2.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>406.5.3 Uses Mixed occupancies and uses. Mixed uses shall be allowed in the same building as an open parking garage subject to the provisions of Sections 402.4.2.3, 406.5.11, 508.1, 510.3, 510.4 and 510.7.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.5.4.1 Single use. Where the open parking garage is used exclusively for the parking or storage of private motor vehicles, with no other uses in and the building is without other uses, the area and height shall be permitted to comply with Table 406.5.4, along with increases allowed by Section 406.5.5.</p> <p style="padding-left: 40px;">Exception: The grade-level tier is permitted to contain an office, waiting and toilet rooms having a total combined area of not more than 1,000 square feet (93 m²). Such area need not be separated from the open parking garage.</p> <p>In open parking garages having a spiral or sloping floor, the horizontal projection of the structure at any cross section shall not exceed the allowable area per parking tier. In the case of an open parking garage having a continuous spiral floor, each 9 feet 6 inches (2896 mm) of height, or portion thereof, shall be considered a under these provisions to be tier.</p> <p>The clear height of a parking tier shall be not less than 7 feet (2134 mm), except that a lower clear height is permitted in mechanical access open parking garages where approved by the building official.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.5.5 Area and height increases. The allowable area and height of open parking garages shall be increased in accordance with the provisions of this section. Garages with sides open on three-fourths of the building's perimeter are permitted to be increased by 25 percent in area and one tier in height. Garages with sides open around the entire building's perimeter are permitted to be increased by 50 percent in area and one tier in height. For a side to be considered open under above these provisions, the total area of openings along the side shall not be not less than 50 percent of the interior area of the side at each tier and such openings shall be equally distributed along the length of the tier. For purposes of calculating the interior area of the side, the height shall not exceed 7 feet (2134</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>mm).</p> <p>Allowable tier areas in Table 406.5.4 shall be increased for open parking garages constructed to heights less than the table maximum. The gross tier area of the garage shall not exceed that permitted for the higher structure. Not fewer than three sides of each such larger tier shall have continuous horizontal openings not less than 30 inches (762 mm) in clear height extending for not less than 80 percent of the length of the sides. And no All parts of such larger tier shall be not more than 200 feet (60 960 mm) horizontally from such an opening. In addition, each such opening shall face a street or yard accessible with access to a street with a width of not less than 30 feet (9144 mm) for the full length of the opening, and standpipes shall be provided in each such tier.</p> <p>Open parking garages of Type II construction, with all sides open, shall be unlimited in allowable area where the building height does not exceed 75 feet (22 860 mm). For a side to be considered open, the total area of openings along the side shall be not less than 50 percent of the interior area of the side at each tier and such openings shall be equally distributed along the length of the tier. For purposes of calculating the interior area of the side, the height shall not exceed 7 feet (2134 mm). All portions of tiers shall be within 200 feet (60 960 mm) horizontally from such openings or other natural ventilation openings as defined in Section 406.5.2. These openings shall be permitted to be provided in courts with a minimum dimension of 20 feet (6096 mm) for the full width of the openings.</p>		
	<p>406.5.7 Means of egress. Where persons other than parking attendants are permitted, open parking garages shall meet the means of egress requirements of Chapter 10. Where no persons other than parking attendants are not permitted, there shall be not fewer than two exit stairways. Each exit stairway shall be not less than 36 inches (914 mm) in width. Lifts shall be permitted to be installed for use of employees only, provided that they are completely enclosed by noncombustible materials.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.6 Enclosed parking garages. Enclosed parking garages shall comply with Sections 406.6.1 through 406.6.3 406.2, 406.4 and 406.6.</p>		<p>Edits made to clarify code, no major changes to code.</p>
	<p>406.6.2 Ventilation. A mechanical ventilation system and exhaust system shall be provided in accordance with Chapters 4 and 5 of the International Mechanical Code.</p>		<p>Edits made to clarify code, no major changes to code.</p>

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	<p>Exception: Mechanical ventilation shall not be required for enclosed parking garages that are accessory to one- and two-family dwellings.</p>		
	<p>406.6.4 Mechanical-access enclosed parking garages. <i>Mechanical-access enclosed parking garages shall be in accordance with Sections 406.6.4.1 through 406.6.4.4.</i></p>		<p>New requirements for mechanical access enclosed parking garages</p>
	<p>406.6.4.1 Separation. <i>Mechanical-access enclosed parking garages shall be separated from other occupancies and accessory uses by not less than 2-hour fire barriers constructed in accordance with Section 707 or by not less than 2-hour horizontal assemblies constructed in accordance with Section 711, or both.</i></p>		<p>This section provides New requirements for mechanical access enclosed parking garages.</p>
	<p>406.6.4.2 Smoke removal. <i>A mechanical smoke removal system, installed in accordance with Section 910.4, shall be provided for all areas containing a mechanical-access enclosed parking garage.</i></p>		<p>This section provides New requirements for mechanical access enclosed parking garages.</p>
	<p>406.6.4.3 Fire control equipment room. <i>Fire control equipment, consisting of the fire alarm control unit, mechanical ventilation controls and an emergency shutdown switch, shall be provided in a room located where the equipment is able to be accessed by the fire service from a secured exterior door of the building. The room shall be not less than 50 square feet (4.65 m²) in area and shall be in a location that is approved by the fire code official.</i></p>		<p>This section provides New requirements for mechanical access enclosed parking garages.</p>
	<p>406.6.4.3.1 Emergency shutdown switch. <i>The mechanical parking system shall be provided with a manually activated emergency shutdown switch for use by emergency personnel. The switch shall be clearly identified and shall be in a location approved by the fire code official.</i></p>		<p>This section provides New requirements for mechanical access enclosed parking garages.</p>
	<p>406.6.4.4 Fire department access doors. <i>Access doors shall be provided in accordance with Section 3206.7 of the International Fire Code.</i></p>		<p>This section provides New requirements for mechanical access enclosed parking garages.</p>

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	<p>406.7 Motor fuel-dispensing facilities. Motor fuel-dispensing facilities shall comply with the International Fire Code and Sections 406.7.1 and 406.7.2 406.2 and 406.7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>406.7.2 Canopies. Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 13 feet 6 inches (4115 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials, fire-retardant-treated wood complying with Chapter 23, wood of Type IV sizes heavy timber complying with Section 2304.11 or of construction providing 1-hour fire resistance. Combustible materials used in or on a canopy shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. Shielded from the pumps by a noncombustible element of the canopy, or wood of Type IV sizes heavy timber complying with Section 2304.11. 2. Plastics covered by aluminum facing having a thickness of not less than 0.010 inch (0.30 mm) or corrosion-resistant steel having a base metal thickness of not less than 0.016 inch (0.41 mm). The plastic shall have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in the form intended for use in accordance with ASTM E84 or UL 723 and a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D1929; or. 3. Panels constructed of light-transmitting plastic materials shall be permitted to be installed in canopies erected over motor vehicle fuel-dispensing station fuel dispensers, provided that the panels are located not less than 10 feet (3048 mm) from any building on the same lot and face yards or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall be not greater than 1,000 square feet (93 m²). The maximum area of any individual panel shall be not greater than 100 square feet (9.3 m²). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>406.8 Repair garages. Repair garages shall be constructed in accordance with the International Fire Code and Sections 406.8.1 406.2 through and 406.8.6. This occupancy shall not include motor fuel-dispensing facilities, as regulated in Section 406.7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>406.8.1 Mixed uses. Mixed uses shall be allowed in the same building as a repair garage subject to the provisions of Section 508.1.</p>		

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	406.8.2 406.8.1 Ventilation.		Numbering
	406.8.3 Floor surface. Repair garage floors shall be of concrete or similar noncombustible and nonabsorbent materials. Exception: Slip resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 0.45 W/cm ² , as determined by NFPA 253, shall be permitted. 406.8.4 Heating equipment. Heating equipment shall be installed in accordance with the International Mechanical Code.		
	[F] 406.8.5 406.8.2.1 Operation System activation. Activation of the gas detection system alarm shall result in all of the following: 1. Initiation of distinct audible and visual alarm signals in the repair garage, where the ventilation system is interlocked with gas detection. 2. Deactivation of all heating systems located in the repair garage. 3. Activation of the mechanical ventilation system, where the system is interlocked with gas detection.		Edits made to clarify code, no major changes to code requirements.
	[F] 406.8.5.3 406.8.2.2 Failure of the gas detection system. Failure of the gas detection system shall result in the deactivation of automatically deactivate the heating system, activation of activate the mechanical ventilation system where the system is interlocked with the gas detection system, and cause a trouble signal to sound in at an approved location.		Edits made to clarify code, no major changes to code requirements.
	[F] 406.8.6 406.8.3 Automatic sprinkler system.		Edits made to clarify code, no major changes to code requirements.
406.9 Repair garages for natural gas- and hydrogen-fueled vehicles. 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 Sections 406.9.1 and 406.9.2. Exception: Where approved by the code official, natural ventilation shall be permitted in lieu of mechanical ventilation.	N/A	406.9 Repair garages for natural gas- and hydrogen-fueled vehicles. Repair garages used for the repair of natural gas- or hydrogen-fueled vehicles shall be designed per Section 2311 of the Houston Fire Code. Mechanical ventilation shall be provided based on the Houston Mechanical Code requirements except where natural ventilation is provided in lieu of mechanical ventilation. Exception: Where approved by the code official, natural ventilation shall be permitted in lieu of mechanical ventilation.	Amendment modified to refer to IFC for requirements.

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<p>406.9.1 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.</p> <p>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 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 [0.00138 m3/(s • m3)] of room volume.</p>	<p>N/A</p>		<p>Amendment removed to refer to IFC.</p>
<p>406.9.2 Operation. The mechanical ventilation system shall operate continuously.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Mechanical ventilation systems that are interlocked with a gas detection system designed in accordance with the <i>Fire Code</i>. 2. Mechanical ventilations systems in garages that are used only for the repair of vehicles fueled by liquid fuels or odorized gases, such as CNG, where the ventilation system is electrically interlocked with the lighting circuit. 	<p>N/A</p>		<p>Amendment removed to refer to IFC.</p>
	<p style="text-align: center;">SECTION 407 GROUP I-2</p>		
	<p>407.2.1 Waiting and similar areas. Waiting areas, public-use areas and similar or group meeting spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. The spaces are not occupied as care recipient's sleeping rooms, treatment rooms, incidental uses in accordance with Section 509, or hazardous uses. 2. The open space is protected by an automatic fire detection system installed in accordance with Section 907. 3. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system installed in accordance with Section 907, or the smoke compartment in which the spaces are located is 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.</p> <p>4. The space is arranged so as not to obstruct access to the required exits.</p>		
<p>407.2.6 Nursing home cooking facilities. In Group I-1, Condition 1, occupancies, rooms or spaces that contain a cooking facility with domestic cooking appliances shall be permitted to be open to the corridor where all of the following criteria are met:</p> <p>{EDITORIAL NOTE: NUMBERED ITEMS NOT LISTED REMAIN AS SET FORTH IN THE 2015 IBC.}</p> <p>7. A domestic cooking hood installed and constructed ducted in accordance with Section 505 <u>504.2</u> of the International Mechanical Code is provided over the cooktop or range.</p>	<p>407.2.6 Nursing home cooking facilities. In Group I-1, Condition 1 occupancies, rooms or spaces that contain a cooking facility with domestic cooking appliances shall be permitted to be open to the <i>corridor</i> where all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. The number of care recipients housed in the <i>smoke compartment</i> is shall not be greater than 30. 2. The number of care recipients served by the cooking facility is shall not be greater than 30. 3. Not Only more than one cooking facility area is shall be permitted in a <i>smoke compartment</i>. 4. The types of domestic cooking appliances permitted are shall be limited to ovens, cooktops, ranges, warmers and microwaves. 5. 4. The corridor is shall be a clearly identified space delineated by construction or floor pattern, material or color. 6. 5. The space containing the domestic cooking facility shall be arranged so as not to obstruct access to the required exit. 7. 6. A Domestic cooking hoods installed and constructed in accordance with Section 505 of the International Mechanical Code is shall be provided over cooktops and ranges. The cooking appliance shall comply with Section 407.2.7. 8. 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. Cooktops and ranges shall be protected in accordance with Section 904.13. 9. A manual actuation device for the hood suppression system shall be installed in accordance with Sections 904.12.1 and 904.12.2. 10. An interlock device shall be provided such that upon activation of the hood suppression system, the power or fuel supply to the cooktop or range will be turned off. 		<p>Edits made to clarify code, no major changes to base code requirements.</p> <p>Amendment removed, no longer needed.</p>

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	<p>11.9. A shut-off for the fuel and electrical power supply to the cooking equipment shall be provided in a location that is accessible only to staff.</p> <p>12.10. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.</p> <p>13.11. A portable fire extinguisher shall be installed in accordance with Section 906 of the International Fire Code provided. Installation shall be in accordance with Section 906, and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance.</p>		
	<p>407.2.7 Domestic cooking appliances. In Group I-2 occupancies, installation of cooking appliances used in domestic cooking facilities shall comply with all of the following:</p> <ol style="list-style-type: none"> 1. The types of cooking appliances permitted shall be limited to ovens, cooktops, ranges, warmers and microwaves. 2. Domestic cooking hoods installed and constructed in accordance with Section 505 of the <i>International Mechanical Code</i> shall be provided over cooktops and ranges. 3. Cooktops and ranges shall be protected in accordance with Section 904.14. 4. A shut-off for the fuel and electrical power supply to the cooking equipment shall be provided in a location to which only staff has access. 5. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes. 6. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906, and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Cooktops and ranges located within <i>smoke compartments</i> with no patient sleeping or patient care areas are not required to comply with this section. 2. Cooktops and ranges used for care recipient training or nutritional counseling are not required to comply with Item 3 of this section. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.3.1 Corridor doors. Corridor doors, other than those in a wall required to be rated by Section 509.4 or for the enclosure of a vertical opening or an exit, shall not have a required fire</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>protection rating and shall not be required to be equipped with self-closing or automatic-closing devices, but shall provide an effective barrier to limit the transfer of smoke and shall be equipped with positive latching. Roller latches are not permitted. Other doors shall conform to Section 716.5.</p>		
	<p>407.3.1.1 Door construction. <u>Doors in corridors not required to have a fire protection rating shall comply with the following:</u></p> <ol style="list-style-type: none"> <u>1. Solid doors shall have close-fitting operational tolerances, head and jamb stops.</u> <u>2. Dutch-style doors shall have an astragal, rabbet or bevel at the meeting edges of the upper and lower door sections. Both the upper and lower door sections shall have latching hardware. Dutch-style doors shall have hardware that connects the upper and lower sections to function as a single leaf.</u> <u>3. To provide makeup air for exhaust systems in accordance with Section 1020.7, Exception 1, doors are permitted to have louvers or to have a clearance between the bottom of the door and the floor surface that is 2/3 inch (19.1 mm) maximum.</u> 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.4 Means of egress. Group I-2 occupancies shall be provided with means of egress complying with Chapter 10 and Sections 407.4.1 through 407.4.4. The fire safety and evacuation plans provided in accordance with Section 1001.4-1002.2 shall identify the building components necessary to support a defend-in-place emergency response in accordance with Sections 404-403 and 408 404 of the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.4.1.1 Locking devices. Locking devices that restrict access to a care recipient's room from the corridor and that are operable only by staff from the corridor side shall not restrict the means of egress from the care recipient's room.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. This section shall not apply to rooms in psychiatric treatment and similar care areas. 2. Locking arrangements in accordance with Section 1010.1.9.6-1010.1.9.7 1010.1.9.6-1010.1.9.7. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>407.4.3 Projections in nursing home corridors. In Group I-2, Condition 1, occupancies, where the corridor width is a minimum of not less than 96 inches (2440 mm), projections shall be permitted for furniture where all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. The furniture is attached to the floor or to the wall. 2. The furniture does not reduce the clear width of the corridor to less than 72 inches (1830 mm) except where other encroachments are permitted in accordance with Section 1005.7. 3. The furniture is positioned on only one side of the corridor. 4. Each arrangement of furniture is 50 square feet (4.6 m²) maximum in area. 5. Furniture arrangements are separated by 10 feet (3048 mm) minimum. 6. Placement of furniture is considered as part of the fire and safety plans in accordance with Section 1001.4-1002.2. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.4.4.1 Exit access through care suites. Exit access from all other portions of a building not classified as a care suite shall not pass through a care suite. In a care suite required to have more than one exit, one exit access is permitted to pass through an adjacent care suite provided that all of the other requirements of Sections 407.4 and 1016.2 are satisfied.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.4.4.3 Access to corridor. Every care suite shall have a door leading directly to an exit access corridor or horizontal exit. Movement from habitable rooms within a care suite shall not require passage through more than three doors and 100 feet (30 480 mm) distance of travel within the of travel within the care suite to a door leading to the exit access corridor or horizontal exit. Where a care suite is required to have more than one exit access door by Section 407.4.4.5.2 or 407.4.4.6.2, the additional door shall lead directly to an exit access corridor, exit or an adjacent suite.</p> <p>Exception: The distance of travel shall be permitted to be increased to 125 feet (38 100 mm) where an automatic smoke detection system is provided throughout the care suite and installed in accordance with NFPA 72.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>407.4.4.5.2 Exit access. Any sleeping room, or any care suite that contains sleeping rooms, of more than 1,000 square feet (93 m²) shall have not fewer than two exit access doors from the care suite located in accordance with Section 1007.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.5 Smoke barriers. Smoke barriers shall be provided to subdivide every story used by persons receiving care, treatment or sleeping and into not fewer than two smoke compartments. Smoke barriers shall be provided to subdivide other stories with an occupant load of 50 or more persons, into not fewer than two smoke compartments. Such stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2092 m²) in Group I-2, Condition 1, and not more than 40,000 square feet (3716 m²) in Group I-2, Condition 2, and the distance of travel from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet (60 960 mm). The smoke barrier shall be in accordance with Section 709.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>407.5.1 Smoke compartment size. Stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2092 m²) in Group I-2 occupancies.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A smoke compartment in Group I-2, Condition 2 is permitted to have an area of not more than 40,000 square feet (3716 m²) provided that all patient sleeping rooms within that smoke compartment are configured for single patient occupancy and any suite within the smoke compartment complies with Section 407.4.4. 2. A smoke compartment in Group I-2, Condition 2 without patient sleeping rooms is permitted to have an area of not more than 40,000 square feet (3716 m²). 		<p>Additional requirements for smoke compartments</p>
	<p>407.5.2 Exit access travel distance. The distance of travel from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet (60 960 mm).</p>		<p>Additional requirements for smoke compartments</p>
	<p>407.5.1 407.5.3 Refuge area.</p>		<p>Numbering</p>

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	407.5.2-407.5.4 Independent 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 means of egress originated. Smoke compartments that do not contain an exit shall be provided with direct access to not less than two adjacent smoke compartments.		Edits made to clarify code, no major changes to code requirements.
	407.5.3-407.5.5 Horizontal assemblies.		
	407.6 Automatic-closing doors. Automatic-closing doors with hold-open devices shall comply with Sections 709.5 and 716.2.		Edits made to clarify code, no major changes to code requirements.
	<u>407.6.1</u> Activation of automatic-closing doors. Automatic-closing doors on hold-open devices in accordance with Section 716.2.6.6 shall also close upon activation of a fire alarm system, an automatic sprinkler system, or both. The automatic release of the hold-open device on one door shall release all such doors within the same smoke compartment.		Edits made to clarify code, no major changes to code requirements.
	[F] 407.6-407.7 Automatic sprinkler system.		Numbering
	[F] 407.7-407.8 Fire alarm system.		Numbering
	[F] 407.8-407.9 Automatic fire detection.		Numbering
	407.9-407.10 Secured yards.		Numbering

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	<p>[F] 407.10-407.11 Electrical systems.</p>		<p>Numbering</p>
	<p>SECTION 408 GROUP I-3</p>		
	<p>408.1.1 Definitions. The following terms are defined in Chapter 2: CELL. CELL TIER. HOUSING UNIT. SALLYPORT.</p>		
	<p>408.3.8 Interior exit stairway and ramp construction. One interior exit stairway or ramp in each building shall be permitted to have glazing installed in doors and interior walls at each landing level providing access to the interior exit stairway or ramp, provided that the following conditions are met:</p> <ol style="list-style-type: none"> 1. The interior exit stairway or ramp shall not serve more than four floor levels. 2. Exit doors shall be not less than 3/4-hour fire door assemblies complying with Section 716.5 3. The total area of glazing at each floor level shall not exceed 5,000 square inches (3.2 m²) and individual panels of glazing shall not exceed 1,296 square inches (0.84 m²). 4. The glazing shall be protected on both sides by an automatic sprinkler system. The sprinkler system shall be designed to wet completely the entire surface of any glazing affected by fire when actuated. 5. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler system operates. 6. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic sprinklers and the glazing. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>408.5.1 Floor openings. Openings in floors within a housing unit are permitted without a shaft enclosure, provided that all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. The entire normally occupied areas so interconnected are open and unobstructed so as to enable observation of the areas by supervisory personnel; 2. Means of egress capacity is sufficient for all occupants from all interconnected cell tiers and areas; 3. The height difference between the floor levels of the highest and lowest cell tiers shall not exceed 23 feet (7010 mm); and 4. Egress from any portion of the cell tier to an exit or exit access door shall not require travel on more than one additional floor level within the housing unit. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>408.6 Smoke barrier. Occupancies in Group I-3 shall have smoke barriers complying with Sections 408.7-408.6 and 709 to divide every story occupied by residents for sleeping, or any other story having an occupant load of 50 or more persons, into no fewer than two smoke compartments.</p> <p>Exception: Spaces having a direct exit to one of the following, provided that the locking arrangement of the doors involved complies with the requirements for doors at the smoke barrier for the use condition involved:</p> <ol style="list-style-type: none"> 1. A public way. 2. A building separated from the resident housing area by a 2-hour fire-resistance-rated assembly or 50 feet (15 240 mm) of open space. 3. A secured yard or court having a holding space 50 feet (15 240 mm) from the housing area that provides 6 square feet (0.56 m²) or more of refuge area per occupant, including residents, staff and visitors. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 409 MOTION PICTURE PROJECTION ROOMS</p>		
	<p>409.3.1 Supply air. Each projection room shall be provided with adequate air supply inlets so arranged as to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air is permitted to be taken from the outside; from adjacent spaces within the building, provided that the volume and infiltration rate is are sufficient; or from the building air-conditioning system,</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	provided that it is so arranged as to provide sufficient air when other systems are not in operation.		
	SECTION 410 STAGES, PLATFORMS AND TECHNICAL PRODUCTION AREAS		
	410.2 Definitions. The following terms are defined in Chapter 2: PLATFORM. PROSCENIUM WALL. STAGE. TECHNICAL PRODUCTION AREA.		
	410.3-410.2 Stages. Stage construction shall comply with Sections 410.3.1 through 410.3.7 410.2.1 through 410.2.7 .		Edits made to clarify code, no major changes to code requirements.
	410.3.1-410.2.1 Stage construction. Stages shall be constructed of materials as required for floors for the type of construction of the building in which such stages are located. Exception: Stages need not be constructed of the same materials as required for the type of construction provided that the construction complies with one of the following: 1. Stages of Type IIB or IV construction with a nominal 2-inch (51 mm) wood deck, provided that the stage is separated from other areas in accordance with Section 410.3.4 410.2.4 . 2. In buildings of Type IIA, IIIA and VA construction, a fire-resistance-rated floor is not required, provided that the space below the stage is equipped with an automatic sprinkler system or fire-extinguishing system in accordance with Section 903 or 904. 3. In all types of construction, the finished floor shall be constructed of wood or approved noncombustible materials. Openings through stage floors shall be		Edits made to clarify code, no major changes to code requirements.

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	equipped with tight-fitting, solid wood trap doors with approved safety locks.		
	410.3.1.1 410.2.1.1 Stage height and area.		Numbering
	410.3.2 410.2.2 Technical production areas: galleries, gridirons and catwalks.		Numbering
	410.3.3 410.2.3 Exterior stage doors.		Numbering
	410.3.4 410.2.4 Proscenium wall.		Numbering
	410.3.5 410.2.5 Proscenium curtain. Where a proscenium wall is required to have a fire-resistance rating, the stage opening shall be provided with a fire curtain complying with NFPA 80, horizontal sliding doors complying with Section 716.5.2 having a fire protection rating of at least not less than 1 hour, or an approved water curtain complying with Section 903.3.1.1 or, in facilities not utilizing the provisions of smoke-protected assembly seating in accordance with Section 1029.6.2, a smoke control system complying with Section 909 or natural ventilation designed to maintain the smoke level not less than 6 feet (1829 mm) above the floor of the means of egress.		Edits made to clarify code, no major changes to code requirements.
	410.3.6 410.2.6 Scenery.		Numbering
	410.3.7 410.2.7 Stage ventilation. Emergency ventilation shall be provided for stages larger than 1,000 square feet (93 m ²) in floor area, or with a stage height greater than 50 feet (15 240 mm). Such ventilation shall comply with Section 410.3.7.1 or 410.3.7.2 410.2.7.1 or 410.2.7.2.		Edits made to clarify code, no major changes to code requirements.

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	410.3.7.1 410.2.7.1 Roof vents.		Numbering
	[F] 410.3.2.7.2 410.2.7.2 Smoke control. Smoke control in accordance with Section 909 shall be provided to maintain the smoke layer interface not less than 6 feet (1829 mm) above the highest level of the assembly seating or above the top of the proscenium opening where a proscenium wall is provided in compliance with Section 410.3.4 410.2.4 .		Numbering
	410.4 410.3 Platform construction.		Numbering
	410.4.1 410.3.1 Temporary platforms.		Numbering
	410.54 Dressing and appurtenant rooms. Dressing and appurtenant rooms shall comply with Sections 410.5.1 410.5.1 and 410.5.2 410.4.1 and 410.4.2 410.4.2 .		Edits made to clarify code, no major changes to code requirements.
	410.5.1 410.4.1 Separation from stage.		numbering.
	410.5.2 410.4.2 Separation from each other.		Numbering
	410.6 410.5 Means of egress.		Numbering
	410.6.1 410.5.1 Arrangement. Where two or more exits or exit access doorways from the stage are required in accordance with Section 1006.2, not fewer than one exit or exit access doorway shall be provided on each side of a stage.		Numbering

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	410.6.2 410.5.2 Stairway and ramp enclosure.		Numbering
	410.6.3 410.5.3 Technical production areas. Technical production areas shall be provided with means of egress and means of escape in accordance with Sections 410.6.3.1 through 410.6.3.5 410.5.3.1 through 410.5.3.5.		Edits made to clarify code, no major changes to code requirements.
	410.6.3.1 410.5.3.1 Number of means of egress.		Numbering
	410.6.3.2 410.5.3.2 Exit access travel distance. The exit access travel distance shall be not greater than 300 feet (91 440 mm) for buildings without a sprinkler system and 400 feet (121 9002 mm) for buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.		Edits made to clarify code, no major changes to code requirements.
	410.6.3.3 410.5.3.3 Two means of egress.		Numbering
	410.6.3.4 410.5.3.4 Path of egress travel.		Numbering
	410.6.3.5 410.5.3.5 Width.		Numbering
	[F] 410.7 410.6 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 that are utilized exclusively for storage of tables and chairs, provided that the concealed space is separated		Edits made to clarify code, no major changes to code requirements.

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	<p>from the adjacent spaces by Type X gypsum board not less than 5/8-inch (15.9 mm) in thickness.</p> <p>2. Sprinklers are not required for stages 1,000 square feet (93 m²) or less in area and 50 feet (15 240 mm) or 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.</p> <p>3. Sprinklers are not required within portable orchestra enclosures on stages.</p>		
	[F] 440.8 410.7 Standpipes.		Numbering
	<p style="text-align: center;">SECTION 411</p> <p style="text-align: center;">SPECIAL AMUSEMENT BUILDINGS AREAS</p> <p>411.1 General. <i>Special amusement buildings</i> areas having an occupant load of 50 or more shall comply with the requirements for the appropriate Group A occupancy and Sections 411.1 through 411.8 411.7. <i>Special amusement buildings</i> areas having an occupant load of less than 50 shall comply with the requirements for a Group B occupancy and Sections 411.1 through 411.8 411.7.</p> <p>Exception: <i>Special amusement buildings or portions thereof</i> areas that are without walls or a roof and constructed to prevent the accumulation of smoke need not comply with this section. For flammable decorative materials, see the International Fire Code.</p>		Edits made to clarify code, no major changes to code requirements.
	411.2 Definition. The following term is defined in Chapter 2: SPECIAL AMUSEMENT BUILDING.		
	[F] 411.3 411.2 Automatic fire detection. <i>Special amusement buildings shall be equipped with an automatic fire detection system in accordance with Section 907.</i> Removed		
	[F] 411.4 411.3 411.2 Automatic sprinkler system. <i>Special amusement Buildings containing special amusement areas shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where special amusement building area is temporary, the sprinkler water supply shall be of an approved temporary means.</i>		Edits made to clarify code, no major changes to code requirements.

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>Exception: <i>Automatic</i> sprinklers are not required where the total floor area of a temporary <i>special amusement building area</i> is less than 1,000 square feet (93 m²) and the <i>exit access</i> travel distance from any point <i>in the special amusement area</i> to an exit is less than 50 feet (15 240 mm).</p>		
	<p>411.3 Fire alarm system. Buildings containing <i>special amusement areas</i> shall be equipped with an <i>automatic smoke detection system</i> in accordance with Section 907.2.13.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 411.5 411.4 Alarm. Actuation of a single smoke detector, the automatic sprinkler system or other automatic fire detection device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated including the capability of manual initiation of requirements in Section 907.2.12.2 907.2.11.</p>		
	<p>[F] 411.6 411.5 411.4 Emergency voice/alarm communications system. An <i>emergency voice/alarm communications system</i> shall be provided in accordance with Section 907.2.12. and 907.5.2.2, which is also permitted to serve as a public address system and shall be audible throughout the entire special amusement building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>411.5 Puzzle room exiting. <i>Puzzle room</i> exiting shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. Exiting in accordance with Chapter 10. 2. An alternative design <i>approved by the building official.</i> 3. <i>Exits</i> shall be open and readily available upon activation by the <i>automatic fire alarm system, automatic sprinkler system, and a manual control at a constantly attended location.</i> 		<p>New requirements for puzzle rooms.</p>
	<p>411.6 411.5 411.6 Exit marking. Exit signs shall be installed at the required <i>exit</i> or <i>exit access doorways</i> <i>serving special</i> of amusement building <i>areas</i> in accordance with this section and Section 1013. <i>Approved</i> directional exit markings shall also be provided. Where mirrors, mazes or other designs are utilized that disguise the path of egress travel such that they are not apparent, <i>approved</i> and <i>listed</i> low-level exit signs that comply with Section 1013.5, and directional path markings <i>listed</i> in accordance with UL 1994, shall be provided and located not more than 8 inches (203 mm) above the walking surface and on or near the path of egress travel. Such markings shall become visible in an emergency. The directional exit marking shall be activated by the <i>automatic fire smoke detection system</i> and the <i>automatic sprinkler system</i> in accordance with Section 907.2.12.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	411.7.4 411.6.1 Photoluminescent exit signs.		numbering
	411.8 411.7 Interior finish. The interior finish in special amusement areas shall be Class A in accordance with Section 803.1.		Edits made to clarify code, no major changes to code requirements.
	SECTION 412 AIRCRAFT-RELATED OCCUPANCIES 412.1 General. Aircraft-related occupancies shall comply with Sections 412.1 through 412.8 412.7 and the International Fire Code.		Numbering
	412.2 Definitions. The following terms are defined in Chapter 2: FIXED BASE OPERATOR (FBO). HELIPORT. HELISTOP. RESIDENTIAL AIRCRAFT HANGAR TRANSIENT AIRCRAFT.		
	412.3 412.2 Airport traffic control towers. The provisions of Sections 412.3.1 412.2.1 through 412.3.8 412.2.6 shall apply to airport traffic control towers occupied only for the following uses: 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.		Edits made to clarify code, no major changes to code requirements.
	412.2.1 Construction. The construction of airport traffic control towers shall comply with the provisions of Sections 412.2.1.1 through 412.2.1.3 .		Edits made to clarify code, no major changes to code requirements.
	412.3.1.1 412.2.1.1 Type of construction. Airport traffic control towers shall be constructed to comply with the height limitations of Table 412.3.1.1 412.2.1.1 .		Edits made to clarify code, no major changes to code requirements.

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	TABLE 412.3.1.1 412.2.1.1 HEIGHT LIMITATIONS FOR AIRPORT TRAFFIC CONTROL TOWERS		Numbering
	[BS] 412.2.1.2 Structural integrity of interior exit stairways and elevator hoistway enclosures. Enclosures for interior exit stairways and elevator hoistway enclosures shall comply with Section 403.2.3 in airport traffic control towers where the control cab is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.		New requirements in air traffic control towers
	412.2.1.3 Sprayed fire-resistant materials (SFRM). The bond strength of the SFRM installed in airport traffic control towers shall be in accordance with Section 403.2.4 where the control cab is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.		New requirement for air traffic control towers
	412.2.2 Means of egress and evacuation. The means of egress in airport traffic control towers shall comply with Sections 412.2.2.1 through 412.2.2.3.		Edits made to clarify code, no major changes to code requirements.
	412.3.2 412.2.2.1 Stairways. Stairways in airport traffic control towers shall be in accordance with Section 1011. Exit stairways shall be smokeproof enclosures complying with one of the alternatives provided in Section 909.20. Exception: Stairways in airport traffic control towers are not required to comply with Section 1011.12.		Edits made to clarify code, no major changes to code requirements.
	412.3.3.2 412.2.2.2 Exit access.		Numbering
	412.3.4 412.2.2.3 Number of exits.		Numbering

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	412.3.4.1 412.2.2.3.1 Interior finish.		Numbering
	412.2.2.3.2 Exit separation. Where an airport traffic control tower is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and two exits are required, the exit separation distance required by Section 1007 shall be not less than one-fourth of the length of the maximum overall dimension of the area served.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.2.3 Emergency systems. The detection, alarm and emergency systems of airport traffic control towers shall comply with Sections 412.2.3.1 through 412.2.3.3.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.3.5 412.2.3.1 Automatic fire smoke detection systems. Airport traffic control towers shall be provided with an automatic fire smoke detection system installed in accordance with Section 907.2.21.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.2.3.2 Fire command center. A fire command center shall be provided in airport traffic control towers where the control cab is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access. The fire command center shall comply with Section 911. Exceptions: 1. The fire command center shall be located in the airport control tower or an adjacent contiguous building where building functions are interdependent. 2. The room shall be not less than 150 square feet (14 m ²) in area with a minimum dimension of 10 feet (3048 mm). 3. The following features shall not be required in an airport traffic control tower fire command center. 3.1. Emergency voice/alarm control unit.		Edits made to clarify code, no major changes to code requirements.

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	<p>3.2. Public address system.</p> <p>3.3. Status indicators and controls for the air distributions centers.</p> <p>3.4. Generator supervision devices, manual start and transfer features.</p> <p>3.5. Elevator emergency or standby power switches where emergency or standby power is provided.</p>		
	<p>[F] 412.2.3.3 Smoke removal. Smoke removal in airport traffic control towers shall be provided in accordance with Section 403.4.7.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 412.3.6 412.2.4 Automatic sprinkler system.</p>		Numbering
	<p>412.3.7 Elevator protection. Wires or cables that provide normal or standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire detecting systems to elevators shall be protected by construction having a fire resistance rating of not less than 1 hour, or shall be circuit integrity cable having a fire resistance rating of not less than 1 hour.</p>		
	<p>[F] 412.2.4.1 Fire pump room. Fire pumps shall be located in rooms that are separated from all other areas of the building by 2-hour fire barriers constructed in accordance with Section 707 or 2-hour horizontal assemblies constructed in accordance with Section 711, or both.</p> <p>Exception: Separation is not required for fire pumps physically separated in accordance with NFPA 20.</p>		Additional requirements in air traffic control towers
	<p>[F] 412.2.5 Protection of elevator wiring and cables. Wiring and cables serving elevators in airport traffic control towers shall be protected in accordance with Section 3007.8.1.</p>		Additional requirements for air traffic control towers

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	412.3.7.1 412.2.5.1 Elevators for occupant evacuation.		Numbering
	412.3.8 412.2.6 Accessibility. Airport traffic control towers need not shall be accessible except as specified in the provisions of Chapter 11 Section 1104.4.		Edits made to clarify code, no major changes to code requirements.
	412.4 412.3 Aircraft hangars. Aircraft hangars shall be in accordance with Sections 412.4.1 through 412.4.6 412.3.1 through 412.3.6 .		Edits made to clarify code, no major changes to code requirements.
	412.4.1 412.3.1 Exterior walls.		Numbering
	412.4.2 412.3.2 Basements. Where hangars have basements, floors over basements shall be of Type IA construction and shall be made tight against seepage of water, oil or vapors. There shall not be no openings or communication between basements and the hangar. Access to basements shall be from outside only.		Edits made to clarify code, no major changes to code requirements.
	412.4.3 412.3.3 Floor surface.		Numbering
	412.4.4 412.3.4 Heating equipment. Heating equipment shall be placed in another room separated by 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Entrance shall be from the outside or by means of a vestibule providing a two-doorway separation. Exceptions: 1. Unit heaters and vented infrared radiant heating equipment suspended not less than 10 feet (3048 mm) above the upper surface of wings or engine enclosures of the highest aircraft that are permitted to be housed in the hangar need not be located in a separate room provided that they are mounted not less than 8 feet (2438 mm) above the floor in shops, offices and other		Edits made to clarify code, no major changes to code requirements.

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	<p>sections of the hangar communicating with storage or service areas.</p> <p>2. Entrance to the separated room shall be permitted by a single interior door provided that the sources of ignition in the appliances are not less than 18 inches (457 mm) above the floor.</p>		
	<p>412.4.5 412.3.5 Finishing.</p>		<p>Numbering</p>
	<p>[F] 412.4.6 412.3.6 Fire suppression. Aircraft hangars shall be provided with a fire suppression system designed in accordance with NFPA 409, based upon the classification for the hangar given in Table 412.4.6 412.3.6.</p> <p>Exception: Where a fixed base operator has separate repair facilities on site, Group II hangars operated by a fixed base operator used for storage of transient aircraft only shall have a fire suppression system, but the system is exempt from foam requirements.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] TABLE 412.4.6 412.3.6 HANGAR FIRE SUPPRESSION REQUIREMENTS^{a,b,c}</p>		<p>Numbering</p>
	<p>[F] 412.4.6.1 412.3.6.1 Hazardous operations. Any Group III aircraft hangar according to Table 412.4.6 412.3.6 that contains hazardous operations including, but not limited to, the following shall be provided with a Group I or II fire suppression system in accordance with NFPA 409 as applicable:</p> <ol style="list-style-type: none"> 1. Doping. 2. Hot work including, but not limited to, welding, torch cutting and torch soldering. 3. Fuel transfer. 4. Fuel tank repair or maintenance not including defueled tanks in accordance with NFPA 409, inerted tanks or tanks that have never been fueled. 5. Spray finishing operations. 		<p>Numbering</p>

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	<p>6. Total fuel capacity of all aircraft within the unsprinklered single fire area in excess of 1,600 gallons (6057 L).</p> <p>7. Total fuel capacity of all aircraft within the maximum single fire area in excess of 7,500 gallons (28 390 L) for a hangar with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		
	<p>[F] 412.4.6.2 412.3.6.2 Separation of maximum single fire areas. Maximum single fire areas established in accordance with hangar classification and construction type in Table 412.4.6 412.3.6 shall be separated by 2-hour fire walls constructed in accordance with Section 706. In determining the maximum single fire area as set forth in Table 412.4.6 412.3.6, ancillary uses that are separated from aircraft servicing areas by a fire barrier of not less than 1 hour, constructed in accordance with Section 707, shall not be included in the area.</p>		Numbering
	<p>412.54 Residential aircraft hangars. Residential aircraft hangars shall comply with Sections 412.5.1 through 412.5.5 412.4.1 through 412.4.5.</p>		Numbering
	<p>412.5.1 412.4.1 Fire separation.</p>		Numbering
	<p>412.5.2 412.4.2 Egress.</p>		Numbering
	<p>[F] 412.5.3 412.4.3 Smoke alarms.</p>		Numbering
	<p>412.5.4 412.4.4 Independent systems.</p>		Numbering

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	412.5.5 412.4.5 Height and area limits.		Numbering
	[F] 412.6 412.5 Aircraft paint hangars. Aircraft painting operations where flammable liquids are used in excess of the maximum allowable quantities per control area listed in Table 307.1(1) shall be conducted in an aircraft paint hangar that complies with the provisions of Sections 412.6.1 through 412.6.8 412.5.1 through 412.5.8. Buildings and structures, or parts thereof, used for the application of flammable finishes shall comply with the applicable provisions of Section 416.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.6.1 412.5.1 Occupancy group classification. Aircraft paint hangars shall be classified as Group H-2 in accordance with the provisions of Section 307.1. Aircraft paint hangars shall comply with the applicable requirements of this code and the International Fire Code for such occupancy.		Edits made to clarify code, no major changes to code requirements.
	415.6.2 412.5.2 Construction. The Aircraft paint hangars shall be of Type I or II construction.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.5.3 Spray equipment cleaning operations. Spray equipment cleaning operations shall be conducted in a liquid use, dispensing and mixing room.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.6.3 412.5.4 Operations. Only those flammable liquids necessary for painting operations shall be permitted in quantities less than the maximum allowable quantities per control area in Table 307.1(1). Spray equipment cleaning operations exceeding the maximum allowable quantities per control area in Table 307.1(1) shall be conducted in a liquid use, dispensing and mixing room.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.6.4 412.5.5 Storage. Storage of flammable or combustible liquids exceeding the maximum allowable quantities per control area in Table 307.1(1) shall be in a liquid storage room.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.6.5 412.5.6 Fire suppression.		Numbering

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	[F] 412.6.6 412.5.7 Ventilation.		Numbering
	[F] 412.5.8 Electrical. Electrical equipment and devices within the aircraft paint hangar shall comply with NFPA 70.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.5.8.1 Class I, Division 1 hazardous locations. The area within 10 feet (3048 mm) horizontally from aircraft surfaces and from the floor to 10 feet (3048 mm) above the aircraft surface shall be classified as a Class I, Division 1 location.		Edits made to clarify code, no major changes to code requirements.
	[F] 412.5.8.2 Class I, Division 2 hazardous locations. The area horizontally from aircraft surfaces between 10 feet (3048 mm) and 30 feet (9144 mm) and from the floor to 30 feet (9144 mm) above the aircraft surface shall be classified as a Class I, Division 2 location.		Edits made to clarify code, no major changes to code requirements.
	412.7 412.6 Aircraft manufacturing facilities. In buildings used for the manufacturing of aircraft, exit access travel distances indicated in Section 1017.1 shall be increased in accordance with the following: <ol style="list-style-type: none"> 1. The building shall be of Type I or II construction. 2. Exit access travel distance shall not exceed the distances given in Table 412.7 412.6. 		Numbering
	TABLE 412.7 412.6 AIRCRAFT MANUFACTURING EXIT ACCESS TRAVEL DISTANCE		Numbering
	412.7.1 412.6.1 Ancillary areas. Rooms, areas and spaces ancillary to the primary manufacturing area shall be permitted to egress through such area having a minimum height as indicated in Table 412.7 412.6 . Exit access travel distance within the ancillary room, area or space shall not exceed that indicated in Table 1017.2 based on the occupancy classification of that ancillary area. Total exit access travel distance shall not exceed that indicated in Table 412.7 412.6 .		Numbering

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	[F] 412.8-412.7 Heliports and helistops. Heliports and helistops shall be permitted to be erected on buildings or other locations where they are constructed in accordance with Sections 412.8.1 through 412.8.5 412.7.1 through 412.7.5 .		Numbering
	[F] 412.8.1-412.7.1 Size. The landing area for helicopters less than 3,500 pounds (1588 kg) shall be not less than 20 feet (6096 mm) in length and width. The landing area shall be surrounded on all sides by a clear area having an minimum average width at roof level of 15 feet (4572 mm), but with and all widths shall be not width less than 5 feet (1524 mm).		Edits made to clarify code, no major changes to code requirements.
	[F] 412.8.2-412.7.2 Design.		Numbering
	412.8.3-412.7.3 Means of egress. The <i>means of egress</i> from <i>heliports</i> and <i>helistops</i> shall comply with the provisions of Chapter 10. Landing areas located on buildings or structures shall have two or more means of egress exits or access to exits . For landing areas less than 60 feet (18 288 mm) in length or less than 2,000 square feet (186 m ²) in area, the second <i>means of egress</i> is permitted to be a fire escape, <i>alternating tread device</i> or ladder leading to the floor below.	[F] 412.7.3 Means of egress. The <i>means of egress</i> from <i>heliports</i> and <i>helistops</i> shall comply with the provisions of Chapter 10, except no stairwell, stairway, guardrail or other structure shall be required or allowed to penetrate the take-off and landing area specified for the heliport or helistop. All L -landing areas located on buildings or structures shall have two or more exits or access to exits . For landing areas less than 60 feet (18,288 mm) in length or less than 2,000 square feet (186 m ²) in area, the second <i>means of egress</i> is permitted to be a fire escape, <i>alternating tread device</i> or ladder leading to the floor below.	Edits made to clarify code, no major changes to base code requirements. Houston amendment moved from Section 412.8.3. No changes to amendment.
	[F] 412.8.4-412.7.4 Rooftop heliports and helistops.		Numbering
[F] 412.8.3 Means of egress. The <i>means of egress</i> from <i>heliports</i> and <i>helistops</i> shall comply with the provisions of Chapter 10 of this code, except no stairwell, stairway, guardrail or other structure shall be required or allowed to penetrate the take-off and landing area specified for the helistop. All L -landing areas located on buildings or structures shall have two or more <i>means of egress</i> . For landing areas less than 60 feet (18 288 mm) in length or less than 2,000 square feet (187 m ²) in area, the second <i>means of egress</i> is permitted to be a fire escape, <i>alternating tread device</i> or ladder leading to the floor below. Now 412.7.3	N/A		
413.1 General. High-piled stock or rack storage in any occupancy group shall comply with the International Fire Code . A fire apparatus access road shall be provided for buildings used for high-piled	SECTION 413 COMBUSTIBLE STORAGE No change	SECTION 413 COMBUSTIBLE STORAGE 413.1 General. High-piled stock or rack storage in any occupancy group shall comply with the International Fire Code . A fire apparatus	No change to Houston amendment.

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<p><u>combustible storage and shall meet applicable provisions of the Fire Code.</u></p>		<p><u>access road that meets applicable provisions of the Fire Code shall be provided for buildings used for high-piled combustible storage.</u></p>	
	<p>SECTION 414 HAZARDOUS MATERIALS</p>	<p>SECITON 414 HAZARDOUS MATERIALS</p>	
	<p>[F] 414.1.2 Materials. The safe design of hazardous material occupancies is material dependent. Individual material requirements are also found in Sections 307 and 415, and in the International Mechanical Code and the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 414.1.2.1 Aerosol products, aerosol cooking spray products and plastic aerosol 3 products. Level 2 and 3 aerosol products, aerosol cooking spray products and plastic aerosol 3 products shall be stored and displayed in accordance with the <i>International Fire Code</i>. See Section 311.2 and the <i>International Fire Code</i> for occupancy group requirements.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 414.1.4 Tire disposers, chipping and shredding operations screening of property. <u>Tire disposers, chipping and shredding operations shall comply with the provisions of this code and Life Safety Bureau (LSB) Standard No. 17. The entire property shall be surrounded by a fence at least 6 feet in height constructed of noncombustible material or by another suitable means to prevent access of any unauthorized persons. An adequate number of gates as determined by the fire marshal shall be provided in the surrounding fence or other barrier to provide ready access for fire apparatuses. Access gates shall be provided in accordance with LSB Standard No. 04, "Access Control Gates".</u></p>	<p>N/A</p>	<p>[F] 414.1.4 Tire disposers, chipping and shredding operations screening of property. <u>Tire disposers, chipping and shredding operations shall comply with the provisions of this code and Life Safety Bureau (LSB) Standard No. 17. The entire property shall be surrounded by a fence at least 6 feet in height constructed of noncombustible material or by another suitable means to prevent access of any unauthorized persons. An adequate number of gates as determined by the fire marshal shall be provided in the surrounding fence or other barrier to provide ready access for fire apparatuses. Access gates shall be provided in accordance with LSB Standard No. 04, "Access Control Gates."</u></p>	<p>No change to Houston amendment.</p>
	<p>[F] 414.2 Control areas. Control areas shall comply with Sections 414.2.1 through 414.2.5 and the International Fire Code. Exception: Higher education laboratories in accordance with Section 428 and Chapter 38 of the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] TABLE 414.2.2 DESIGN AND NUMBER OF CONTROL AREAS</p>		<p>Changed Floor/ Floor level to Story</p>

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	<p>[F] 414.2.3 Number. The maximum number of <i>control areas</i> within a building shall be in accordance with Table 414.2.2. For purposes of determining the number of control areas within a building, each portion of a building separated by one or more fire walls complying with Section 706 shall be considered a separate building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 414.2.4 Fire-resistance rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 414.2.2. The floor assembly of the control area and the construction supporting the floor of the control area shall have a fire-resistance rating of not less than 2 hours.</p> <p>Exception: The floor assembly of the control area and the construction supporting the floor of the control area are allowed to be 1-hour fire-resistance -rated in buildings of Types IIA, IIIA, IV and VA construction, provided that both of the following conditions exist:</p> <ol style="list-style-type: none"> 1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1; and 2. The building is three or fewer stories above grade plane. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 414.2.5 Hazardous material in Group M display and storage areas and in Group S storage areas. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a Group M display and storage area, a Group S storage area or an outdoor control area is permitted to exceed the maximum allowable quantities per control area specified in Tables 307.1(1) and 307.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with the International Fire Code and quantities do not exceed the maximum allowable specified in Table 414.2.5(1) Hazardous materials located in Group M and Group S occupancies shall be in accordance with Sections 414.2.5.1 through 414.2.5.3.</p> <p>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 414.2.5(2), provided that the materials are displayed and stored in accordance with the International Fire Code.</p> <p>The maximum quantity of aerosol products in Group M occupancy retail display areas, storage areas adjacent to</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	retail display areas and retail storage areas shall be in accordance with the International Fire Code.		
	<p>[F] TABLE 414.2.5(1) MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES NONFLAMMABLE SOLIDS AND NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS^{d,e,f}</p>		Changes to footnote: b,c,g, and h * New footnote "k" *
	<p>[F] TABLE 414.2.5(2) MAXIMUM ALLOWABLE QUANTITY OF FLAMMABLE AND COMBUSTIBLE LIQUIDS IN WHOLESALE AND RETAIL SALES OCCUPANCIES PER CONTROL AREA^a</p>		Changes to c.
	<p>[F] 414.2.5.1 Nonflammable solids and nonflammable and noncombustible liquids. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a Group M display and storage area, a Group S storage area or an outdoor control area is permitted to exceed the maximum allowable quantities per control area specified in Tables 307.1(1) and 307.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with the International Fire Code and quantities do not exceed the maximum allowable specified in Table 414.2.5(1).</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 414.2.5.2 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 414.2.5(2), provided that the materials are displayed and stored in accordance with the International Fire Code.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 414.2.5.3 Aerosol products, aerosol cooking spray products or plastic aerosol 3 products. The maximum quantity of aerosol products, aerosol cooking spray products or plastic aerosol 3 products in Group M occupancy retail display</p>		Edits made to clarify code, no major changes to code requirements.

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		<p style="background-color: magenta;">areas, storage areas adjacent to retail display areas and retail storage areas shall be in accordance with the <i>International Fire Code</i>.</p>	
	<p>[F] 414.3 Ventilation. Rooms, areas or spaces in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or may have the potential to be emitted due to the processing, use, handling or storage of materials shall be mechanically ventilated where required by this code, the International Fire Code or the International Mechanical Code.</p> <p>Emissions generated at workstations shall be confined to the area in which they are generated as specified in the International Fire Code and the International Mechanical Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
		<p>TABLE 414.5.1</p>	<p>Changes to footnote f and g</p>
<p>[F] 414.6 Outdoor storage, dispensing and use. The outdoor storage, dispensing and use of hazardous materials shall be in accordance with the <i>International Fire Code</i> and Chapter 28, Article VII, of the <i>City Code</i> (the Hazardous Enterprise Ordinance).</p>	<p>No change</p>	<p>[F] 414.6 Outdoor storage, dispensing and use. The outdoor storage, dispensing and use of <i>hazardous materials</i> shall be in accordance with the International Fire Code and Chapter 28, Article VII, of the <i>City Code</i> (the Hazardous Enterprise Ordinance).</p>	<p>No change to Houston amendment.</p>
<p>[F] 414.6.1 Weather protection. Where weather protection is provided for sheltering outdoor hazardous material storage or use areas, such areas shall be considered outdoor storage or use when the weather protection structure complies with Section 414.6.1.1 through 414.6.1.3.</p> <p><u>Exception: For the purpose of applying Chapter 28, Article VII, of the <i>City Code</i> (the Hazardous Enterprise Ordinance), and the <i>fire separation distance</i> provisions of this code, canopies providing weather protection for quantities of hazardous materials exceeding the maximum allowable quantity limits per control area identified in Section 307 and Tables 307.1(1) and 307.1(2) shall be classified in the appropriate Group H occupancy.</u></p>	<p>[F] 414.6.1 Weather protection. Where weather protection is provided for sheltering outdoor hazardous material storage or use areas, such areas shall be considered outdoor storage or use when where the weather protection structure complies with Sections 414.6.1.1 through 414.6.1.3.</p>	<p>[F] 414.6.1 Weather protection. Where weather protection is provided for sheltering outdoor <i>hazardous material</i> storage or use areas, such areas shall be considered outdoor storage or use where the weather protection structure complies with Section 414.6.1.1 through 414.6.1.3.</p> <p><u>Exception: For the purpose of applying Chapter 28, Article VII, of the <i>City Code</i> (the Hazardous Enterprise Ordinance), and the <i>fire separation distance</i> provisions of this code, canopies providing weather protection for quantities of hazardous materials exceeding the maximum allowable quantity limits per control area identified in Section 307 and Tables 307.1(1) and 307.1(2) shall be classified in the appropriate Group H occupancy.</u></p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
<p>414.7 Enterprise permit. Businesses and facilities storing or utilizing hazardous materials exceeding the <i>maximum allowable quantity</i> limits per control area identified in Section 307 and Tables 307.1(1) and 307.1(2) shall comply with Chapter 28, Article VII, of the <i>City Code</i> for a <i>hazardous enterprise</i>.</p>	<p>N/A</p>	<p>414.7 Enterprise permit. Businesses and facilities storing or utilizing hazardous materials exceeding the <i>maximum allowable quantity</i> limits per control area identified in Section 307 and Tables 307.1(1) and 307.1(2) shall comply with Chapter 28, Article VII, of the <i>City Code</i> for a <i>hazardous enterprise</i>.</p>	<p>No change to Houston amendment.</p>

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	<p align="center">SECTION 415</p> <p align="center">GROUPS H-1, H-2, H-3, H-4 AND H-5</p> <p>[F] 415.1 Scope-General. The provisions of Sections 415.1 through 415.11 shall apply to the storage and use of hazardous materials in excess of the maximum allowable quantities per control area listed in Section 307.1. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of Section 414 and the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.2 Definitions. The following terms are defined in Chapter 2:</p> <p>CONTINUOUS GAS DETECTION SYSTEM.</p> <p>DETACHED BUILDING.</p> <p>EMERGENCY CONTROL STATION.</p> <p>EXHAUSTED ENCLOSURE.</p> <p>FABRICATION AREA.</p> <p>FLAMMABLE VAPORS OR FUMES.</p> <p>GAS CABINET.</p> <p>GASROOM.</p> <p>HAZARDOUS PRODUCTION MATERIAL (HPM).</p> <p>HPM FLAMMABLE LIQUID.</p> <p>HPM ROOM.</p> <p>IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).</p> <p>LIQUID.</p> <p>LIQUID STORAGE ROOM.</p> <p>LIQUID USE, DISPENSING AND MIXING ROOM.</p> <p>LOWER FLAMMABLE LIMIT (LFL).</p> <p>NORMAL TEMPERATURE AND PRESSURE (NTP).</p> <p>PHYSIOLOGICAL WARNING THRESHOLD LEVEL.</p> <p>SERVICE CORRIDOR.</p> <p>SOLID.</p> <p>STORAGE, HAZARDOUS MATERIALS.</p> <p>USE (MATERIAL).</p> <p>WORKSTATION.</p>		

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<p>[F] 415.2 Definitions. The following terms are defined in Chapter 2: {EDITORIAL NOTE: DEFINITIONS NOT LISTED REMAIN AS SET FORTH IN THE 2015 IBC.} HPM FLAMMABLE LIQUID.</p>	<p>[F] 415.2 Compliance. Buildings and structures with an occupancy in Group H shall comply with the applicable provisions of Section 414 and the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to base code requirements. Amendment removed, no longer needed.</p>
	<p>[F] 415.5.3 Supervision. Emergency alarm systems required by Section 415.5.1 or 415.5.2 shall be electrically supervised and monitored by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.5.4 Emergency alarm systems. Emergency alarm systems required by Section 415.5.1 or 415.5.2 shall be provided with emergency or standby power in accordance with Section 2702.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.6 Fire separation distance. Group H occupancies shall be located on property in accordance with the other provisions of this chapter. In Groups H-2 and H-3, not less than 25 percent of the perimeter wall of the occupancy shall be an exterior wall.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Liquid use, dispensing and mixing rooms having a floor area of not more than 500 square feet (46.5 m²) need not be located on the outer perimeter of the building where they are in accordance with the International Fire Code and NFPA 30. 2. Liquid storage rooms having a floor area of not more than 1,000 square feet (93 m²) need not be located on the outer perimeter where they are in accordance with the International Fire Code and NFPA 30. 3. Spray paint booths that comply with the International Fire Code need not be located on the outer perimeter. 		
	<p>[F] 415.6.1 Rooms for flammable or combustible liquid use, dispensing or mixing in open systems. Rooms for flammable or combustible liquid use, dispensing or mixing in open systems having a floor area or not more than 500 feet (46.5 m²) need not be located on the outer perimeter of the building where they are in accordance with the International Fire Code and NFPA 30.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.6.2 Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems. Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems, having a floor</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<u>area of not more than 1,000 square feet (93 m²) need not be located on the outer perimeter where they are in accordance with the <i>International Fire Code</i> and NFPA 30.</u>		
	[F] 415.6.3 Spray paint booths. <u>Spray paint booths that comply with the <i>International Fire Code</i> need not be located on the outer perimeter.</u>		Edits made to clarify code, no major changes to code requirements.
	[F] 415.6.1 415.6.4 Group H occupancy minimum fire separation distance. Regardless of any other provisions, buildings containing Group H occupancies shall be set back to the minimum fire separation distance as set forth in Sections 415.6.1.1 through 415.6.1.4. Distances shall be measured from the walls enclosing the occupancy to lot lines, including those on a public way. Distances to assumed lot lines established for the purpose of determining exterior wall and opening protection are not to be used to establish the minimum fire separation distance for buildings on sites where explosives are manufactured or used when where separation is provided in accordance with the quantity distance tables specified for explosive materials in the <i>International Fire Code</i> .		Edits made to clarify code, no major changes to code requirements.
	[F] 415.6.1.1 415.6.4.1 Group H-1.		Numbering
	[F] 415.6.1.2 415.6.4.2 Group H-2.		Numbering
	[F] 415.6.1.3 415.6.4.3 Groups H-2 and H-3.		Numbering
	[F] 415.6.1.4 415.6.4.4 Explosive materials.		Numbering
	[F] 415.6.2 415.6.5 Detached buildings for Group H-1, H-2 or H-3 occupancy.		Numbering

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	[F] TABLE 415.6.2-415.6.5		Numbering
	[F] 415.6.2.1 415.6.5.1 Wall and opening protection. Where a detached building is required by Table 415.6.2, there are no requirements for wall and opening protection based on fire separation distance is not required .		Edits made to clarify code, no major changes to code requirements.
	[F] 415.7 Special provisions for Group H-1 occupancies. Group H-1 occupancies shall be in detached buildings not used for as other purposes. Roofs shall be of lightweight construction with suitable thermal insulation to prevent sensitive material from reaching its decomposition temperature. Group H-1 occupancies containing materials that are in themselves both physical and health hazards in quantities exceeding the maximum allowable quantities per control area in Table 307.1(2) shall comply with requirements for both Group H-1 and H-4 occupancies.		Edits made to clarify code, no major changes to code requirements.
	[F] 415.8 Special provisions for Group H-2 and H-3 occupancies. Group H-2 and H-3 occupancies containing quantities of hazardous materials in excess of those set forth in Table 415.6.2 shall be in detached buildings used for manufacturing, processing, dispensing, use or storage of hazardous materials. Materials listed for Group H-1 occupancies in Section 307.3 are permitted to be located within Group H-2 or H-3 detached buildings provided that the amount of materials per control area do not exceed the maximum allowed quantity specified in Table 307.1(1).		Edits made to clarify code, no major changes to code requirements.
	[F] 415.9.1.5 Leakage alarm. An approved automatic alarm shall be provided to indicate a leak in a storage tank and room. The alarm shall sound an audible signal, 15 dBa above the ambient sound level, at every point of entry into the room in which the leaking storage tank is located. An approved sign shall be posted on every entry door to the tank storage room indicating the potential hazard of the interior room environment, or the sign shall state: WARNING, WHEN ALARM SOUNDS, THE ENVIRONMENT WITHIN THE ROOM MAY BE HAZARDOUS. The leakage alarm shall also be supervised in accordance with Chapter 9 to transmit a trouble signal.		Edits made to clarify code, no major changes to code requirements.

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	<p>[F] 415.10.4 Separation of highly toxic solids and liquids. Highly toxic solids and liquids not stored in approved hazardous materials storage cabinets shall be isolated from other hazardous materials storage by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] TABLE 415.11.1.1.1</p>		<p>Additional requirement for class III water reactive MAQ for H5 occupancy within the tool.</p>
	<p>[F] 415.11.1.4 Floors. Except for surfacing, floors within fabrication areas shall be of noncombustible construction.</p> <p>Openings through floors of fabrication areas are permitted to be unprotected where the interconnected levels are used solely for mechanical equipment directly related to such fabrication areas (see also Section 415.11.1.5).</p> <p>Floors forming a part of an occupancy separation shall be liquid tight.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.11.1.5 Shafts and openings through floors. Elevator hoistways, vent shafts and other openings through floors shall be enclosed where required by Sections 712 and 713. Mechanical, duct and piping penetrations within a fabrication area shall not extend through more than two floors. The annular space around penetrations for cables, cable trays, tubing, piping, conduit or ducts shall be sealed at the floor level to restrict the movement of air. The fabrication area, including the areas through which the ductwork and piping extend, shall be considered to be a single conditioned environment.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.11.1.8 Electrical. Electrical equipment and devices within the fabrication area shall comply with NFPA 70. The requirements for hazardous locations need not be applied where the average air change is at least not less than four times that set forth in Section 415.11.1.6 and where the number of air changes at any location is not less than three times that required by Section 415.11.1.6. The use of recirculated air shall be permitted.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[F] 415.11.2 Corridors. Corridors shall comply with Chapter 10 and shall be separated from fabrication areas as specified in Section 415.11.1.2. Corridors shall not contain HPM and shall not be used for transporting such materials except through closed piping systems as provided in Section 415.11.6.4.</p> <p>Exception: Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing corridors, subject to the following conditions:</p> <ol style="list-style-type: none"> 1. Nonproduction HPM is allowed to be transported in corridors if utilized for maintenance, lab work and testing. 2. Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing corridors, subject to the following conditions: <ol style="list-style-type: none"> 2.1. Corridors. Corridors adjacent to the fabrication area where the alteration work is to be done shall comply with Section 1020 for a length determined as follows: <ol style="list-style-type: none"> 2.1.1. The length of the common wall of the corridor and the fabrication area; and 2.1.2. For the distance along the corridor to the point of entry of HPM into the corridor serving that fabrication area. 2.2. Emergency alarm system. There shall be an emergency telephone system, a local manual alarm station or other approved alarm-initiating device within corridors at not more than 150-foot (45 720 mm) intervals and at each exit and doorway. The signal shall be relayed to an approved central, proprietary or remote station service or the emergency control station and shall also initiate a local audible alarm. 2.3. Pass-throughs. Self-closing doors having a fire protection rating of not less than 1 hour shall 		<p>Edits made to clarify code, no major changes to code requirements.</p>
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	separate pass-throughs from existing corridors. Pass-throughs shall be constructed as required for the corridors and protected by an approved automatic sprinkler system.		
	[F] 415.11.3.5 415.11.4 Emergency alarm system.		Numbering
	[F] 415.11.3.5.1 415.11.4.1 Service corridors.		
	[F] 415.11.3.5.2 415.11.4.2 Corridors and interior exit stairways and ramps.		
	[F] 415.11.3.5.3 415.11.4.3 Liquid storage rooms, HPM rooms and gas rooms.		
	[F] 415.11.3.5.4 415.11.4.4 Alarm-initiating devices.		
	[F] 415.11.3.5.5 415.11.4.5 Alarm signals.		
	[F] 415.11.4 415.11.5 Storage of hazardous production materials.		
	[F] 415.11.5 415.11.6 HPM rooms, gas rooms, liquid storage room construction.		

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	[F] 415.11.5.1 415.11.6.1 HPM rooms and gas rooms.		
	[F] 415.11.5.2 415.11.6.2 Liquid storage rooms.		
	[F] 415.11.5.3 415.11.6.3 Floors.		
	[F] 415.11.5.4 415.11.6.4 Location. Where HPM rooms, liquid storage rooms and gas rooms are provided, they shall have no fewer than one exterior wall and such wall shall be not less than 30 feet (9144 mm) from lot lines, including lot lines adjacent to public ways.		
	[F] 415.11.5.5 415.11.6.5 Explosion control.		
	[F] 415.11.5.6 415.11.6.6 Exits.		
	[F] 415.11.5.7 415.11.6.7 Doors.		
	[F] 415.11.5.8 415.11.6.8 Ventilation.		
	[F] 415.11.5.9 415.11.6.9 Emergency alarm system.		

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	[F] 415.11.6 415.11.7 Piping and tubing.		
	[F] 415.11.6.1 415.11.7.1 HPM having a health-hazard ranking of 3 or 4.		
	[F] 415.11.6.2 415.11.7.2 Location in service corridors.		
	[F] 415.11.6.3 415.11.7.3 Excess flow control.		
	[F] 415.11.6.4 415.11.7.4 Installations in corridors and above other occupancies.		
	[F] 415.11.6.5 415.11.7.5 Identification.		
	[F] 415.11.7 415.11.8 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 415.11.7.1 and through 415.11.7.2.		Edits made to clarify code, no major changes to code requirements.
	[F] 415.11.7.1 415.11.8.1 Where required. A continuous gas detection system shall be provided in the areas identified in Sections 415.11.7.1.1 through 415.11.7.1.4.		Edits made to clarify code, no major changes to code requirements.
	[F] 415.11.7.1.1 415.11.8.1.1 Fabrication areas. A continuous gas detection system shall be provided in fabrication areas where HPM gas is used in the fabrication area.		Edits made to clarify code, no major changes to code requirements.

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	<p>[F] 415.11.7.1.2 415.11.8.1.2 HPM rooms. A continuous gas detection system shall be provided in HPM rooms where HPM gas is used in the room.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.11.7.1.3 415.11.8.1.3 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.11.7.1.4 415.11.8.1.4 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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.11.7.2 415.11.8.2 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:</p> <ol style="list-style-type: none"> 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 threshold level shall be vapor concentrations in excess of 25 percent of the lower flammable limit (LFL) where the monitoring is within or outside an 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>exhausted enclosure, ventilated enclosure or gas cabinet.</p> <p>4. Except as noted in this section, monitoring for highly toxic and toxic gases shall also comply with Chapter 60 of the International Fire Code.</p>		
	<p>[F] 415.11.7.2.1 415.11.8.2.1 Alarms.</p>		
	<p>[F] 415.11.7.2.2 415.11.8.2.2 Shutoff of gas supply.</p>		
	<p>[F] 415.11.8 415.11.9 Manual fire alarm system.</p>		
	<p>[F] 415.11.9 415.11.10 Emergency control station.</p>		
	<p>[F] 415.11.9.1 415.11.10.1 Location.</p>		
	<p>[F] 415.11.9.2 415.11.10.2 Staffing.</p>		
	<p>[F] 415.11.9.3 415.11.10.3 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:</p> <ol style="list-style-type: none"> 1. Automatic sprinkler system alarm and monitoring systems. 2. Manual fire alarm systems. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Emergency alarm systems.</p> <p>4. Continuous Gas detection systems.</p> <p>5. Smoke detection systems.</p> <p>6. Emergency power system.</p> <p>7. Automatic detection and alarm systems for pyrophoric liquids and Class 3 water-reactive liquids required in Section 2705.2.3.4 of the International Fire Code.</p> <p>8. Exhaust ventilation flow alarm devices for pyrophoric liquids and Class 3 water-reactive liquids cabinet exhaust ventilation systems required in Section 2705.2.3.4 of the International Fire Code.</p>		
	<p>[F] 415.11.10 415.11.11 Emergency power system.</p>		
	<p>[F] 415.11.10.1 415.11.11.1 Required electrical systems.</p>		
	<p>[F] 415.11.10.2 415.11.11.2 Exhaust ventilation systems.</p>		
	<p>[F] 415.11.11 415.11.12 Automatic sprinkler system protection in exhaust ducts for HPM. An approved automatic sprinkler system shall be provided in exhaust ducts conveying gases, vapors, fumes, mists or dusts generated from HPM in accordance with Sections 415.11.11.1 through 415.10.11.3 415.11.11.3 and the International Mechanical Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 415.11.11.1 415.11.12.1 Metallic and noncombustible nonmetallic exhaust ducts.</p>		
	<p>[F] 415.11.11.2 415.11.12.2 Combustible nonmetallic exhaust ducts.</p>		

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	<p>[F] 415.11.11.3 415.11.12.3 Automatic sprinkler locations.</p>		
	<p>SECTION 416</p> <p>SPRAY APPLICATION OF FLAMMABLE FINISHES</p> <p>[F] 416.1 General. The provisions of this section shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spray application of flammable finishes. Such construction Operations and equipment shall comply with the International Fire Code.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 416.2.1 Construction. Walls and ceilings of spray rooms shall be constructed of noncombustible materials or the interior surface shall be completely covered with noncombustible materials. Aluminum shall not be used.</p>		Clarification for construction materials of spray room.
	<p>[F] 416.2.1 416.2.2 Surfaces. The interior surfaces of spray rooms shall be smooth and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the room. Aluminum shall not be used.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 416.2.2 416.2.3 Ventilation. Mechanical ventilation and interlocks with the spraying operation shall be in accordance with the International Fire Code and International Mechanical Code.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 416.3.1 Surfaces. The interior surfaces of spraying spaces shall be smooth and continuous without edges, shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning; and shall be so designed to confine residues within the spraying space. Aluminum shall not be used.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 416.4 Spray booths. Spray booths shall be designed, constructed and operated in accordance with the International Fire Code.</p>		
	<p>[F] 416.5 Fire protection. An automatic sprinkler system or fire-extinguishing system shall be provided in all spray, dip and immersing spaces and storage rooms and spray booths, and shall be installed in accordance with Chapter 9.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>SECTION 417 DRYING ROOMS</p>		
	<p>SECTION 418 ORGANIC COATINGS</p>		
	<p>SECTION 419 LIVE/WORK UNITS ARTIFICIAL DECORATIVE VEGETATION</p> <p>[F] 419.1 Artificial decorative vegetation. Artificial decorative vegetation exceeding 6 feet (1830 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 321.1 of the <i>International Fire Code</i>.</p> <p>Exception: Artificial decorative vegetation located more than 30 feet (9144 mm) from the exterior wall of a building.</p>		<p>New requirement for artificial decorative vegetation</p>
	<p>419.1.1 Limitations. All of the following shall apply to all live/work areas:</p> <ol style="list-style-type: none"> 1. The live/work unit is permitted to be not greater than 3,000 square feet (279 m²) in area. 2. The nonresidential area is permitted to be not more than 50 percent of the area of each live/work unit. 3. The nonresidential area function shall be limited to the first or main floor only of the live/work unit; and. 4. Not more than five nonresidential workers or employees are allowed to occupy the nonresidential area at any one time. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>419.2 Occupancies. Live/work units shall be classified as a Group R-2 occupancy. Separation requirements found in Sections 420 and 508 shall not apply within the live/work unit where the live/work unit is in compliance with Section 419. Nonresidential uses that would otherwise be classified as either a Group H or S occupancy shall not be permitted in a live/work unit.</p> <p>Exception: Storage shall be permitted in the live/work unit provided that the aggregate area of storage in the nonresidential portion of the live/work unit shall be limited to 10 percent of the space dedicated to nonresidential activities.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>419.3.1 Egress capacity. The egress capacity for each element of the live/work unit shall be based on the occupant load for the function served in accordance with Table 4004.1.2-1004.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 420 GROUPS I-1, R-1, R-2, R-3 AND R-4</p>		
	<p>420.1 General. Occupancies in Groups I-1, R-1, R-2, R-3 and R-4 shall comply with the provisions of Sections 420.1 through 420.6 420.10 and other applicable provisions of this code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>420.2 Separation walls. Walls separating dwelling units in the same building, walls separating sleeping units in the same building and walls separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as fire partitions in accordance with Section 708.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where sleeping units include private bathrooms, walls between bedrooms and the associated private bathrooms are not required to be constructed as fire partitions. 2. Where sleeping units are constructed as suites, walls between bedrooms within the sleeping unit and the walls between the bedrooms and associated living spaces are not required to be constructed as fire partitions. 3. In Group R-3 and R-4 facilities, walls within the dwelling units or sleeping units are not required to be constructed as fire partitions. 		<p>Exceptions added</p>
	<p>420.3 Horizontal separation. Floor assemblies separating dwelling units in the same buildings, floor assemblies separating sleeping units in the same building and floor assemblies separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as horizontal assemblies in accordance with Section 711.</p> <p>Exception: In Group R-3 and R-4 facilities, floor assemblies within the dwelling units or sleeping units are not required to be constructed as horizontal assemblies.</p>		<p>Exceptions added</p>

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	<p>[F] 420.5 420.4 Automatic sprinkler system.</p>		
	<p>420.4 420.6 Smoke barriers in Group I-1, Condition 2. Smoke barriers shall be provided in Group I-1, Condition 2, to subdivide every story used by persons receiving care, treatment or sleeping and to provide other stories with an occupant load of 50 or more persons, into no fewer than two smoke compartments. Such stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2092 m²) and the distance of travel from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be in accordance with Section 709.</p>		
	<p>420.4.1 420.6.1 Refuge area.</p>		
	<p>420.7 Group I-1 assisted living housing units. In Group I-1 occupancies, where a fire-resistance corridor is provided in areas where assisted living residents are housed, shared living spaces, group meeting or multipurpose therapeutic spaces open to the corridor shall be in accordance with all of the following criteria:</p> <ol style="list-style-type: none"> 1. The walls and ceilings of the space are constructed as required for corridors. 2. The spaces are not occupied as resident sleeping rooms, treatment rooms, incidental uses in accordance with Section 509, or hazardous uses. 3. The open space is protected by an automatic fire detection system installed in accordance with Section 907. 4. In Group I-1, Condition 1, the corridors onto which the spaces open are protected by an automatic fire detection system installed in accordance with Section 907, or the spaces are equipped throughout with quick-response sprinklers in accordance with Section 903.3.2. 5. In Group I-1, Condition 2, the corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system installed in accordance with Section 907, or the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2. 6. The space is arranged so as not to obstruct access to the required exits. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>420.8 Group I-1 cooking facilities. In Group I-1 occupancies, rooms or spaces that contain a cooking facilities facility with domestic cooking appliances shall be in accordance with be permitted to be open to the corridor where all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. In Group I-1, Condition 1 occupancies, the number of care recipients served by one cooking facility shall not be greater than 30. 2. In Group I-1, Condition 2 occupancies, the number of care recipients served by one cooking facility and within the same smoke compartment shall not be greater than 30. 3. The types of domestic cooking appliances permitted shall be limited to ovens, cooktops, ranges, warmers and microwaves. 4-3. The space containing the domestic cooking facilities shall be arranged so as not to obstruct access to the required exit. 4. The cooking appliances shall comply with Section 420.9. 5. Domestic cooking hoods installed and constructed in accordance with Section 505 of the International Mechanical Code shall be provided over cooktops or ranges. 6. Cooktops and ranges shall be protected in accordance with Section 904.14. 7. A shutoff for the fuel and electrical supply to the cooking equipment shall be provided in a location that is accessible only to staff. 8. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes. 9. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906 and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>420.8.1 Cooking facilities open to the corridor. Cooking facilities located in a room or space open to a corridor, aisle or common space shall comply with Section 420.8. Removed</p>		
	<p>420.9 Domestic cooking appliances. In Group I-1 occupancies, installation of cooking appliance used in domestic cooking facilities shall comply with all of the following:</p> <ol style="list-style-type: none"> 1. The types of cooking appliances permitted shall be limited to ovens, cooktops, ranges, warmers and microwaves. 		<p>Additional requirements in I-1 occupancies for cooking appliances.</p>

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	<p><u>2. Domestic cooking hoods installed and constructed in accordance with Section 505 of the <i>International Mechanical Code</i> shall be provided over cooktops or ranges.</u></p> <p><u>3. Cooktops and ranges shall be protected in accordance with Section 904.14.</u></p> <p><u>4. A shutoff for the fuel and electrical supply to the cooking equipment shall be provided in a location to which only staff has access.</u></p> <p><u>5. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.</u></p> <p><u>6. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906 and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance.</u></p> <p>Exceptions:</p> <p><u>1. Cooking facilities provided within care recipients' individual <i>dwelling units</i> are not required to comply with this section.</u></p> <p><u>2. Cooktops and ranges used for care-recipient training or nutritional counseling are not required to comply with Item 3 of this section.</u></p>		
	<p>420.9 420.10 Group R cooking facilities. In Group R occupancies, cooking appliances used for domestic cooking operations shall be in accordance with Section 917.2 of the International Mechanical Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>420.10 420.11 Group R-2 dormitory cooking facilities. Domestic cooking appliances for use by residents of Group R-2 college dormitories shall be in accordance with Sections 420.10.1 and 420.10.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>420.10.1 420.11.1 Cooking appliances. Where located in Group R-2 college dormitories, domestic cooking appliances for use by residents shall be in compliance with all of the following:</p> <ol style="list-style-type: none"> 1. The types of domestic cooking appliances shall be limited to ovens, cooktops, ranges, warmers, coffee makers and microwaves. 2. Domestic cooking appliances shall be limited to approved locations. 3. Cooktops and ranges shall be protected in accordance with Section 904.13. 4. Cooktops and ranges shall be provided with a domestic cooking hood installed and constructed in 		<p>Additional requirements for cooking appliances in R2 occupancies.</p>

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	accordance with Section 505 of the International Mechanical Code.		
	420.10.2 420.11.2 Cooking appliances in sleeping rooms. Cooktops, ranges and ovens shall not be installed or used in sleeping rooms.		Edits made to clarify code, no major changes to code requirements.
	SECTION 421 HYDROGEN FUEL GAS ROOMS		
	[F] 421.2 Definitions. The following terms are defined in Chapter 2: GASEOUS HYDROGEN SYSTEM. HYDROGEN FUEL GAS ROOM.		
	[F] 421.3 421.2 Location.		
	[F] 421.4 421.3 Design and construction.		
	[F] 421.4.1 421.3.1 Pressure control.		
	[F] 421.4.2 421.3.2 Windows.		
	[F] 421.5 421.4 Exhaust ventilation. Hydrogen fuel gas rooms shall be provided with mechanical exhaust ventilation in accordance with the applicable provisions of Section 502.16.1 of the International Mechanical Code.	[F] 421.4 Exhaust ventilation. Hydrogen fuel gas rooms shall be provided with mechanical exhaust ventilation in accordance with the applicable provisions of Section 502.16.1 of the <i>International Mechanical Code</i> and Section 2307.1 of the <i>Fire Code</i> .	No change to Houston amendment.
[F] 421.5 Exhaust ventilation. Hydrogen fuel gas rooms shall be provided with mechanical exhaust ventilation in accordance with the applicable provisions of Section 502.16.1 of the <i>International Mechanical Code</i> and Section 2307.1 of the <i>Fire Code</i> . Now 421.4	[F] 421.6 421.5 Gas detection system. Hydrogen fuel gas rooms shall be provided with an approved flammable gas detection system in accordance that complies with Sections 421.6.1 421.5.1 through 421.6.4, 421.5.2, and 916.		Edits made to clarify code, no major changes to code requirements.
	[F] 421.6.1 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 flammability limit (LFL) for the gas or mixtures present at their anticipated temperature and pressure.		

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	[F] 421.6.2 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.		
	[F] 421.6.3 421.5.1 Operation System activation. Activation of the a gas detection system alarm shall result in all 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.		Edits made to clarify code, no major changes to code requirements.
	[F] 421.6.4 421.5.2 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.		Edits made to clarify code, no major changes to code requirements.
[F] 422.6 Electrical systems. In ambulatory care facilities, the essential electrical system for electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of Chapter 27 and NFPA 99.	[F] 421.7 421.6 Explosion control. Explosion control shall be provided where required by Section 414.5.1.		Edits made to clarify code, no major changes to code requirements. Houston amendment removed, now covered in base code section.
	[F] 421.8 421.7 Standby power.		
	SECTION 422 AMBULATORY CARE FACILITIES 422.1 General. Occupancies classified as ambulatory care facilities shall comply with the provisions of Sections 422.1 through 422.5 422.6 and other applicable provisions of this code.		Edits made to clarify code, no major changes to code requirements.
	422.2 Separation. Ambulatory care facilities where the potential for four or more care recipients are to be incapable of self-preservation at any time, whether rendered incapable by staff or staff accepted responsibility for a care recipient already incapable, shall be separated from adjacent spaces, corridors or tenants with a fire partition installed in accordance with Section 708.		Edits made to clarify code, no major changes to code requirements.

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	<p>422.3 Smoke compartments. Where the aggregate area of one or more ambulatory care facilities is greater than 10,000 square feet (929 m²) on one story, the story shall be provided with a smoke barrier to subdivide the story into not fewer than two smoke compartments. The area of any one such smoke compartment shall be not greater than 22,500 square feet (2092 m²). The distance of travel from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709 with the exception that smoke barriers shall be continuous from outside wall to an outside wall, a floor to a floor, or from a smoke barrier to a smoke barrier or a combination thereof.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>422.3.1 Means of egress. Where ambulatory care facilities require smoke compartmentation in accordance with Section 422.3, the fire safety evacuation plans provided in accordance with Section 1001.4-1002.2 shall identify the building components necessary to support a defend-in-place emergency response in accordance with Sections 404 and 408-403 and 404 of the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 422.6 Electrical systems. In ambulatory care facilities, the essential electrical system for electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of Chapter 27 and NFPA 99.</p>		<p>New essential electronic system reference</p>
	<p>422.7 Domestic cooking. Installation of cooking appliances used in domestic cooking facilities shall comply with all of the following:</p> <ol style="list-style-type: none"> 1. The types of cooking appliances permitted are limited to ovens, cooktops, ranges, warmers and microwaves. 2. Domestic cooking hoods installed and constructed in accordance with Section 505 of the <i>International Mechanical Code</i> shall be provided over cooktops and ranges. 3. A shutoff for the fuel and electrical supply to the cooking equipment shall be provided in a location to which only staff has access. 4. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes. 5. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906 and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance. 		<p>Cooking appliance requirements</p>
	<p style="text-align: center;">SECTION 423 STORM SHELTERS</p> <p>423.1 General. In addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>500. This section applies to the construction of storm shelters constructed as separate detached buildings or constructed as rooms or spaces within buildings for the purpose of providing protection from storms that produce high winds, such as tornadoes and hurricanes, during the storm. Such structures shall be designated to be hurricane shelters, tornado shelters, or combined hurricane and tornado shelters. This section specifies where <i>storm shelters</i> are required and provides requirements for the design and construction of <i>storm shelters</i>. Design of facilities for use as emergency shelters after the storm are outside the scope of ICC 500 and shall comply with Table 1604.5 as a <i>Risk Category IV Structure</i>.</p>		
	<p>423.1.1 Scope. This section applies to the construction of storm shelters constructed as separate detached buildings or constructed as safe rooms within buildings for the purpose of providing safe refuge from storms that produce high winds, such as tornadoes and hurricanes. Such structures shall be designated to be hurricane shelters, tornado shelters, or combined hurricane and tornado shelters.</p>		
	<p>423.2 Definitions. The following terms are defined in Chapter 2: STORM SHELTER. Community storm shelter. Residential storm shelter.</p>		
	<p>423.2 Construction. In addition to other applicable requirements in this code, <i>Storm shelters</i> shall be constructed in accordance with this code and ICC 500 and shall be designated as hurricane shelters, tornado shelters, or combined hurricane and tornado shelters. Buildings or structures that are also designated as emergency shelters shall also comply with Table 1604.5 as <i>Risk Category IV</i> structures. <u>Any <i>storm shelter</i> not required by this section shall be permitted to be constructed, provided that such structures meet the requirements of this code and ICC 500.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>423.3 Occupancy classification. The occupancy classification for a <i>storm shelter</i> shall be determined in accordance with this section.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>423.3.1 Dedicated storm shelters. A facility designed to be occupied solely as a <i>storm shelter</i> shall be classified as Group A-3 for the determination of requirements other than those covered in ICC 500.</u> Exceptions:</p>		<p>Occupancy classification of storm shelters</p>

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	<p><u>1. The occupancy category for dedicated storm shelters with an occupant load of fewer than 50 persons as determined in accordance with ICC 500 shall be in accordance with Section 303.</u></p> <p><u>2. The occupancy category for a dedicated residential storm shelter shall be the Group R occupancy served.</u></p>		
	<p>423.3.2 Storm shelters within host buildings. Where designated storm shelters are constructed as a room or space within a host building that will normally be occupied for other purposes, the requirements of this code for the occupancy of the building, or the individual rooms or spaces thereof, shall apply unless otherwise required by ICC 500.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>423.3 423.4 Critical emergency operations. In areas where the shelter design wind speed for tornados in accordance with Figure 304.2(1) of ICC 500 is 250 MPH mph, 911 call stations, emergency operation centers and fire, rescue, ambulance and police stations shall have comply with Table 1604.5 as a Risk Category IV structure and shall be provided with a storm shelter constructed in accordance with ICC 500.</p> <p>Exception: Buildings meeting the requirements for shelter design in ICC 500.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>423.4 423.5 Group E occupancies. In areas where the shelter design wind speed for tornados is 250 MPH mph in accordance with Figure 304.2(1) of ICC 500, all Group E occupancies with an aggregate occupant load of 50 or more shall have a storm shelter constructed in accordance with ICC 500. The shelter shall be capable of housing the total occupant load of the Group E occupancy.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Group E day care facilities. 2. Group E occupancies accessory to places of religious worship. 3. Buildings meeting the requirements for shelter design in ICC 500. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>423.4.1 423.5.1 Required occupant capacity. The required occupant capacity of the storm shelter shall include all of the buildings on the site and shall be the greater of the following:</p> <ol style="list-style-type: none"> 1. The total occupant load of the classrooms, vocational rooms and offices in the Group E occupancy. 2. The occupant load of the largest indoor assembly space that is associated with the Group E occupancy. 		<p>Occupant capacity requirements for storm shelters</p>

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	<p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where a new building is being added on an existing Group E site, and where the new building is not of sufficient size to accommodate the required occupant capacity of the <i>storm shelter</i> for all of the buildings on the site, the storm shelter shall at a minimum accommodate the required occupant capacity for the new building. 2. Where approved by the <i>building official</i>, the required occupant capacity of the shelter shall be permitted to be reduced by the occupant capacity of any existing <i>storm shelters</i> on the site. 		
	<p>423.4.2 423.5.2 Location. Storm shelters shall be located within the buildings they serve or shall be located where the maximum distance of travel from not fewer than one exterior door of each building to a door of the shelter serving that building does not exceed 1,000 feet (305 m).</p>		<p>Location requirements for storm shelters</p>
	<p style="text-align: center;">SECTION 424 Children's PLAY STRUCTURES</p> <p>424.1 Children's play structures General. Children's Play structures installed inside all occupancies covered by this code that exceed 10 feet (3048 mm) in height and or 150 square feet (14 m²) in area shall comply with Sections 424.2 through 424.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>424.2 Materials. Children's Play structures shall be constructed of noncombustible materials or of combustible materials that comply with the following:</p> <ol style="list-style-type: none"> 1. Fire-retardant-treated wood complying with Section 2303.2. 2. Light-transmitting plastics complying with Section 2606. 3. Foam plastics (including the pipe foam used in soft-contained play equipment structures) having a maximum heat-release rate not greater than 100 kilowatts when tested in accordance with UL 1975 or when tested in accordance with NFPA 289, using the 20 kW ignition source. 4. Aluminum composite material (ACM) meeting the requirements of Class A interior finish in accordance with Chapter 8 when tested as an assembly in the maximum thickness intended for use. 5. Textiles and films complying with the fire propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701. 6. Plastic materials used to construct rigid components of soft-contained play equipment structures (such as tubes, windows, panels, junction boxes, pipes, slides and decks) exhibiting a peak rate of heat release not exceeding 400 kW/ m² when 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m² in the horizontal orientation at a thickness of 6 mm.</p> <p>7. Ball pool balls, used in soft-contained play equipment structures, having a maximum heat-release rate not greater than 100 kilowatts when tested in accordance with UL 1975 or when tested in accordance with NFPA 289, using the 20 kW ignition source. The minimum specimen test size shall be 36 inches by 36 inches (914 mm by 914 mm) by an average of 21 inches (533 mm) deep, and the balls shall be held in a box constructed of galvanized steel poultry netting wire mesh.</p> <p>8. Foam plastics shall be covered by a fabric, coating or film meeting the fire propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.</p> <p>9. The floor covering placed under the children's play structure shall exhibit a Class I interior floor finish classification, as described in Section 804, when tested in accordance with ASTM E648 or NFPA 253.</p>		
	<p>[F] 424.3 Fire protection. Play structures shall be provided with the same level of <i>approved</i> fire suppression and detection devices required for other structures in the same occupancy.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>424.4 Separation. Play structures shall have a horizontal separation from building walls, partitions and from elements of the <i>means of egress</i> of not less than 5 feet (1524 mm). Children's playground Play structures shall have a horizontal separation from other children's <i>play structures</i> of not less than 20 feet (6090 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>424.5 Area limits. Play structures shall be not greater than 300 600 square feet (28 56 m²) in area, unless a special investigation, acceptable to the <i>building official</i>, has demonstrated adequate fire safety.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>424.5.1 Design. Play structures exceeding 600 square feet (56 m²) in area or 10 feet (3048 mm) in height shall be designed in accordance with Chapter 16.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 425 HYPERBARIC FACILITIES</p>		
	<p style="text-align: center;">SECTION [F] 426 COMBUSTIBLE DUSTS, GRAIN PROCESSING AND STORAGE</p> <p>[F] 426.1 Combustible dusts, grain processing and storage General. The provisions of Sections 426.1.1 through 426.1.7 shall</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>apply to buildings in which materials that produce <i>combustible dusts</i> are stored and handled. Buildings that store or handle <i>combustible dusts</i> shall comply with <u>the applicable provisions of the <i>International Fire Code</i>. Where required by the fire code official, NFPA 652 and the applicable provisions of NFPA 61, NFPA 85, NFPA 120, NFPA 484, NFPA 654, NFPA 655 and NFPA 664 and the International Fire Code shall apply.</u></p>		
	<p>[F] 426.1.7 Tire rebuilding. Buffing operations shall be located in a room separated from the remainder of the building housing the tire rebuilding or tire recapping operation by a 1-hour fire barrier.</p> <p>Exception: Buffing operations are not required to be separated where all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. Buffing operations are equipped with an approved continuous automatic water-spray system directed at the point of cutting action; 2. Buffing machines are connected to particle-collecting systems providing a minimum air movement of 1,500 cubic feet per minute (cfm) (0.71 m³/s) in volume and 4,500 feet per minute (fpm) (23 m/s) in-line velocity; and 3. The collecting system shall discharge the rubber particles to an approved outdoor noncombustible or fire-resistant container, which is emptied at frequent intervals to prevent overflow. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>SECTION 427 REUSE OF BUILDING MATERIALS</p> <p>427.1 Reuse of building materials. Reuse of building materials shall be allowed in accordance with Appendix R.</p> <p>Moved to 429</p>	<p>SECTION 427 MEDICAL GAS SYSTEMS</p> <p>[F] 427.1 General. Medical gases at health care-related facilities intended for patient or veterinary care shall comply with Sections 427.2 through 427.2.3 in addition to requirements of Chapter 53 of the International Fire Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 427.2 Interior supply location. Medical gases shall be 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 permitted amount are located inside the buildings, they shall be located in a 1-hour exterior room, 1-hour interior room or a gas cabinet in accordance with Section 427.2.1, 427.2.2 or 427.2.3, 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 Tables 307.1(1) and 307.1(2) shall be in accordance with Group H occupancies.</p>		<p>Gas supply requirements</p>
	<p>[F] 427.2.1 One-hour exterior room. 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 or horizontal assemblies constructed in accordance with Section 711, or both, with a</p>		<p>Gas supply requirements</p>

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	<p>fire-resistance rating 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 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 vents. Each vent shall have a minimum free air opening of not less than 36 square inches (232 cm²) for each 1,000 cubic feet (28 m³) at normal temperature and pressure (NTP) of gas stored in the room and shall be not less than 72 square inches (465 cm²) 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 fewer than one automatic fire sprinkler to provide container cooling in case of fire.</p>		
	<p>[F] 427.2.2 One-hour interior room. Where an <i>exterior wall</i> cannot be provided for the room, a 1-hour interior room or enclosure 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 or <i>horizontal assemblies</i> constructed in accordance with Section 711, 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 <i>self-closing</i> smoke- and draft-control assemblies having a <i>fire protection rating</i> of not less than 1 hour. An <i>automatic sprinkler system</i> 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 <i>shaft enclosure</i> from the room to the exterior. Approved mechanical <i>ventilation</i> shall comply with the <i>International Mechanical Code</i> and be provided with a minimum rate of 1 cubic foot per minute per square foot (0.00508 m³/s/m²) of the area of the room.</p>		<p>Gas supply requirements</p>
	<p>[F] 427.2.3 Gas cabinets. Gas cabinets shall be constructed in accordance with Section 5003.8.6 of the International Fire Code and shall comply with the following:</p> <ol style="list-style-type: none"> 1. Cabinets shall be exhausted to the exterior through a dedicated exhaust duct system installed in accordance with Chapter 5 of the International Mechanical Code. 2. Supply and exhaust ducts shall be enclosed in a 1-hour rated shaft enclosure from the 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 (1.02m/s) with a minimum of 150 feet per minute (0.76 m/s) at any point of the access port or window. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Cabinets shall be provided with an automatic sprinkler system internal to the cabinet.</p>		
<p>SECTION 428 ENERGY SYSTEMS</p> <p>428.1 General. Energy systems shall be installed in accordance with NFPA 70, 111, and 855 and the most restrictive provisions specified in the most current edition of the <i>International Codes</i>.</p> <p>Moved to 430</p>	<p>SECTION 428 HIGHER EDUCATION LABORATORIES</p> <p>[F] 428.1 Scope. Higher education laboratories complying with the requirements of Sections 428.1 through 428.4 shall be permitted to exceed the maximum allowable quantities of hazardous materials in control areas set forth in Tables 307.1(1) and [F] 307.1(2) without requiring classification as a Group H occupancy. Except as specified in Section 428, such laboratories shall comply with all applicable provisions of this code and the International Fire Code.</p>		<p>Provisions for IBC to meet NFPA 45 style design requirements.</p>
	<p>[F] 428.2 Application. The provisions of Section 428 shall be applied as exceptions or additions to applicable requirements of this code. Unless specifically modified by Section 428, the storage, use and handling of hazardous materials shall comply with all other provisions in Chapters 38 and 50 through 67 of the International Fire Code and this code for quantities not exceeding the maximum allowable quantity.</p>		<p>Provisions for IBC to meet NFPA 45 style design requirements.</p>
	<p>[F] 428.3 Laboratory suite construction. Where laboratory suites are provided, they shall be constructed in accordance with this section and Chapter 38 of the International Fire Code. The number of laboratory suites and percentage of maximum allowable quantities of hazardous materials in laboratory suites shall be in accordance with Table 428.3.</p>		<p>Provisions for IBC to meet NFPA 45 style design requirements.</p>
	<p>[F] TABLE 428.3 DESIGN AND NUMBER OF LABORATORY SUITES PER FLOOR</p>		<p>Provisions for IBC to meet NFPA 45 style design requirements.</p>
	<p>[F] 428.3.1 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:</p> <p>1. Fire barriers and horizontal assemblies as required in Table 428.3. Fire barriers shall be constructed in accordance with Section 707 and horizontal assemblies constructed in accordance with Section 711.</p> <p>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 this code.</p>		<p>Provisions for IBC to meet NFPA 45 style design requirements.</p>

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	2. Separations as required by Section 508.		
	[F] 428.3.2 Separation from other laboratory suites. Laboratory suites shall be separated from other laboratory suites in accordance with Table 428.3.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.3.3 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 the laboratory suites and the construction supporting the floor of the laboratory suites are allowed 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.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.3.4 Maximum number. The maximum number of laboratory suites shall be in accordance with Table 428.3. 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 428.3.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.3.5 Means of egress. Means of egress shall be in accordance with Chapter 10.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.3.6 Standby or emergency power. Standby or emergency power shall be provided in accordance with Section 414.5.2 where laboratory suites are located above the sixth story above grade plane or located in a story below grade plane.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.3.7 Ventilation. Ventilation shall be in accordance with Chapter 7 of NFPA 45, and the International Mechanical Code.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.3.8 Liquid-tight floor. Portions of laboratory suites where hazardous materials are present shall be provided with a liquid-tight floor.		Provisions for IBC to meet NFPA 45 style design requirements.

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	[F] 428.3.9 Automatic fire extinguishing sprinkler systems. Buildings containing laboratory suites shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.		Provisions for IBC to meet NFPA 45 style design requirements.
	[F] 428.4 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 428.3.		Provisions for IBC to meet NFPA 45 style design requirements.
<p align="center">SECTION 429 MOBILE FOOD UNITS AND OTHER MOBILE FOOD PREPARATION VEHICLES</p> <p><u>429.1 General.</u> Mobile food units, and other mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors shall comply with Section 319 of the <i>Fire Code</i> or appropriate provisions of Chapter 20, Article II, of the <i>City Code</i>, whichever is more restrictive.</p> <p>Moved to 431</p>		<p align="center">SECTION 429 REUSE OF BUILDING MATERIALS</p> <p><u>429.1 Reuse of building materials.</u> Reuse of building materials shall be allowed in accordance with Appendix R.</p>	No change to Houston amendment.
		<p align="center">SECTION 430 ENERGY SYSTEMS</p> <p><u>430.1 General.</u> Energy systems shall be installed in accordance with NFPA 70, 111, and 855 and the most restrictive provisions specified in the most current edition of the <i>International Codes</i>.</p>	No change to Houston amendment.
		<p align="center">SECTION 431 MOBILE FOOD UNITS AND OTHER MOBILE FOOD PREPARATION VEHICLES</p> <p><u>431.1 General.</u> Mobile food units, and other mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors shall comply with Section 319 of the <i>Fire Code</i> or appropriate provisions of Chapter 20, Article II, of the <i>City Code</i>, whichever is more restrictive.</p>	No change to Houston amendment.
<p>2015 Houston IBC – Chapter 5 General Building Heights and Areas</p>	<p>2021 IBC – Chapter 5 General Building Heights and Areas</p>	<p>2021 Houston Amendments – Chapter 5 General Building Heights and Areas</p>	<p>Code Analysis</p>
	<p>SECTION 501 GENERAL</p>	<p>SECTION 501 BUILDING ADDRESS</p>	
[F] 501.2 Identifying number. Address identification. New and existing buildings and occupancies there under construction shall be provided with <i>approved</i> address identification identifying numbers. The address identification identifying numbers shall be legible and placed in a position that is visible from the street or road	[F] 501.2 Address identification. New and existing buildings 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	[F] 502.1 Identifying number. Address identification. New and existing buildings and occupancies there under construction shall be provided with <i>approved</i> address identification identifying numbers. The address identification identifying numbers shall be legible and placed in a position that is visible from the street or road	No change to Houston amendment.

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<p>fronting the property. Address identification characters Identifying numbers shall contrast with their background. Address Identifying numbers shall be Arabic numerals numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (101.6 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification identifying numbers shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure. Address identification Property owners shall maintain identifying numbers in good repair for visibility be maintained.</p> <p>All new and existing buildings are required to be numbered as provided in Chapter 10, Article V, of the <i>City Code</i>.</p>	<p>shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure. Address identification shall be maintained.</p>	<p>fronting the property. Address identification characters Identifying numbers shall contrast with their background. Address Identifying numbers shall be Arabic numerals numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification identifying numbers shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure. Address identification Property owners shall maintain identifying numbers in good repair for visibility be maintained.</p> <p>All new and existing buildings are required to be numbered as provided in Chapter 10, Article V, of the <i>City Code</i>.</p>	
	<p style="text-align: center;">SECTION 502 Definitions-BUILDING ADDRESS</p> <p>502.1 Definitions. The following terms are defined in Chapter 2:</p> <p>AREA, BUILDING.</p> <p>BASEMENT.</p> <p>EQUIPMENT PLATFORM.</p> <p>GRADE PLANE.</p> <p>HEIGHT, BUILDING.</p> <p>MEZZANINE.</p> <p>[F] 502.1 Address identification. New and existing buildings shall be provided with approved 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 a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure. Address identification shall be maintained.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p align="center">SECTION 503</p> <p align="center">GENERAL BUILDING HEIGHT AND AREA LIMITATIONS</p> <p>503.1 General. Unless otherwise specifically modified in Chapter 4 and this chapter, building height, number of stories and building area shall not exceed the limits specified in Sections 504 and 506 based on the type of construction as determined by Section 602 and the occupancies as determined by Section 302 except as modified hereafter. Building height, number of stories and building area provisions shall be applied independently. For the purposes of determining area limitations, height limitations and type of construction, each portion of a building separated by one or more fire walls complying with Section 706 shall be considered to be a separate building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>503.1.4 Occupied roofs. A roof level or portion thereof shall be permitted to be used as an occupied roof provided the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the <i>story</i> immediately below the roof. The area of the occupied roofs shall not be included in the <i>building area</i> as regulated by Section 506. An occupied roof shall not be included in the <i>building height</i> or number of <i>stories</i> as regulated by Section 504, provided that the <i>penthouses</i> and other enclosed <i>rooftop structures</i> comply with Section 1511.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> The occupancy located on an occupied roof shall not be limited to the occupancies allowed on the <i>store</i> immediately below the roof where the building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Section 907.5 Sections 907.5.2.1 and 907.5.2.3 is provided in the area of the occupied roof. Emergency voice/alarm communication system notification per Section 907.5.2.2 shall also be provided in the area of the occupied roof where such system is required elsewhere in the building. Assembly occupancies shall be permitted on roofs of open parking spaces of Type I or Type II construction, in accordance with the exception to Section 903.2.1.6. 		<p>New requirements for occupied roofs</p>
	<p>503.1.4.1 Enclosures over occupied roof areas. Elements or structures enclosing the occupied roof areas shall not extend more than 48 inches (1220 mm) above the surface of the occupied roof.</p> <p>Exception: Penthouses constructed in accordance with Section 1510.2 and towers, domes, spires and cupolas</p>		<p>New requirements for occupied roofs</p>

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	constructed in accordance with Section 1510.5.		
	SECTION 504 BUILDING HEIGHT AND NUMBER OF STORIES		
	<p>504.3 Height in feet. The maximum height, in feet, of a building shall not exceed the limits specified in Table 504.3.</p> <p>Exception: Towers, spires, steeples and other roof structures shall be constructed of materials consistent with the required type of construction of the building except where other construction is permitted by Section 1510.2.5 1510.2.4. Such structures shall not be used for habitation or storage. The structures shall be unlimited in height where of noncombustible materials and shall not extend more than 20 feet (6096 mm) above the allowable building height where of combustible materials (see Chapter 15 for additional requirements).</p>		Edits made to clarify code, no major changes to code requirements.
	TABLE 504.3^a ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE^a		Edits made to clarify code, no major changes to code requirements.
	<p>504.4 Number of stories. The maximum number of stories above grade plane of a building shall not exceed the limits specified in Table 504.4.</p>		Edits made to clarify code, no major changes to code requirements.
	TABLE 504.4^{a,b} ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE^{a,b}		Edits made to clarify code, no major changes to code requirements.
	SECTION 505 MEZZANINES AND EQUIPMENT PLATFORMS		
	<p>505.2.1 Area limitation. The aggregate area of a mezzanine or mezzanines within a room shall be not greater than one-third of the floor area of that room or space in which they are located. The enclosed portion of a room shall not be included in a determination of the floor area of the room in which the mezzanine is located. In determining</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>the allowable mezzanine area, the area of the mezzanine shall not be included in the floor area of the room.</p> <p>Where a room contains both a mezzanine and an equipment platform, the aggregate area of the two raised floor levels shall be not greater than two-thirds of the floor area of that room or space in which they are located.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The aggregate area of mezzanines in buildings and structures of Type I or II construction for special industrial occupancies in accordance with Section 503.1.1 shall be not greater than two-thirds of the floor area of the room. 2. The aggregate area of mezzanines in buildings and structures of Type I or II construction shall be not greater than one-half of the floor area of the room in buildings and structures equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 and an approved emergency voice/alarm communication system in accordance with Section 907.5.2.2. 3. The aggregate area of a mezzanine within a dwelling unit that is located in a building equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 shall not be greater than one-half of the floor area of the room, provided that: <ol style="list-style-type: none"> 3.1. Except for enclosed closets and bathrooms, the mezzanine shall be open to the room in which such mezzanine is located; 3.2. The opening to the room shall be unobstructed except for walls not more than 42 inches (1067 mm) in height, columns and posts; and 3.3. Exceptions to Section 505.2.3 shall not be permitted. 		
	<p>505.2.1.1 Aggregate area of mezzanines and equipment platforms. Where a room contains both a mezzanine and an equipment platform, the aggregate area of the two raised floor levels shall be not greater than two-thirds of the floor area of</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p style="background-color: magenta;">that room or space in which they are located. The area of the mezzanine shall not exceed the area determined in accordance with Section 505.2.1.</p>		
	<p>505.2.3 Openness. A mezzanine shall be open and unobstructed to the room in which such mezzanine is located except for walls not more than 42 inches (1067 mm) in height, columns and posts.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the occupant load of the aggregate area of the enclosed space is not greater than 10. 2. A mezzanine having two or more exits or access to exits is not required to be open to the room in which the mezzanine is located. 3. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the aggregate floor area of the enclosed space is not greater than 10 percent of the mezzanine area. 4. In industrial facilities, mezzanines used for control equipment are permitted to be glazed on all sides. 5. In occupancies other than Groups H and I, that which are no more than two stories above grade plane and equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, a mezzanine having two or more means of egress exits or access to exits shall not be required to be open to the room in which the mezzanine is located. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>505.3.1 Area limitation. The aggregate area of all equipment platforms within a room shall be not greater than two-thirds of the area of the room in which they are located. Where an equipment platform is located in the same room as a mezzanine, the area of the mezzanine shall be determined by Section 505.2.1 and the combined aggregate area of the equipment platforms and mezzanines shall be not greater than two-thirds of the room in which they are located. The area of the mezzanine shall</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>not exceed the area determined in accordance with Section 505.2.1.</p>		
	<p style="text-align: center;">SECTION 506 BUILDING AREA</p>		
	<p>506.2.1 Single-occupancy, one-story buildings. The allowable area of each story of a single-occupancy building with no more than one story above grade plane shall be determined in accordance with Equation 5-1:</p> <p>$A_a = A_t + (NS \times I_f)$ (Equation 5-1)</p> <p>where:</p> <p>A_a = Allowable area (square feet).</p> <p>A_t = Tabular allowable area factor (NS, S1, or S13R or S13D value, as applicable) in accordance with Table 506.2.</p> <p>NS = Tabular allowable area factor in accordance with Table 506.2 for nonsprinklered building (regardless of whether the building is sprinklered).</p> <p>I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.</p> <p>The allowable area per story of a single-occupancy building with a maximum of three stories above grade shall be determined by Equation 5-1. The total allowable area of a single-occupancy building more than three stories above grade plane shall be determined in accordance with Equation 5-2.</p> <p>$A_a = [A_t + (NS \times I_f)] \times S_a$ (Equation 5-2)</p> <p>where:</p> <p>A_a = Allowable area (square feet).</p> <p>A_t = Tabular allowable area factor (NS, S13R, S13D or SM value, as applicable) in accordance with Table 506.2.</p> <p>NS = Tabular allowable area factor in accordance with Table 506.2 for a nonsprinklered building (regardless of whether the building is sprinklered).</p> <p>I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.</p> <p>$S_a = 3$ where the actual number of stories above grade plane exceeds three, or</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><u>$S_a = 4$ where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2.</u></p> <p><u>The actual area of any individual floor shall not exceed the allowable area per Equation 5-1</u></p>		
	<p>506.2.2 Mixed-occupancy, one-story buildings. The allowable area of each story of a mixed-occupancy building with no more than one story above grade plane shall be determined in accordance with the applicable provisions of Section 508.1, based on Equation 5-1 for each applicable occupancy. <u>Section 508.3.2 for nonseparated occupancies and Section 508.4.2 for separated occupancies.</u> For buildings with more than three stories above grade plane, <u>the total building area shall be such that the aggregate sum of the ratios of the actual area of each story divided by the allowable area of such stories, determined in accordance with Equation 5-3 based on the applicable provisions of Section 508.1, shall not exceed three.</u></p> <p>$A_a = [A_t + (NS \times I_r)]$ (Equation 5-3)</p> <p><u>A_a = Allowable area (square feet).</u></p> <p><u>A_t = Tabular allowable area factor (NS, S13R, S13D or SM value, as applicable) in accordance with Table 506.2.</u></p> <p><u>NS = Tabular allowable area factor in accordance with Table 506.2 for a nonsprinklered building, regardless of whether the building is sprinklered.</u></p> <p><u>I_r = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.</u></p> <p><u>Exception: For buildings designed as separated occupancies under Section 508.4 and equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2, the total building area shall be such that the aggregate sum of the ratios of the actual area of each story divided by the allowable area of such stories determined in accordance with Equation 5-3 based on the applicable provisions of Section 508.1, shall not exceed four.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>506.2.3 Single occupancy, multistory buildings. The allowable area of a single occupancy building with more than one story above grade plane shall be determined in accordance with Equation 5-2:</p> <p>where:</p> <p>= Allowable area (square feet).</p>		

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	<p>= Tabular allowable area factor (NS, S13R, S13D or SM value, as applicable) in accordance with Table 506.2.</p> <p>= Tabular allowable area factor in accordance with Table 506.2 for a nonsprinklered building (regardless of whether the building is sprinklered).</p> <p>= Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.</p> <p>= Actual number of building stories above grade plane, not to exceed three. For buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2, use the</p> <p>actual number of building stories above grade plane, not to exceed four.</p> <p style="padding-left: 40px;">No individual story shall exceed the allowable area (A_a) as determined by Equation 5-2 using the value of S_a = 1.</p>		
	<p>506.2.4 Mixed occupancy, multistory buildings. Each story of a mixed occupancy building with more than one story above grade plane shall individually comply with the applicable requirements of Section 508.1. For buildings with more than three stories above grade plane, the total building area shall be such that the aggregate sum of the ratios of the actual area of each story divided by the allowable area of such stories, determined in accordance with Equation 5-3 based on the applicable provisions of Section 508.1, shall not exceed three.</p> <p>(Equation 5-3)</p> <p>where:</p> <p>A_a = Allowable area (square feet).</p> <p>A_t = Tabular allowable area factor (NS, S13R, S13D or SM value, as applicable) in</p> <p>accordance with Table 506.2.</p> <p>NS = Tabular allowable area factor in accordance with Table 506.2 for a</p> <p>nonsprinklered building (regardless of whether the building is sprinklered).</p> <p>I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.</p> <p>Exception: For buildings designed as separated occupancies under Section 508.4 and equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2, the total building area shall be such that the aggregate sum of the</p>		

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	<p>ratios of the actual area of each story divided by the allowable area of such stories</p> <p>determined in accordance with Equation 5-3 based on the applicable provisions of</p> <p>Section 508.1, shall not exceed four.</p>		
	<p style="text-align: center;">TABLE 506.2^{a, b}</p> <p style="text-align: center;">ALLOWABLE AREA FACTOR (A</p> <p style="text-align: center;">t = NS, S1, S13R, S13D or SM, as applicable) IN SQUARE</p> <p style="text-align: center;">FEET^{a, b}</p>		<p style="text-align: center;">Added 13D</p>
	<p>506.3.2 Minimum frontage distance. To qualify for an area factor increase based on frontage, the <i>public way</i> or open space adjacent to the building perimeter shall have a minimum distance (<i>W</i>) of 20 feet (6096 mm) measured at right angles from the building face to any of the following:</p> <ol style="list-style-type: none"> 1. The closest interior lot line. 2. The entire width of a street, alley or <i>public way</i>. 3. The exterior face of an adjacent building on the same property. <p style="background-color: #40E0D0;"><u>The frontage increase shall be based on the smallest <i>public way</i> or open space that is 20 feet (6096 mm) or greater, and the percentage of building perimeter having a minimum 20 feet (6096 mm) <i>public way</i> or open space.</u></p> <p>Where the value of <i>W</i> is greater than 30 feet (9144 mm), a value of 30 feet (9144 mm) shall be used in calculating the building area increase based on frontage, regardless of the actual width of the <i>public way</i> or open space. Where the value of <i>W</i> varies along the perimeter of the building, the calculation performed in accordance with Equation 5-5 shall be based on the weighted average calculated in accordance with Equation 5-4.</p> <p><u>where:</u></p> <p>= Calculated width of <i>public way</i> or open space (feet).</p> <p>= Length of a portion of the exterior perimeter wall.</p> <p>= Width (≥ 20 feet) of a <i>public way</i> or open space associated with that portion of the exterior perimeter wall.</p> <p>= Building perimeter that fronts on a <i>public way</i> or open space having a width of 20 feet (6096 mm) or more.</p> <p>Exception: Where a building meets the requirements of Section 507, as applicable, except for compliance with the minimum 60 foot (18 288 mm) <i>public way</i> or yard requirement, and the value of <i>W</i> is greater than 30 feet</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	(9144 mm), the value of W shall not exceed 60 feet (18 288 mm).		
	<p>506.3.3 Amount of increase. The area factor increase based on frontage shall be determined in accordance with Table 506.3.3. Equation 5-5:</p> <p>where:</p> <ul style="list-style-type: none"> = Area factor increase due to frontage. = Building perimeter that fronts on a public way or open space having minimum distance of 20 feet (6096 mm). = Perimeter of entire building (feet). = Width of public way or open space (feet) in accordance with Section 506.3.2. 		
	<p>506.3.3.1 Section 507 buildings. Where a building meets the requirements of Section 507, as applicable, except for compliance with the minimum 60-foot (18 288 mm) public way or yard requirement, the area factor increase based on frontage shall be determined in accordance with Table 506.3.3.1.</p>		Edits made to clarify code, no major changes to code requirements.
	TABLE 506.3.3		New table for frontage increase.
	TABLE 506.3.3.1		New unlimited area table for frontage
	<p style="text-align: center;">SECTION 507</p> <p style="text-align: center;">UNLIMITED AREA BUILDINGS</p> <p>507.1 General. The area of buildings of the occupancies and configurations specified in Sections 507.1 through 507.12-507.13 shall not be limited. Basements not more than one story below grade plane shall be permitted.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>507.2 Measurement of open spaces. Where Sections 507.3 through 507.13 require buildings to be surrounded and adjoined by public ways and yards, those open spaces shall be determined as follows:</p> <ol style="list-style-type: none"> 1. Yards shall be measured from the building perimeter in all directions to the closest interior lot lines or to the exterior 		

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	<p>face of an opposing building located on the same lot, as applicable.</p> <p>2 Where the building fronts on a public way, the entire width of the public way shall be used.</p>		
	<p>507.3 Nonsprinklered, one-story buildings. The area of a Group F-2 or S-2 building no more than one story in height shall not be limited where the building is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.</p>		
	<p>507.4 Sprinklered, one-story buildings. The area of a Group A-4 building not more than one story above grade plane of other than Type V construction, or the area of a Group B, F, M or S building no more than one story above grade plane of any construction type, shall not be limited where the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Buildings and structures of Type I or II construction for rack storage facilities that do not have access by the public shall not be limited in height, provided that such buildings conform to the requirements of Sections 507.4 and 903.3.1.1 and Chapter 32 of the International Fire Code. 2. The automatic sprinkler system shall not be required in areas occupied for indoor participant sports, such as tennis, skating, swimming and equestrian activities in occupancies in Group A-4, provided that both all of the following criteria are met: <ol style="list-style-type: none"> 2.1. Exit doors directly to the outside are provided for occupants of the participant sports areas. 2.2. The building is equipped with a fire alarm system with manual fire alarm boxes installed in accordance with Section 907. 2.3. An automatic sprinkler system is provided in storage rooms, press boxes, concession booths or other spaces ancillary to the sport activity space. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>507.5 Two-story buildings. The area of a Group B, F, M or S building no more than two stories above grade plane shall not be limited where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.</p>		

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	<p>507.6 Group A-3 buildings of Type II construction. The area of a Group A-3 building no more than one story above grade plane, used as a place of religious worship, community hall, dance hall, exhibition hall, gymnasium, lecture hall, indoor swimming pool or tennis court of Type II construction, shall not be limited provided all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. The building shall not have a stage other than a platform. 2. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 3. The building shall be surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>507.7 Group A-3 buildings of Type III and IV construction. The area of a Group A-3 building of Type III or IV construction, with no more than one story above grade plane and used as a place of religious worship, community hall, dance hall, exhibition hall, gymnasium, lecture hall, indoor swimming pool or tennis court, shall not be limited provided all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. The building shall not have a stage other than a platform. 2. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 3. The assembly floor shall be located at or within 21 inches (533 mm) of street or grade level and all exits are provided with ramps complying with Section 1012 to the street or grade level. 4. The building shall be surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>507.8.1.1.1 Liquid use, dispensing and mixing rooms and Rooms for flammable or combustible liquid use, dispensing or mixing in open system. Liquid use, dispensing and mixing rooms and Rooms for flammable or combustible liquid use, dispensing or mixing in open systems having a floor area of not more than 500 square feet (46.5 m²) need not be located on the outer perimeter of the building where they are in accordance with the <i>International Fire Code</i> and NFPA 30.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>507.8.1.1.2 Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems. Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems having a floor area of not more than 1,000 square feet (93 m²) need not be located on the outer perimeter where they are in accordance with the <i>International Fire Code</i> and NFPA 30.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>507.9 Unlimited mixed occupancy buildings with Group H-5. The area of a Group B, F, H-5, M or S building no more than two stories above grade plane shall not be limited where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width, provided all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. Buildings containing Group H-5 occupancy shall be of Type I or II construction. 2. Each area used for Group H-5 occupancy shall be separated from other occupancies as required in Sections 415.11 and 508.4. 3. Each area used for Group H-5 occupancy shall not exceed the maximum allowable area permitted for such occupancies in Section 503.1 including modifications of Section 506. <p style="padding-left: 40px;">Exception: Where the Group H-5 occupancy exceeds the maximum allowable area, the Group H-5 shall be subdivided into areas that are separated by 2-hour fire barriers.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>507.10 Aircraft paint hangar. The area of a Group H-2 aircraft paint hangar no more than one story above grade plane shall not be limited where such aircraft paint hangar complies with the provisions of Section 412.6 412.5 and is surrounded and adjoined by public ways or yards not less in width than one and one-half times the building height.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>507.11 Group E buildings. The area of a Group E building no more than one story above grade plane, of Type II, IIIA or IV construction, shall not be limited provided all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. Each classroom shall have not less than two means of egress, with one of the means of egress being a direct exit to the outside of the building complying with Section 1022. 2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 3. The building is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 508 MIXED USE AND OCCUPANCY</p> <p>508.1 General. Each portion of a building shall be individually classified in accordance with Section 302.1. Where a building contains more than one occupancy group, the building or portion thereof shall comply with the applicable provisions of Section 508.2, 508.3, or 508.4 or 508.5, or a combination of these sections.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Exceptions:</p> <ol style="list-style-type: none"> Occupancies separated in accordance with Section 510. Where required by Table 415.6.5, areas of Group H-1, H-2 and H-3 occupancies shall be located in a <i>detached building</i> or structure. Uses within live/work units, complying with Section 419, are not considered separate occupancies. 		
	<p>508.3.1 Occupancy classification. Nonseparated occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space. In addition, the most restrictive provisions of Chapter 9 that apply to the nonseparated occupancies shall apply to the total nonseparated occupancy area. Where nonseparated occupancies occur in a high-rise building, the most restrictive requirements of Section 403 that apply to the nonseparated occupancies shall apply throughout the high-rise building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>508.3.1.1 High-rise buildings. Where nonseparated occupancies occur in a high-rise building, the most restrictive requirements of Section 403 that apply to the nonseparated occupancies shall apply throughout the high-rise building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>508.3.1.2 Group I-2, Condition 2 occupancies. Where one of the nonseparated occupancies is Group I-2, Condition 2, the most restrictive requirements of Sections 407, 509 and 712 shall apply throughout the fire area containing the Group I-2 occupancy. The most restrictive requirements of Chapter 10 shall apply to the path of egress from the Group I-2, Condition 2 occupancy up to and including the exit discharge.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>508.3.2 Allowable building area and, height and number of stories. The allowable building area and, height and number of stories of the building or portion thereof shall be based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building in accordance with Section 503.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>508.4.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code based on the occupancy classification of that portion of the building. The most restrictive provisions of Chapter 9 that apply to the separate occupancies shall</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>apply to the total nonfire-barrier-separated occupancy areas. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring a fire protection system shall also comply with Section 901.7.</p>		
	<p>508.4.3 Allowable building height and number of stories. Each separated occupancy shall comply with the building height limitations and story limitations based on the type of construction of the building in accordance with Section 503.1.</p> <p>Exception: Special provisions of Section 510 shall permit occupancies at building heights and number of stories other than provided in Section 503.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>508.4.4.1 Construction. Required separations shall be fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, so as to completely separate adjacent occupancies. <u>Mass timber elements serving as fire barriers or horizontal assemblies to separate occupancies in Type IV-B or IV-C construction shall be separated from the interior of the building with an approved thermal barrier consisting of gypsum board that is not less than 1/2 inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.</u></p>		<p>Additional Mass Timber separation requirements.</p>
	<p>419.1 508.5 General. Live/work units.</p>		
	<p>419.1.4 508.5.1 Limitations.</p>		
	<p>419.2 508.5.2 Occupancies.</p>		
	<p>419.3 508.5.3 Means of egress.</p>		

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TABLE 508.4

REQUIRED SEPARATION OF OCCUPANCIES (HOURS)

OCCUPANCY	A, E		I-1, I-3, I-4		I-2		R ^a		F-2, S-2 ^b , U		B ^c , F-1, M, S-1		H-1		H-2		H-3, H-4		H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E	N	N	1	2	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3	2	NP
I-1, I-3, I-4	—	—	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP	2	NP
I-2	—	—	—	—	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP	2	NP
R ^a	—	—	—	—	—	—	N	N	1 ^d	2 ^e	1	2	NP	NP	3	NP	2	NP	2	NP
F-2, S-2 ^b , U	—	—	—	—	—	—	—	—	N	N	1	2	NP	NP	3	4	2	3	2	NP
B ^c , F-1, M, S-1	—	—	—	—	—	—	—	—	—	—	N	N	NP	NP	2	3	1	2	1	NP
H-1	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	NP	NP	NP	NP	NP	NP
H-2	—	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	1	NP	1	NP	NP
H-3, H-4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 ^f	NP	1	NP	NP	NP
H-5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	N	NP	NP	NP

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

N = No separation requirement.

NP = Not permitted.

a. See Section 420.

b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but not to less than 1 hour.

c. See Section 406.3.4.

d. Separation is not required between occupancies of the same classification.

e. See Section 422.2 for ambulatory care facilities.

f. Daycare facilities shall be separated from assembly areas where alcohol is served.

TABLE 508.4

TABLE 508.4

REQUIRED SEPARATION OF OCCUPANCIES (HOURS)^f

OCCUPANCY	A, E ^a		I-1, I-3, I-4		I-2		R ^a		F-2, S-2 ^b , U		B ^c , F-1, M, S-1		H-1		H-2		H-3, H-4		H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E ^a	N	N	1	2	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3	2	NP
I-1, I-3, I-4	1	2	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP	2	NP
I-2	2	NP	2	NP	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP	2	NP
R ^a	1	2	1	NP	2	NP	N	N	1 ^d	2 ^e	1	2	NP	NP	3	NP	2	NP	2	NP
F-2, S-2 ^b , U	N	1	1	2	2	NP	1 ^d	2 ^e	N	N	1	2	NP	NP	3	4	2	3	2	NP
B ^c , F-1, M, S-1	1	2	1	2	2	NP	1	2	1	2	N	N	NP	NP	2	3	1	2	1	NP
H-1	N	NP	N	NP	N	NP	NP	NP	NP	NP	NP	NP	N	NP	NP	NP	NP	NP	NP	NP
H-2	3	4	3	NP	3	NP	3	NP	3	4	2	3	N	NP	N	NP	1	NP	1	NP
H-3, H-4	2	3	2	N	2	NP	2	NP	2	3	1	2	N	NP	1	NP	1	NP	1	NP
H-5	2	NP	2	NP	2	NP	2	NP	2	NP	1	NP	N	NP	1	NP	1	NP	N	NP

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
 NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

N = No separation requirement.
 NP = Not permitted.
 a. See Section 420.
 b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but not to less than 1 hour.
 c. See Section 406.3.4 and 406.6.4.
 d. Separation is not required between occupancies of the same classification.
 e. See Section 422.2 for ambulatory care facilities.
 f. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring fire protection systems shall also comply with Section 707.3.10 and Table 707.3.10 in accordance with Section 901.7.
 g. Daycare facilities shall be separated from occupancies where alcohol is served, in accordance with Table 509.1.

Base code updated separation requirements within the table.

Houston amendment for footnote moved from "f" to "g".

419.3.1 508.5.4 Egress capacity.

419.3.2 508.5.5 Spiral stairways.

419.4 508.5.6 Vertical openings.

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	[F] 419.5 508.5.7 Fire protection.										
	419.6 508.5.8 Structural.										
	419.7 508.5.9 Accessibility.										
	419.8 508.5.10 Ventilation.										
	419.9 508.5.11 Plumbing facilities.										
	SECTION 509 INCIDENTAL USES	[F] TABLE 509 INCIDENTAL USES									
	[F] TABLE 509 TABLE 509.1 INCIDENTAL USES	<table border="1"> <thead> <tr> <th>ROOM OR AREA</th> <th>SEPARATION AND/OR PROTECTION</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center;"><small>[EDITORIAL NOTE: PORTIONS OF THIS TABLE NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.]</small></td> </tr> <tr> <td><small>Stationary storage battery systems having an energy capacity greater than the threshold quantity specified in Table 1206.2 of the Fire Code</small></td> <td><small>1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.</small></td> </tr> <tr> <td><small>Daycare facilities shall be separated from occupancies where alcohol is served</small></td> <td><small>Separation shall be 1 hour rated in sprinklered occupancies. Separation shall be 2 hour rated in unsprinklered occupancies.</small></td> </tr> </tbody> </table>	ROOM OR AREA	SEPARATION AND/OR PROTECTION	<small>[EDITORIAL NOTE: PORTIONS OF THIS TABLE NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.]</small>		<small>Stationary storage battery systems having an energy capacity greater than the threshold quantity specified in Table 1206.2 of the Fire Code</small>	<small>1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.</small>	<small>Daycare facilities shall be separated from occupancies where alcohol is served</small>	<small>Separation shall be 1 hour rated in sprinklered occupancies. Separation shall be 2 hour rated in unsprinklered occupancies.</small>	Houston amendment for stationary storage battery systems remains unchanged. Includes new provision limiting daycare facilities adjacent to occupancies where alcohol is served.
ROOM OR AREA	SEPARATION AND/OR PROTECTION										
<small>[EDITORIAL NOTE: PORTIONS OF THIS TABLE NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.]</small>											
<small>Stationary storage battery systems having an energy capacity greater than the threshold quantity specified in Table 1206.2 of the Fire Code</small>	<small>1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.</small>										
<small>Daycare facilities shall be separated from occupancies where alcohol is served</small>	<small>Separation shall be 1 hour rated in sprinklered occupancies. Separation shall be 2 hour rated in unsprinklered occupancies.</small>										
	509.4.1.1 Type IV-B and IV-C construction. Where Table 509.1 specifies a fire-resistance-rated separation, <i>mass timber</i> elements serving as <i>fire barriers</i> or <i>horizontal assemblies</i> in Type IV-B or IV-C construction shall be separated from the interior of the incidental use with an <i>approved</i> thermal barrier consisting of <i>gypsum board</i> that is not less than 1/2 inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.		Additional fire resistance requirements for mass timber.								

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	<p>509.4.2 Protection. Where Table 509 permits an automatic sprinkler system without a fire barrier, the incidental uses shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The walls shall extend from the top of the foundation or floor assembly below to the underside of the ceiling that is a component of a fire-resistance-rated floor assembly or roof assembly above or to the underside of the floor or roof sheathing, deck or slab above. Doors shall be self- or automatic-closing upon detection of smoke in accordance with Section 716.5.9.3 716.2.6.6. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80. Walls surrounding the incidental use shall not have air transfer openings unless provided with smoke dampers in accordance with Section 710.8.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>510.1 General. The provisions in Sections 510.2 through 510.10 510.9 shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable <i>building heights and areas</i> of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code. The provisions of Sections 510.2 through 510.9 510.8 are to be considered independent and separate from each other.</p>	<p style="text-align: center;">SECTION 510 SPECIAL PROVISIONS</p> <p>510.1 General. The provisions in Sections 510.2 through 510.9 shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable building heights and areas of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code. The provisions of Sections 510.2 through 510.8 are to be considered independent and separate from each other.</p>	<p style="text-align: center;">SECTION 510 SPECIAL PROVISION</p> <p>510.1 General. The provisions in Sections 510.2 through 510.10 510.9 shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable <i>building heights and areas</i> of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code. The provisions of Sections 510.2 through 510.9 510.8 are to be considered independent and separate from each other.</p>	<p>No change to Houston amendment.</p>
	<p>510.2 Horizontal building separation allowance. A building shall be considered as separate and distinct buildings for the purpose of determining area limitations, continuity of <i>fire walls</i>, limitation of number of <i>stories</i> and type of construction where the following conditions are met:</p> <ol style="list-style-type: none"> 1. The buildings are separated with a <i>horizontal assembly</i> having a <i>fire-resistance rating</i> of not less than 3 hours. Where vertical offsets are provided as part of a horizontal assembly, the vertical offset and the structure supporting the vertical offset shall have a fire-resistance rating of not less than 3 hours. 2. The building below, including the horizontal assembly, is of Type IA construction. 3. <i>Shaft, stairway, ramp</i> and escalator enclosures through the <i>horizontal assembly</i> shall have not less than a 2-hour <i>fire-resistance rating</i> with opening protectives in accordance with Section 716.5. <p>Exception: Where the enclosure walls below the <i>horizontal assembly</i> have not less than a 3-hour <i>fire-resistance rating</i> with opening protectives in accordance with Section 716.5, the enclosure walls extending above the <i>horizontal</i></p>		<p>Edits made to clarify code, additional allowance for combustible stairs within a IA building.</p>

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	<p><i>assembly</i> shall be permitted to have a 1-hour <i>fire-resistance rating</i>, provided that the following conditions are met:</p> <ol style="list-style-type: none"> 1. The building above the <i>horizontal assembly</i> is not required to be of Type I construction. 2. The enclosure connects fewer than four stories. 3. The enclosure opening protectives above the <i>horizontal assembly</i> have a <i>fire protection rating</i> of not less than 1 hour. <p>4. Interior exit stairways located within the Type IA building are permitted to be of combustible materials where the following requirements are met:</p> <ol style="list-style-type: none"> 4.1. The building above the Type IA building is of Type III, IV, or V construction. 4.2. The stairway located in the Type IA building is enclosed by 3-hour fire-resistance-rated construction with opening protectives in accordance with Section 716. <p>45. The building or buildings above the <i>horizontal assembly</i> shall be permitted to have multiple Group A occupancy uses, each with an <i>occupant load</i> of less than 300, or Group B, M, R or S occupancies.</p> <p>56. The building below the <i>horizontal assembly</i> shall be protected throughout by an <i>approved automatic sprinkler system</i> in accordance with Section 903.3.1.1, and shall be permitted to be any occupancy allowed by this code except Group H.</p> <p>67. The maximum <i>building height</i> in feet (mm) shall not exceed the limits set forth in Section 504.3 for the building having the smaller allowable height as measured from the <i>grade plane</i>.</p>		
	<p>510.3 Group S-2 enclosed parking garage with Group S-2 open parking garage above. A Group S-2 enclosed parking garage with not more than one <i>store above grade plane</i> and located below a Group S-2 <i>open parking garage</i> shall be classified as a separate and distinct building for the purpose of determining the type of construction where the following conditions are met:</p> <ol style="list-style-type: none"> 1. The allowable area of the building shall be such that the sum of the ratios of the actual area divided by the allowable area for each separate occupancy shall not exceed 1. 2. The Group S-2 enclosed parking garage is of Type I or II construction and is at least equal to the <i>fire-resistance</i> requirements of the Group S-2 <i>open parking garage</i>. 3. The height and the number of tiers of the Group S-2 <i>open parking garage</i> shall be limited as specified in Table 406.5.4. 4. The floor assembly separating the Group S-2 enclosed parking garage and Group S-2 <i>open parking garage</i> shall be 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>protected as required for the floor assembly of the Group S-2 enclosed parking garage. Openings between the Group S-2 enclosed parking garage and Group S-2 <i>open parking garage</i>, except exit openings, shall not be required to be protected.</p> <p>5. The Group S-2 enclosed parking garage is used exclusively for the parking or storage of private motor vehicles, but shall be permitted to contain an office, waiting room and toilet room having a total area of not more than 1,000 square feet (93 m²) and mechanical equipment rooms incidental to associated with the operation of the building.</p>		
	<p>510.5 Group R-1 and R-2 buildings of Type IIIA construction. The height limitation For buildings of Type IIIA construction in Groups R-1 and R-2, the maximum allowable height in Table 504.3 shall be increased to six stories and 75 feet (22 860 mm) by 10 feet (3048 mm) and the maximum allowable number of stories in Table 504.4 shall be increased by one where the first-floor assembly above the <i>basement</i> has a <i>fire-resistance rating</i> of not less than 3 hours and the floor area is subdivided by 2-hour fire-resistance-rated <i>fire walls</i> into areas of not more than 3,000 square feet (279 m²).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>510.7.1 Fire separation. Fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711 between the parking occupancy and the upper occupancy shall correspond to the required fire-resistance rating prescribed in Table 508.4 for the uses involved. The type of construction shall apply to each occupancy individually, except that structural members, including main bracing within the open parking structure, which is necessary to support the upper occupancy, shall be protected with the more restrictive fire-resistance-rated assemblies of the groups involved as shown in Table 601. Means of egress for the upper occupancy shall conform to Chapter 10 and shall be separated from the parking occupancy by fire barriers having not less than a 2-hour fire-resistance rating as required by Section 707 with self-closing doors complying with Section 716 or horizontal assemblies having not less than a 2-hour fire-resistance rating as required by Section 711, with self-closing doors complying with Section 716. Means of egress from the open parking garage shall comply with Section 406.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>510.8 Group B or M buildings with Group S-2 open parking garage above. Group B or M occupancies located below a Group S-2 <i>open parking garage</i> of a lesser type of construction shall be considered as a separate and distinct building from the Group S-2 <i>open parking garage</i> for the purpose of determining the type of construction where the following conditions are met:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. The buildings are separated with a <i>horizontal assembly</i> having a <i>fire-resistance rating</i> of not less than 2 hours.</p> <p>2. The occupancies in the building below the <i>horizontal assembly</i> are limited to Groups B and M.</p> <p>3. The occupancy above the <i>horizontal assembly</i> is limited to a Group S-2 <i>open parking garage</i>.</p> <p>4. The building below the <i>horizontal assembly</i> is of Type IA construction.</p> <p>Exception: The building below the <i>horizontal assembly</i> shall be permitted to be of Type IB or II construction, but not less than the type of construction required for the Group S-2 <i>open parking garage</i> above, where the building is below is not greater than <i>one story</i> in height above <i>grade plane</i>.</p> <p>5. The height and area of the building below the <i>horizontal assembly</i> does not exceed the limits set forth in Section 503.</p> <p>6. The height and area of the Group S-2 <i>open parking garage</i> does not exceed the limits set forth in Section 406.5. The height, in both feet and <i>stories</i>, of the Group S-2 <i>open parking garage</i> shall be measured from <i>grade plane</i> and shall include the building below the <i>horizontal assembly</i>.</p> <p>7. <i>Exits</i> serving the Group S-2 <i>open parking garage</i> discharge at grade with direct and unobstructed access to a street or <i>public way</i> and are separated from the building below the <i>horizontal assembly</i> by 2-hour <i>fire barriers</i> constructed in accordance with Section 707 or 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711, or both.</p>		
<p>510.9 <u>Basement and first story of open parking garages.</u> Other provisions of this code notwithstanding, a basement or first story located below an open parking garage may be considered as a separate and distinct building for the purpose of occupancy, area limitation and type of construction, when the basement or first story is separated from the open parking garage above with a three-hour occupancy separation and the basement and first floor are protected throughout by an <i>automatic sprinkler system</i>.</p>		<p>510.9 <u>Basement and first story of open parking garages.</u> Other provisions of this code notwithstanding, a basement or first story located below an open parking garage may be considered as a separate and distinct building for the purpose of occupancy, area limitation and type of construction, when the basement or first story is separated from the open parking garage above with a three-hour occupancy separation and the basement and first floor are protected throughout by an <i>automatic sprinkler system</i>.</p>	<p>No change to Houston amendment.</p>
<p>510.10 <u>Multiple buildings above a horizontal assembly.</u> Where two or more buildings are provided above the <i>horizontal assembly</i> separating a Group S-2 parking garage or building below from the buildings above in accordance with the special provisions in Sections 510.2, 510.3 or 510.8, the buildings above the <i>horizontal assembly</i> shall be regarded as separate and distinct buildings from each other and shall comply with all other provisions of this code as applicable to each separate and distinct building.</p>		<p>510.10 <u>Multiple buildings above a horizontal assembly.</u> Where two or more buildings are provided above the <i>horizontal assembly</i> separating a Group S-2 parking garage or building below from the buildings above in accordance with the special provisions in Sections 510.2, 510.3 or 510.8, the buildings above the <i>horizontal assembly</i> shall be regarded as separate and distinct buildings from each other and shall comply with all other provisions of this code as applicable to each separate and distinct building.</p>	<p>No change to Houston amendment.</p>

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SECTION 511 TRANSIT SHEDS		SECTION 511 TRANSIT SHEDS	
<p>511.1 Scope. The area of a Type IIB building meeting the definition of a “transit shed” may be increased to 250,000 square feet, provided there is no other building located closer than 200 feet to the building, and there is a paved access road at least 60 feet in width on all sides of the building.</p>		<p>511.1 Scope. The area of a Type IIB building meeting the definition of a “transit shed” may be increased to 250,000 square feet, provided there is no other building located closer than 200 feet to the building, and there is a paved access road at least 60 feet in width on all sides of the building.</p>	<p>No change to Houston amendment.</p>
<p>SECTION 512 FOUNDATION ELEVATION</p> <p>512.1 General. All new buildings constructed within this jurisdiction shall have the finished floor of the building not less than 12 inches above the nearest sanitary sewer manhole rim of the sewer connected to the building, or, where no sewer is available, the finished floor shall not be less than 4 inches above the crown of the street.</p> <p>Exception: Buildings located in annexed subdivisions where the following conditions exist:</p> <ol style="list-style-type: none"> 1. The subdivision was platted and recorded prior to annexation; 2. The sanitary sewer system for the subdivision was installed prior to annexation; and 3. The drainage piping from a building meets the requirements of Section 710 of the <i>Plumbing Code</i>. <p>NOTE: When a greater elevation is required by Chapter 19 of the <i>City Code</i>, then Chapter 19 shall govern.</p>		<p>SECTION 512 FOUNDATION ELEVATION</p> <p>512.1 General. All new buildings constructed within this jurisdiction shall have the top of the finished floor of the first-story of the building or structure elevated not less than 12 inches (304.8 mm) above the nearest sanitary sewer manhole rim of the sewer connected to and serving the building, or, where no sewer is available, the top of the finished floor of the first-story of the building or structure shall be elevated not less than 4 inches (101.6 mm) above the crown of the street.</p> <p>Exception: Buildings located in annexed subdivisions where the following conditions exist:</p> <ol style="list-style-type: none"> 1. The subdivision was platted and recorded prior to annexation; 2. The sanitary sewer system for the subdivision was installed prior to annexation; and 3. The drainage piping from the building meets the requirements of Section 710 of the <i>Plumbing Code</i>. <p>NOTE: When a greater elevation is required by Chapter 19 of the <i>City Code</i>, then Chapter 19 shall govern.</p>	<p>Minor wordsmithing changes, no change to intent of Houston amendment.</p>
<p>512.2 Plans and applications. All construction plans and applications submitted for construction, sewer connections or septic systems shall reflect the elevations of the finished floor of the building and the elevation of the nearest manhole rim of a sanitary sewer connected to the building or crown of the street, whichever is applicable.</p>		<p>512.2 Plans and applications. All construction plans and applications submitted for construction, sewer connections or septic systems shall reflect the elevations of the finished floor of the building and the elevation of the nearest manhole rim of a sanitary sewer connected to the building or crown of the street, whichever is applicable.</p>	<p>No change to Houston amendment.</p>
<p>512.3 Damage risk. All permits for connection shall be issued on the condition that the owner take all the risk of damage that may result from water backing up into the premises from the sewer.</p>		<p>512.3 Damage risk. All permits for connection shall be issued on the condition that the owner take all the risk of damage that may result from water backing up into the premises from the sewer.</p>	<p>No change to Houston amendment.</p>
<p>512.4 Existing structures. When an existing structure is required to connect with a public or private sewer, it shall have the finished floor a minimum of 12 inches above the nearest sanitary sewer manhole rim of a sewer connected to the building.</p> <p>Exception: Where the public or private sewer is not of sufficient depth, or where structures required to be connected to the</p>		<p>512.4 Existing structures. When an existing structure is required to connect with a public or private sewer, it shall have the finished floor a minimum of 12 inches (304.8 mm) above the nearest sanitary sewer manhole rim of a sewer connected to the building.</p> <p>Exception: Where the public or private sewer is not of sufficient depth, or where structures required to be connected to the</p>	<p>No change to Houston amendment. Now includes metric measurements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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sewer cannot meet the minimum requirements of this section and other ordinances, the *building official* may authorize the issuance of a permit for an alternate method of construction or installation when this will not be detrimental to the health, welfare, and safety of the public.

sewer cannot meet the minimum requirements of this section and other ordinances, the *building official* may authorize the issuance of a permit for an alternate method of construction or installation when this will not be detrimental to the health, welfare, and safety of the public.

2015 Houston IBC – Chapter 6 Types of Construction	2021 IBC – Chapter 6 Types of Construction	2021 Houston Amendments – Chapter 6 Types of Construction	Code Analysis
	SECTION 601 GENERAL		
	SECTION 602 CONSTRUCTION CLASSIFICATION		
	TABLE 601		Updates to fire resistive requirements table 601 for heavy timber
	602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.		Edits made to clarify code, no major changes to code requirements.
	602.4 Type IV. Type IV construction (Heavy Timber, HT) is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid or wood, laminated wood, heavy timber (HT) or structural composite lumber (SCL) without concealed spaces. The minimum dimensions for permitted materials including solid timber, glued laminated timber, structural composite lumber (SCL), and cross laminated timber and details of Type IV construction shall comply with the provisions of this section and Section 2304.11. Exterior walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Minimum solid sawn nominal dimensions are required for structures built using Type IV construction (HT). For glued laminated members and structural composite lumber (SCL) members, the equivalent net finished width and depths corresponding to the minimum nominal width and depths of solid sawn lumber are required as specified in Table 602.4. Cross laminated timber (CLT) dimensions used in this section are actual dimensions. Interior walls and partitions not less than 1-hour fire resistance rating or heavy timber complying with Section 2304.11.2.2 shall be permitted. Type IV construction is that		Type IV requirements have been updated

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type of construction in which the *building elements* are *mass timber* or noncombustible materials and have *fire-resistance ratings* in accordance with Table 601. *Mass timber* elements shall meet the *fire-resistance-rating* requirements of this section based on either the *fire-resistance rating* or the *noncombustible protection*, the *mass timber*, or a combination of both and shall be determined in accordance with Section 703.2. The minimum dimensions and permitted materials for *building elements* shall comply with the provisions of this section and Section 2304.11. *Mass timber* elements of Type IV-A, IV-B and IV-C construction shall be protected with *noncombustible protection* applied directly to the *mass timber* in accordance with Sections 602.4.1 through 602.4.3. The time assigned to the *noncombustible protection* shall be determined in accordance with Section 703.6 and comply with Section 722.7.

Cross-laminated timber shall be labeled as conforming to ANSI/APA PRG 320 as referenced in Section 2303.1.4.

Exterior *load-bearing walls* and *nonload-bearing walls* shall be *mass timber* construction, or shall be of noncombustible construction.

Exception: Exterior *load-bearing walls* and *nonload-bearing walls* of Type IV-HT Construction in accordance with Section 602.4.4.

The interior *building elements*, including *nonload-bearing walls* and partitions, shall be of *mass timber* construction or of noncombustible construction.

Exception: Interior *building elements* and *nonload-bearing walls* and partitions of Type IV-HT construction in accordance with Section 602.4.4.

Combustible concealed spaces are not permitted except as otherwise indicated in Sections 602.4.1 through 602.4.4. Combustible stud spaces within light frame walls of Type IV-HT construction shall not be considered concealed spaces, but shall comply with Section 718.

In buildings of Type IV-A, IV-B, and IV-C construction with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department access, up to and including 12 *stories* or 180 feet (54 864 mm) above *grade plane*, *mass timber* interior exit and elevator hoistway enclosures shall be protected in accordance with Section 602.4.1.2. In buildings greater than 12 *stories* or 180 feet (54 864 mm) above *grade plane*, interior exit and elevator hoistway enclosures shall be constructed of noncombustible materials.

TABLE 602.4

WOOD MEMBER SIZE EQUIVALENCIES

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	<u>602.4.1 Type IV-A. <i>Building elements in Type IV-A construction shall be protected in accordance with Sections 602.4.1.1 through 602.4.1.6. The required fire-resistance rating of noncombustible elements and protected mass timber elements shall be determined in accordance with Section 703.2.</i></u>		Updated Mass Timber requirements
	<u>602.4.1.1 Exterior protection. The outside face of exterior walls of mass timber construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water-resistive barriers having a peak heat release rate of less than 150kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m².</u>		Updated Mass Timber requirements
	<u>602.4.1.2 Interior protection. Interior faces of all mass timber elements, including the inside faces of exterior mass timber walls and mass timber roofs, shall be protected with materials complying with Section 703.3.</u>		Updated Mass Timber requirements
	<u>602.4.1.2.1 Protection time. Noncombustible protection shall contribute a time equal to or greater than times assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their respective protection contributions specified in Table 722.7.1(2) shall be permitted to be used for compliance with Section 722.7.1.</u>		Updated Mass Timber requirements
	<u>602.4.1.3 Floors. The floor assembly shall contain a noncombustible material not less than 1 inch (25 mm) in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.</u>		Updated Mass Timber requirements
	<u>602.4.1.4 Roofs. The interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.1.2. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.</u>		Updated Mass Timber requirements

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	<p>602.4.1.5 Concealed spaces. <u>Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with Section 602 of the International Mechanical Code, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected in accordance with Section 602.4.1.2.</u></p>		<p>Updated Mass Timber requirements</p>
	<p>602.4.1.6 Shafts. <u>Shafts shall be permitted in accordance with Sections 713 and 718. Both the shaft side and the room side of mass timber elements shall be protected in accordance with Section 602.4.1.2.</u></p>		<p>Updated Mass Timber requirements</p>
	<p>602.4.2 Type IV-B. <u>Building elements in Type IV-B construction shall be protected in accordance with Sections 602.4.2.1 through 602.4.2.6. The required fire-resistance rating of noncombustible elements of mass timber elements shall be determined in accordance with Section 703.2.</u></p>		<p>Updated Mass Timber requirements</p>
	<p>602.4.2.1 Exterior protection. <u>The outside face of exterior walls of mass timber construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water-resistive barriers having a peak heat release rate of less than 150kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354, and having a flame index spread of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m².</u></p>		<p>Updated Mass Timber requirements</p>
	<p>602.4.2.2 Interior protection. <u>Interior faces of all mass timber elements, including the inside face of exterior mass timber walls and mass timber roofs, shall be protected, as required by this section, with materials complying with Section 703.3.</u></p>		<p>Updated Mass Timber requirements</p>
	<p>602.4.2.2.1 Protection time. <u>Noncombustible protection shall contribute a time equal to or greater than times assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their respective protection contributions specified in Table 722.7.1(2) shall be permitted to be used for compliance with Section 722.7.1.</u></p>		<p>Updated Mass Timber requirements</p>

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	<p>602.4.2.2.2 Protected area. Interior faces of <i>mass timber</i> elements, including the inside face of exterior <i>mass timber walls</i> and <i>mass timber roofs</i>, shall be protected in accordance with Section 602.4.2.2.1.</p> <p>Exceptions: Unprotected portions of <i>mass timber ceilings</i> and <i>walls</i> complying with Section 602.4.2.2.4 and the following:</p> <p>1. Unprotected portions of <i>mass timber ceilings</i> and <i>walls</i> complying with one of the following:</p> <p>1.1. Unprotected portions of <i>mass timber ceilings</i>, including attached beams, shall be permitted and shall be limited to an area equal to 20 percent of the floor area in any <i>dwelling unit</i> or <i>fire area</i>.</p> <p>1.2. Unprotected portions of <i>mass timber walls</i>, including attached columns, shall be permitted and shall be limited to an area equal to 40 percent of the floor area in any <i>dwelling unit</i> or <i>fire area</i>.</p> <p>1.3. Unprotected portions of both <i>walls</i> and <i>ceilings</i> of <i>mass timber</i>, including attached columns and beams, in any <i>dwelling unit</i> or <i>fire area</i> shall be permitted in accordance with Section 602.4.2.2.3.</p> <p>2. <i>Mass timber</i> columns and beams that are not an integral portion of <i>walls</i> or <i>ceilings</i>, respectively, shall be permitted to be unprotected without restriction of either aggregate area or separation from one another.</p>		<p>Updated Mass Timber requirements</p>
	<p>602.4.2.2.3 Mixed unprotected areas. In each <i>dwelling unit</i> or <i>fire area</i>, where both portions of <i>ceilings</i> and portions of <i>walls</i> are unprotected, the total allowable unprotected area shall be determined in accordance with Equation 6-1.</p> $(U_{tc}/U_{ac}) + (U_{tw}/U_{aw}) \leq 1$ <p>where:</p> <p>U_{tc} = Total unprotected <i>mass timber ceiling areas</i>.</p> <p>U_{ac} = Allowable unprotected <i>mass timber ceiling area</i> conforming to Exception 1.1 of Section 602.4.2.2.2.</p> <p>U_{tw} = Total unprotected <i>mass timber wall areas</i>.</p>		<p>Updated Mass Timber requirements</p>

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	<u><i>U_{aw}</i> = Allowable unprotected mass timber wall area conforming to Exception 1.2 of Section 602.4.2.2.2.</u>		
	602.4.2.2.4 Separation distance between unprotected mass timber elements. In each dwelling unit or fire area, unprotected portions of mass timber walls and ceilings shall not be less than 15 feet (4752 mm) from unprotected portions of other walls and ceilings, measured horizontally along the ceiling and from other unprotected portions of walls measured horizontally along the floor.		Updated Mass Timber requirements
	602.4.2.3 Floors. The floor assembly shall contain a noncombustible material not less than 1 inch (25 mm) in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.		Updated Mass Timber requirements
	602.4.2.4 Roofs. The interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.2.2 except, in nonoccupiable spaces, they shall be treated as a concealed space with no portion left unprotected. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.		Updated Mass Timber requirements
	602.4.2.5 Concealed spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with Section 602 of the International Mechanical Code, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected in accordance with Section 602.4.1.2.		Updated Mass Timber requirements
	602.4.2.6 Shafts. Shafts shall be permitted in accordance with Sections 713 and 718. Both the shaft side and room side of mass timber elements shall be protected in accordance with Section 602.4.1.2		Updated Mass Timber requirements
	602.4.3 Type IV-C. Building elements in Type IV-C construction shall be protected in accordance with Sections 602.4.3.1 through 602.4.3.6. The required fire-resistance rating of building elements shall be determined in accordance with Section 703.2.		Updated Mass Timber requirements

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	<p>602.4.3.1 Exterior protection. The exterior side of walls of combustible construction shall be protected with <u>noncombustible protection</u> with a minimum assigned time of 40 minutes, as determined in Table 722.7.1(1). Components of the <u>exterior wall covering</u> shall be of <u>noncombustible materials except water-resistive barriers</u> having a peak heat release rate of less than 150 kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354 and having a <u>flame spread index</u> of 25 or less and a <u>smoke-developed index</u> of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m².</p>		Updated Mass Timber requirements
	<p>602.4.3.2 Interior protection. <u>Mass timber elements are permitted to be unprotected.</u></p>		Updated Mass Timber requirements
	<p>602.4.3.3 Floors. Floor finishes in accordance with Section 804 shall be permitted on top of the floor construction.</p>		Updated Mass Timber requirements
	<p>602.4.3.4 Roof coverings. <u>Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.</u></p>		Updated Mass Timber requirements
	<p>602.4.3.5 Concealed spaces. <u>Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with Section 602 of the International Mechanical Code, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1).</u></p>		Updated Mass Timber requirements
	<p>602.4.3.6 Shafts. <u>Shafts shall be permitted in accordance with Sections 713 and 718. Shafts and elevator hoistway and interior exit stairway enclosures shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1), on both the inside of the shaft and the outside of the shaft.</u></p>		Updated Mass Timber requirements
	<p>602.4.4 Type IV-HT. <u>Type IV-HT (Heavy Timber) construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid wood, laminated heavy timber or structural composite lumber (SCL), without concealed spaces or with concealed</u></p>		Updated Mass Timber requirements

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	<p>spaces complying with Section 602.4.4.3. The minimum dimensions for permitted materials including solid timber, glued-laminated timber, SCL and cross-laminated timber (CLT) and the details of Type IV construction shall comply with the provisions of this section and Section 2304.11. Exterior walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Interior walls and partitions not less than 1-hour fire-resistance rated or heavy timber conforming with Section 2304.11.2.2 shall be permitted.</p>		
	<p>602.4.1 602.4.4.1 Fire-retardant-treated wood in exterior walls. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies not less than 6 inches (152 mm) in thickness with a 2-hour rating or less.</p>		
	<p>602.4.2 602.4.4.2 Cross-laminated timber in exterior walls. Cross-laminated timber (CLT) not less than 4 inches (102 mm) in thickness complying with Section 2303.1.4 shall be permitted within exterior wall assemblies not less than 6 inches (152 mm) in thickness with a 2-hour rating or less. Provide the Heavy timber structural members appurtenant to the CLT exterior wall shall meet the requirements of Table 2304.11 and be fire-resistance rated as required for the exterior wall. The exterior surface of the cross-laminated timber is and heavy timber elements shall be protected by one of the following:</p> <ol style="list-style-type: none"> 1. Fire-retardant-treated wood sheathing complying with Section 2303.2 and not less than ¹⁵/₃₂ inch (12 mm) thick. 2. Gypsum board not less than ½ inch (12.7 mm) thick. 3. A noncombustible material. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>602.4.3 Columns. Wood columns shall be sawn or glued laminated and shall be not less than 8 inches (203 mm), nominal, in any dimension where supporting floor loads and not less than 6 inches (152 mm) nominal in width and not less than 8 inches (203 mm) nominal in depth where supporting roof and ceiling loads only. Columns shall be continuous or superimposed and connected in an approved manner. Protection in accordance with Section 704.2 is not required.</p>		
	<p>602.4.4 Floor framing. Wood beams and girders shall be of sawn or glued laminated timber and shall be not less than 6 inches (152 mm) nominal in width and not less than 10 inches (254 mm) nominal in depth. Framed sawn or glued laminated timber arches, which spring from the floor line and support floor loads, shall be not less than 8 inches (203 mm) nominal in any dimension. Framed timber trusses</p>		

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	<p>supporting floor loads shall have members of not less than 8 inches (203 mm) nominal in any dimension.</p>		
	<p>602.4.5 Roof framing. Wood frame or glued laminated arches for roof construction, which spring from the floor line or from grade and do not support floor loads, shall have members not less than 6 inches (152 mm) nominal in width and have not less than 8 inches (203 mm) nominal in depth for the lower half of the height and not less than 6 inches (152 mm) nominal in depth for the upper half. Framed or glued laminated arches for roof construction that spring from the top of walls or wall abutments, framed timber trusses and other roof framing, which do not support floor loads, shall have members not less than 4 inches (102 mm) nominal in width and not less than 6 inches (152 mm) nominal in depth. Spaced members shall be permitted to be composed of two or more pieces not less than 3 inches (76 mm) nominal in thickness where blocked solidly throughout their intervening spaces or where spaces are tightly closed by a continuous wood cover plate of not less than 2 inches (51 mm) nominal in thickness secured to the underside of the members. Splice plates shall be not less than 3 inches (76 mm) nominal in thickness. Where protected by approved automatic sprinklers under the roof deck, framing members shall be not less than 3 inches (76 mm) nominal in width.</p>		
	<p>602.4.6 Floors. Floors shall be without concealed spaces. Wood floors shall be constructed in accordance with Section 602.4.6.1 or 602.4.6.2. 602.4.6.1 Sawn or glued laminated plank floors. Sawn or glued laminated plank floors shall be one of the following:</p> <ol style="list-style-type: none"> 1. Sawn or glued laminated planks, splined or tongue and groove, of not less than 3 inches (76 mm) nominal in thickness covered with 1 inch (25 mm) nominal dimension tongue and groove flooring, laid crosswise or diagonally, 15/32 inch (12 mm) wood structural panel or 1/2 inch (12.7 mm) particleboard. 2. Planks not less than 4 inches (102 mm) nominal in width set on edge close together and well spiked and covered with 1 inch (25 mm) nominal dimension flooring or 15/32 inch (12 mm) wood structural panel or 1/2 inch (12.7 mm) particleboard. The lumber shall be laid so that no continuous line of joints will occur except at points of support. Floors shall not extend closer than 1/2 inch (12.7 mm) to walls. Such 1/2 inch (12.7 mm) space shall be covered by a molding fastened to 		

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	<p>the wall and so arranged that it will not obstruct the swelling or shrinkage movements of the floor. Corbelling of masonry walls under the floor shall be permitted to be used in place of molding.</p>		
	<p>602.4.6.2 Cross-laminated timber floors. Cross-laminated timber shall be not less than 4 inches (102 mm) in thickness. Cross-laminated timber shall be continuous from support to support and mechanically fastened to one another. Cross-laminated timber shall be permitted to be connected to walls without a shrinkage gap providing swelling or shrinking is considered in the design. Corbelling of masonry walls under the floor shall be permitted to be used.</p>		
	<p>602.4.7 Roofs. Roofs shall be without concealed spaces and wood roof decks shall be sawn or glued laminated, splined or tongue and groove plank, not less than 2 inches (51 mm) nominal in thickness; 1 1/8 inch thick (32 mm) wood structural panel (exterior glue); planks not less than 3 inches (76 mm) nominal in width, set on edge close together and laid as required for floors; or of cross-laminated timber. Other types of decking shall be permitted to be used if providing equivalent fire resistance and structural properties.</p> <p>Cross-laminated timber roofs shall be not less than 3 inches (76 mm) nominal in thickness and shall be continuous from support to support and mechanically fastened to one another.</p>		
	<p>602.4.8 Partitions and walls. Partitions and walls shall comply with Section 602.4.8.1 or 602.4.8.2.</p>		
	<p>602.4.8.1 Interior walls and partitions. Interior walls and partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction 4 inches (102 mm) thick, or of 1-hour fire-resistance-rated construction.</p>		
	<p>602.4.8.2 Exterior walls. Exterior walls shall be of one of the following:</p> <ol style="list-style-type: none"> 1. Noncombustible materials. 2. Not less than 6 inches (152 mm) in thickness and constructed of one of the following: 		

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	<p>2.1. Fire retardant treated wood in accordance with Section 2303.2 and complying with Section 602.4.1.</p> <p>2.2. Cross laminated timber complying with Section 602.4.2.</p>		
	<p>602.4.9 602.4.3 Exterior structural members. Where a horizontal separation of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes complying with Section 2304.11 shall be permitted to be used externally.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>602.4.4.3 Concealed spaces. Concealed spaces shall not contain combustible materials other than <i>building elements</i> and electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with Section 602 of the <i>International Mechanical Code</i>. Concealed spaces shall comply with applicable provisions of Section 718. Concealed spaces shall be protected in accordance with one or more of the following:</p> <p>1. The building shall be sprinklered throughout in accordance with Section 903.3.1.1 and automatic sprinklers shall also be provided in the concealed space.</p> <p>2. The concealed space shall be completely filled with noncombustible insulation.</p> <p>3. Surfaces within the concealed space shall be fully sheathed with not less than 5/8-inch Type X <i>gypsum board</i>.</p> <p>Exception: Concealed spaces within interior walls and partitions with a 1-hour or greater <i>fire-resistance rating</i> complying with Section 2304.11.2.2 shall not require additional protection.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>602.4.3 602.4.4.4 Exterior structural members. Where a horizontal separation of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes complying with Section 2304.11 shall be permitted to be used externally.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:</p> <p>1. Fire-retardant-treated wood shall be permitted in:</p>	<p style="text-align: center;">SECTION 603</p> <p style="text-align: center;">COMBUSTIBLE MATERIAL IN TYPES I AND II CONSTRUCTION</p> <p>603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following</p>	<p style="text-align: center;">SECTION 603</p> <p style="text-align: center;">COMBUSTIBLE MATERIAL IN TYPES I AND II CONSTRUCTION</p> <p>603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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<p>1.1 Nonbearing partitions where the required <i>fire-resistance rating</i> is 2 hours or less.</p> <p>1.2 Nonbearing <i>exterior walls</i> where fire-resistance-rated construction is no required.</p> <p>1.3 Roof construction, including girders, trusses, framing and decking. Exception: In building of Type IA construction exceeding <i>two stories above grade plane</i>, <i>fire-retardant-treated wood</i> is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6,096 mm).</p> <p><u>1.4 Roof structures such as walkways, decks, fences, flower boxes or similar appendages.</u></p> <p>25. Materials exposed within plenums complying with Section 602.2 of the International Mechanical Code.</p> <p>{EDITORIAL NOTE: PORTIONS OF SECTION 603.1 NOT SHOWN REMAIN AS SET FORTH IN THE 2015 IBC.}</p>	<p>applications and in accordance with Sections 603.1.1 through 603.1.3:</p> <p>1. <i>Fire-retardant-treated wood</i> shall be permitted in:</p> <p>1.1. Nonbearing partitions where the required <i>fire-resistance rating</i> is 2 hours or less except in shaft enclosures within Group I-2 occupancies and ambulatory care facilities.</p> <p>1.2. Nonbearing <i>exterior walls</i> where fire-resistance-rated construction is not required.</p> <p>1.3. Roof construction, including girders, trusses, framing and decking.</p> <p>Exceptions:</p> <p>1. In buildings of Type IA construction exceeding <i>two stories above grade plane</i>, <i>fire-retardant-treated wood</i> is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6096 mm).</p> <p>2. Group I-2, roof construction containing <i>fire-retardant-treated wood</i> shall be covered by not less than a Class A roof covering or roof assembly, and the roof assembly shall have a <i>fire-resistance rating</i> where required by the construction type.</p> <p>1.4. Balconies, porches, decks and exterior stairways not used as required exits on buildings three stories or less above grade plane.</p> <p>2. Thermal and acoustical insulation, other than foam plastics, having a <i>flame spread index</i> of not more than 25.</p> <p>Exceptions:</p> <p>1. Insulation placed between two layers of noncombustible materials without an intervening airspace shall be allowed to have a flame spread index of not more than 100.</p> <p>2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a flame spread index of not more than 200.</p> <p>3. Foam plastics in accordance with Chapter 26.</p> <p>4. Roof coverings that have an A, B or C classification.</p> <p>5. Interior floor finish and floor covering materials installed in accordance with Section 804.</p> <p>6. Millwork such as doors, door frames, window sashes and frames.</p>	<p><u>{EDITORIAL NOTE: PORTIONS OF SECTION 603.1 NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.}</u></p> <p>1. <i>Fire-retardant-treated wood</i> shall be permitted in:</p> <p>1.1 Nonbearing partitions where the required <i>fire-resistance rating</i> is 2 hours or less except in <i>shaft enclosures</i> within Group I-2 occupancies and ambulatory care facilities.</p> <p>1.2 Nonbearing <i>exterior walls</i> where fire-resistance-rated construction is not required.</p> <p>1.3 Roof construction, including girders, trusses, framing and decking. Exception:</p> <p>1. In buildings of Type IA construction exceeding <i>two stories above grade plane</i>, <i>fire-retardant-treated wood</i> is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6096 mm).</p> <p>2. Group I-2, roof construction containing <i>fire-retardant-treated wood</i> shall be covered by not less than a Class A roof covering or roof assembly, and the roof assembly shall have a <i>fire-resistance rating</i> where required by the construction type.</p> <p>1.4 Balconies, porches, decks and exterior <i>stairways</i> not used as required exits on buildings three stories or less above grade plane.</p> <p>1.5 <u>Roof structures such as walkways, decks, fences, flower boxes or similar appendages.</u></p> <p>25. Materials exposed within plenums complying with Section 602.2 of the International Mechanical Code.</p>	
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- 7. Interior wall and ceiling finishes installed in accordance with Sections ~~801 and~~ 803.
- 8. Trim installed in accordance with Section 806.
- 9. Where not installed greater than 15 feet (4572 mm) above grade, show windows, nailing or furring strips and wooden bulkheads below show windows, including their frames, aprons and show cases.
- 10. Finish flooring installed in accordance with Section 805.
- 11. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and that do not establish a corridor serving an occupant load of 30 or more shall be permitted to be constructed of fire-retardant-treated wood, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.
- 12. Stages and platforms constructed in accordance with Sections ~~410.3 and 410.4~~ 410.2 and 410.3, respectively.
- 13. Combustible exterior wall coverings, balconies and similar projections and bay or oriel windows in accordance with Chapter 14 and Section 705.2.3.1.
- 14. Blocking such as for handrails, millwork, cabinets and window and door frames.
- 15. Light-transmitting plastics as permitted by Chapter 26.
- 16. Mastics and caulking materials applied to provide flexible seals between components of exterior wall construction.
- 17. Exterior plastic veneer installed in accordance with Section 2605.2.
- 18. Nailing or furring strips as permitted by Section ~~803.13~~ 803.15.
- 19. Heavy timber as permitted by Note c to Table 601 and Sections ~~602.4.7 602.4.3 and 1406.3~~ 705.2.3.1.
- 20. Aggregates, component materials and admixtures as permitted by Section 703.2.2.
- 21. Sprayed fire-resistant materials and intumescent and mastic fire-resistant coatings, determined on the basis of fire resistance tests in accordance with Section 703.2 and installed in accordance with Sections 1705.14 and 1705.15, respectively.
- 22. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 714.
- 23. Materials used to protect joints in fire-resistance-rated assemblies in accordance with Section 715.
- 24. Materials allowed in the concealed spaces of buildings of Types I and II construction in accordance with Section 718.5.

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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25. Materials exposed within plenums complying with Section 602 of the International Mechanical Code.

26. Wall construction of freezers and coolers of less than 1,000 square feet (92.9 m²), in size, lined on both sides with noncombustible materials and the building is protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

27. Wood nailers for parapet flashing and roof cants.

2015 Houston IBC – Chapter 7 Fire and Smoke Protection Features	2021 IBC – Chapter 7 Fire and Smoke Protection Features	2021 Houston Amendments – Chapter 2 Fire and Smoke Protection Features	Code Analysis
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	<p>SECTION 701 GENERAL</p>		
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	<p>701.2 Multiple use fire assemblies. Fire assemblies that serve multiple purposes in a building shall comply with all of the requirements that are applicable for each of the individual fire assemblies.</p>		<p>Deleted section that was unnecessary</p>
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	<p style="text-align: center;">SECTION 702</p> <p style="text-align: center;">DEFINITIONS-MULTIPLE-USE FIRE ASSEMBLIES</p> <p>702.1 Definitions Multiple use fire assemblies. The following terms are defined in Chapter 2: Fire assemblies that serve multiple purposes in a building shall comply with all of the requirements that are applicable for each of the individual fire assemblies.</p> <p>ANNULAR SPACE.</p> <p>BUILDING ELEMENT.</p> <p>CEILING RADIATION DAMPER.</p> <p>COMBINATION FIRE/SMOKE DAMPER.</p> <p>CORRIDOR DAMPER.</p> <p>DAMPER.</p> <p>DRAFTSTOP</p> <p>F RATING.</p> <p>FIRE BARRIER.</p> <p>FIRE DAMPER.</p> <p>FIRE DOOR.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
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~~FIRE DOOR ASSEMBLY.~~
~~FIRE PARTITION.~~
~~FIRE PROTECTION RATING.~~
~~FIRE RATED GLAZING.~~
~~FIRE RESISTANCE.~~
~~FIRE RESISTANCE RATING.~~
~~FIRE RESISTANT JOINT SYSTEM.~~
~~FIRE SEPARATION DISTANCE.~~
~~FIRE WALL.~~
~~FIRE WINDOW ASSEMBLY.~~
~~FIREBLOCKING.~~
~~FLOOR FIRE DOOR ASSEMBLY.~~
~~HORIZONTAL ASSEMBLY.~~
~~JOINT.~~
~~L RATING.~~
~~MEMBRANE PENETRATION.~~
~~MEMBRANE PENETRATION FIRESTOP.~~
~~MEMBRANE PENETRATION FIRESTOP SYSTEM.~~
~~MINERAL FIBER.~~
~~MINERAL WOOL.~~
~~PENETRATION FIRESTOP.~~
~~SELF-CLOSING.~~
~~SHAFT.~~
~~SHAFT ENCLOSURE.~~
~~SMOKE BARRIER.~~
~~SMOKE COMPARTMENT.~~
~~SMOKE DAMPER.~~
~~SPLICE.~~
~~T RATING.~~
~~THROUGH PENETRATION.~~
~~THROUGH PENETRATION FIRESTOP SYSTEM.~~

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	SECTION 703 FIRE-RESISTANCE RATINGS AND FIRE TESTS		
	<p>703.2 Fire resistance ratings. The fire-resistance rating of building elements, components or assemblies shall be determined in accordance with Section 703.2.1 or 703.2.2 without the use of automatic sprinklers or any other fire suppression system being incorporated, or in accordance with Section 703.2.3. the test procedures set forth in ASTM E119 or UL 263 or in accordance with Section 703.2.2. The fire-resistance rating of penetrations and fire-resistant joint systems shall be determined in accordance Sections 714 and 715, respectively.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>703.2.1 Tested assemblies. A fire-resistance rating of building elements, components or assemblies shall be determined by the test procedures set forth in ASTM E119 or UL 263. The fire-resistance rating of penetrations and fire-resistant joint systems shall be determined in accordance with Sections 714 and 715, respectively.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>703.2.1.1 Nonsymmetrical wall construction.</p>		
	<p>703.2.2 703.2.1.2 Combustible components.</p>		
	<p>703.2.3 703.2.1.3 Restrained classification.</p>		
	<p>703.2.4 703.2.1.4 Supplemental features.</p>		
	<p>703.2.5 703.2.1.5 Exterior bearing walls.</p>		

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	<p>703.3 703.2.2 Methods for determining fire resistance. Analytical methods. The fire resistance of <i>building elements</i>, components or assemblies established by an analytical method shall be by This application of any of the methods listed in this section, based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263. The required fire resistance of a building element, component or assembly shall be permitted to be established by any of the following methods or procedures:</p> <ol style="list-style-type: none"> 1. <i>Fire-resistance</i> designs documented in approved sources. 2. Prescriptive designs of fire-resistance-rated <i>building elements</i>, components or assemblies as prescribed in Section 721. 3. Calculations in accordance with Section 722. 4. Engineering analysis based on a comparison of <i>building element</i>, component or assemblies designs having <i>fire-resistance ratings</i> as determined by the test procedures set forth in ASTM E119 or UL 263. 5. Alternative protection methods as allowed by Section 404.1 6. Fire-resistance designs certified by an <i>approved</i> agency. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>703.2.3 Approved alternate method. The fire resistance of <i>building elements</i>, components or assemblies not complying with Section 703.2.1 or 703.2.2 shall be permitted to be established by an alternative protection method in accordance with Section 104.11.</p>		<p>Detailing requirements of alternate methods of construction for fire resistive building elements.</p>
	<p>703.5 703.3 Noncombustibility tests. The tests indicated in Sections 703.5.1 and 703.5.2 Section 703.3.1 shall serve as criteria for acceptance of building materials as set forth in Section 602.2, 602.3 and 602.4 in Types I, II, III and IV construction. The term “noncombustible” does not apply to the <i>flame spread</i> characteristics of <i>interior finish</i> or <i>trim</i> materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or <i>flame spread</i> beyond the limitations herein established through the effects of age, moisture or other atmospheric conditions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>703.5.1 703.3.1 Elementary Noncombustible materials. Materials required to be noncombustible shall be tested in accordance with ASTM E136. <u>Alternately, materials required to be noncombustible shall be tested in accordance with ASTM E2652 using the acceptance criteria prescribed by ASTM E136.</u></p> <p>Exception: <u>Materials having a structural base of noncombustible material as determined in accordance with</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><u>ASTM E136, or with ASTM E2652 using the acceptance criteria prescribed by ASTM E136, with a surfacing of not more than 0.125 inch (3.18 mm) in thickness having a <i>flame spread index</i> not greater than 50 when tested in accordance with ASTM E84 or UL 723 shall be acceptable as noncombustible.</u></p>		
	<p>703.4 Automatic sprinklers. Under the prescriptive fire resistance requirements of this code, the fire resistance rating of a building element, component or assembly shall be established without the use of automatic sprinklers or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures and acceptance criteria specified in ASTM E119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the building official allowed by Sections 104.10 and 104.11.</p>		
	<p>703.6 703.4 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E119 or UL 263 and complying with the requirements of Section 707, shall be permitted. Fire-resistance-rated glazing shall bear a label marked in accordance with Table 716.3-716.1(1) issued by an agency and shall be permanently identified on the glazing.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>703.7 703.5 Marking and identification.</p>		
	<p>703.6 Determination of noncombustible protection time contribution. <u>The time, in minutes, contributed to the fire-resistance rating by the noncombustible protection of mass timber building elements, components, or assemblies, shall be established through a comparison of assemblies tested using procedures set forth in ASTM E119 or UL 263. The test assemblies shall be identical in construction, loading and materials, other than the noncombustible protection. The two test assemblies shall be tested to the same criteria of structural failure with the following conditions:</u></p> <ol style="list-style-type: none"> <u>1. Test Assembly 1 shall be without protection.</u> <u>2. Test Assembly 2 shall include the representative noncombustible protection. The protection shall be fully defined in terms of configuration details, attachment details, joint sealing details, accessories and all other relevant details.</u> <p><u>The noncombustible protection time contribution shall be determined by subtracting the fire-resistance time, in minutes, of Test Assembly 1 from the fire-resistance time, in minutes, of Test Assembly 2.</u></p>		<p>Details provided in compliance with ASTM or UL testing.</p>

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	<p>703.7 Sealing of adjacent mass timber elements. In buildings of Types IV-A, IV-B and IV-C construction, sealant or adhesive shall be provided to resist the passage of air in the following locations:</p> <ol style="list-style-type: none"> 1. At abutting edges and intersections of <i>mass timber building elements</i> required to be fire-resistance rated. 2. At abutting intersections of <i>mass timber building elements</i> and <i>building elements</i> of other materials where both are required to be fire-resistance rated. <p>Sealants shall meet the requirements of ASTM C920. Adhesives shall meet the requirements of ASTM D3498.</p> <p>Exception: Sealants or adhesives need not be provided where they are not a required component of a tested fire-resistance-rated assembly.</p>		<p>Additional requirements to bring mass timber up to similar design requirements as regular non combustible construction.</p>
	<p>SECTION 704</p> <p>FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS</p>		
	<p>704.2 Column protection. Where columns are required to have protection to achieve a fire-resistance rating, the entire column shall be provided individual encasement protection by protecting it on all sides for the full column height, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.</p> <p>Exception: Columns that meet the limitations of Section 704.4.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>704.3 Protection of the primary structural frame other than columns. Members of the primary structural frame other than columns that are required to have protection to achieve a fire-resistance rating and support more than two floors or one floor and roof, or support a load-bearing wall or a nonload-bearing wall more than two stories high, shall be provided individual encasement protection by protecting them on all sides for the full length, including connections to other structural members, with materials having the required fire-resistance rating.</p> <p>Exception: Individual encasement protection on all sides shall be permitted on all exposed sides provided that the extent of protection is in accordance with the required fire-resistance rating, as determined in Section 703.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>704.4 Protection of secondary structural members. <i>Secondary structural members</i> that are required to have protection to achieve a <i>fire-resistance rating</i> shall be protected by individual encasement protection.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>704.4.1 Light-frame construction. Studs, columns and boundary elements that are integral elements in load-bearing walls of light-frame construction and are located entirely between the top and bottom plates or tracks shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>704.6.1 Secondary attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary steel attachments to those structural members shall be protected with the same fire-resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches (305 mm), or shall be applied to the entire length where the attachment is less than 12 inches (305 mm) long. Where an attachment is hollow and the ends are open, the fire-resistive material and thickness shall be applied to both exterior and interior of the hollow steel attachment.</p>		<p>Providing more details for fire protection requirements of secondary structural members.</p>
	<p>704.9 Impact protection. Where the fire protective covering of a structural member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire protective covering shall be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor.</p> <p>Exception: Corner protection is not required on concrete columns in open or enclosed parking garages.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>704.10 Exterior structural members. Load-bearing structural members located within the exterior walls or on the outside of a building or structure shall be provided with the highest fire-resistance rating as determined in accordance with the following:</p> <ol style="list-style-type: none"> 1. As required by Table 601 for the type of building element based on the type of construction of the building; 2. As required by Table 601 for exterior bearing walls based on the type of construction; and 3. As required by Table 602 for exterior walls based on the fire separation distance. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>704.13.3 Substrate condition. The SFRM shall be applied to a substrate in compliance with Sections 704.13.3.1 through and 704.13.3.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>704.13.3.2 Primers, paints and encapsulants. Where the SFRM is to be applied over primers, paints or encapsulants other than those specified in the listing, the material shall be field tested in accordance with ASTM E736. Where testing of the SFRM with primers, paints or encapsulants demonstrates that required adhesion is maintained, SFRM shall be permitted to be applied to primed, painted or encapsulated wide flange steel shapes in accordance with the following conditions:</p> <ol style="list-style-type: none"> 1. The beam flange width does not exceed 12 inches (305 mm); or 2. The column flange width does not exceed 16 inches (400 mm); or 3. The beam or column web depth does not exceed 16 inches (400 mm). 4. The average and minimum bond strength values shall be determined based on a minimum of not fewer than five bond tests conducted in accordance with ASTM E736. Bond tests conducted in accordance with ASTM E736 shall indicate an average bond strength of not less than 80 percent and an individual bond strength of not less than 50 percent, when compared to the bond strength of the SFRM as applied to clean uncoated 1/8-inch-thick (3.2 mm) steel plate. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 705 EXTERIOR WALLS</p>		
	<p>705.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1406-1405. Exterior egress balconies and exterior exit stairways and ramps shall comply with Sections 1021 and 1027, respectively. Projections shall not extend any closer to the line used to determine the fire separation distance than shown in Table 705.2.</p> <p>Exception: Buildings on the same lot and considered as portions of one building in accordance with Section 705.3</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	are not required to comply with this section for projections between the buildings.		
	Table 705.2		New requirements for some distances in projections.
	705.2.1 Types I and II construction. Projections from walls of Type I or II construction shall be of noncombustible materials or combustible materials as allowed by Sections 4406.3-705.2.3.1 and 4406.4-705.2.4 .		Edits made to clarify code, no major changes to code requirements.
	<p>705.2.3 Combustible projections. Projection protection. Combustible projections extending to within 5 feet (1524 mm) of the line used to determine the fire separation distance shall be of not less than 1-hour fire-resistance-rated construction, Type IV heavy timber construction, complying with Section 2304.11, fire-retardant treated wood or as required permitted by Section 4406.3-705.2.3.1. Projections extending to within 5 feet (1524 mm) of the line used to determine the fire separation distance shall be one of the following:</p> <ol style="list-style-type: none"> 1. Noncombustible materials. 2. Combustible materials of not less than 1-hour fire-resistance-rated construction. 3. Heavy timber construction complying with Section 2304.11. 4. Fire-retardant-treated wood. 5. As permitted by Section 705.2.3.1. <p>Exception: Type VB construction shall be allowed for combustible projections in Group R-3 and U occupancies with a <i>fire separation distance</i> greater than or equal to 5 feet (1524 mm).</p>		New requirements for some projections.
	<p>705.2.3.1 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant-treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of heavy timber construction in accordance with Section 2304.11. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.</p> <p style="text-align: center;">Exceptions:</p>		New requirement for balconies

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	<p>1. On buildings of Types I and II construction, three stories or less above grade plane, fire-retardant-treated wood shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.</p> <p>2. Untreated wood and plastic composites that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar guard components that are limited to 42 inches (1067 mm) in height.</p> <p>3. Balconies and similar projections on buildings of Types III, IV and V construction shall be permitted to be of Type V construction and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.</p> <p>4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.</p>		
	<p>705.2.4 Bay and oriel windows. Bay and oriel windows constructed of combustible materials shall conform to the type of construction required for the building to which they are attached.</p> <p>Exception: Fire-retardant-treated wood shall be permitted on buildings three stories or less above grade plane of Type I, II, III or IV construction.</p>		<p>Bay windows requirements added.</p>
	<p>705.5 Fire-resistance ratings. Exterior walls shall be fire-resistance rated in accordance with Table 601, based on the type of construction, and Table 705.5, and this section based on the fire separation distance. The required fire-resistance rating of exterior walls with a fire separation distance of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 602 TABLE 705.5</p>		<p>Added Type IV construction to table</p>

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	<p>705.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 705.8 based on the fire separation distance of each individual story.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first story above grade plane either where the wall faces one of the following: <ol style="list-style-type: none"> 1.1. Where the wall faces A street and has a fire separation distance of more than 15 feet (4572 mm); or. 1.2. Where the wall faces An unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall be not less than 30 feet (9144 mm) in width and shall have access from a street by a posted fire lane in accordance with the International Fire Code. 2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>705.8.2 Protected openings. Where openings are required to be protected, fire doors and fire shutters shall comply with Section 716.5 and fire window assemblies shall comply with Section 716.6 opening protectives shall comply with Section 716.</p> <p>Exception: Opening protectives are not required where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and the exterior openings are protected by a water curtain using automatic sprinklers approved for that use.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>705.8.5 Vertical separation of openings. Openings in exterior walls in adjacent stories shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower story is not a protected opening with a fire protection rating of not less than 3/4 hour. Such openings shall be separated</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>vertically not less than 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of not less than 1 hour, rated for exposure to fire from both sides, or by flame barriers that extend horizontally not less than 30 inches (762 mm) beyond the exterior wall. Flame barriers shall have a fire-resistance rating of not less than 1 hour. The unexposed surface temperature limitations specified in ASTM E119 or UL 263 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. This section shall not apply to buildings that are three stories or less above grade plane. 2. This section shall not apply to buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. 3. Open parking garages. 		
	<p>705.8.6 Vertical exposure.</p> <p>For buildings on the same lot, opening protectives having a fire protection rating of not less than 3/4 hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the fire separation distances between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm) from the imaginary line to each building or structure are less than 15 feet (4572 mm).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Opening protectives are not required where the roof assembly of the adjacent building or structure has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the exterior wall facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour. 2. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with Section 705.8.6. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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705.11 Parapets. Parapets shall be provided on exterior walls of buildings.

Exceptions: A parapet need not be provided on an exterior wall where any of the following conditions exist:

1. The wall is not required to be fire-resistance rated in accordance with Table 602 because of fire separation distance.
2. The building has an area of not more than 1,000 square feet (93 m²) on any floor.
3. Walls that terminate at roofs of not less than 2-hour fire-resistance-rated construction or where the roof, including the deck or slab and supporting construction, is constructed entirely of noncombustible materials.
4. One-hour fire-resistance-rated exterior walls that terminate at the underside of the roof sheathing, deck or slab, provided that:
 - 4.1. Where the roof/ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction for a width of 4 feet (1220 mm) for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
 - 4.2. Where roof/ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction.
 - 4.3. Openings in the roof shall not be located within 5 feet (1524 mm) of the 1-hour fire-resistance-rated exterior wall for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
 - 4.4. The entire building shall be provided with not less than a Class B roof covering.
5. In Groups R-2 and R-3 where the entire building is provided with a Class C roof covering, the exterior wall shall be permitted to terminate at the underside of the roof sheathing or deck in Types III, IV and V construction, provided that one or both of the following criteria is met:

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	<p>5.1. The roof sheathing or deck is constructed of approved noncombustible materials or of fire-retardant-treated wood for a distance of 4 feet (1220 mm).</p> <p>5.2. The roof is protected with 0.625-inch (16 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by not less than nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members for a minimum distance of 4 feet (1220 mm).</p> <p>6. Where the wall is permitted to have not less than 25 percent of the exterior wall areas containing unprotected openings based on fire separation distance as determined in accordance with Section 705.8.</p>		
	<p>705.11.1 Parapet construction. Parapets shall have the same fire-resistance rating as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials. The height of the parapet shall be not less than 30 inches (762 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a fire separation distance where protection of wall openings is required, but in no case shall the height shall be not less than 30 inches (762 mm).</p>		
	<p style="text-align: center;">SECTION 706 FIRE WALLS</p> <p>706.1 General. Each portion of a building separated by one or more fire walls that comply with the provisions of this section shall be considered a separate building Fire walls shall be constructed in accordance with Sections 706.2 through 706.11. The extent and location of such fire walls shall provide a complete separation. Where a fire wall separates occupancies that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation shall apply.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>706.1.1 Party walls. Any wall located on a <i>lot line</i> between adjacent buildings, which is used or adapted for <i>joint</i> service between the two buildings, shall be constructed as a <i>fire wall</i> in accordance with Section 706. Party walls shall be constructed without openings and shall create separate buildings.</p> <p>Exceptions:</p>		<p>Allows for easements to prevent the need of additional fire walls.</p>

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	<p>1. Openings in a party wall separating an <i>anchor building</i> and a <i>mall</i> shall be in accordance with Section 402.4.2.2.1.</p> <p>2. Party walls and fire walls are not required on <i>lot lines</i> dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the <i>lot line</i> do not exceed the maximum height and area requirements of this code. For the code building official's review and approval, he or she the official shall be provided with copies of dedicated access easements and contractual agreements that permit the <i>owners</i> of portions of the building located on either side of the <i>lot line</i> access to the other side for purposes of maintaining fire and <i>life safety systems</i> necessary for the operation of the building.</p>		
	<p>706.2 Structural stability. Fire walls shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. Fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.</p> <p>Exception: In Seismic Design Categories D through F, where double fire walls are used in accordance with NFPA 221, floor and roof sheathing not exceeding 3/4 inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of light frame construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>706.5 Horizontal continuity. Fire walls shall be continuous from exterior wall to exterior wall and shall extend not less than 18 inches (457 mm) beyond the exterior surface of exterior walls.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Fire walls shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided that the exterior wall has a fire-resistance rating of not less than 1 hour for a horizontal distance of not less than 4 feet (1220 mm) on both sides of the fire wall. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. 2. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided that the sheathing, siding or other exterior noncombustible finish extends a horizontal distance of not less than 4 feet (1220 mm) on both sides of the fire wall. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.</p>		
	<p>706.5.2 Horizontal projecting elements. Fire walls shall extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees and similar projections that are within 4 feet (1220 mm) of the fire wall.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Horizontal projecting elements without concealed spaces, provided that the exterior wall behind and below the projecting element has not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting element on both sides of the fire wall. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. 2. Noncombustible horizontal projecting elements with concealed spaces, provided that a minimum 1-hour fire-resistance-rated wall extends through the concealed space. The projecting element shall be separated from the building by not less than 1-hour fire-resistance-rated construction for a distance on each side of the fire wall equal to the depth of the projecting element. The wall is not required to extend under the projecting element where the building exterior wall is not less than 1-hour fire-resistance rated for a distance on each side of the fire wall equal to the depth of the projecting element. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. 3. For combustible horizontal projecting elements with concealed spaces, the fire wall need only extend through the concealed space to the outer edges of the projecting elements. The exterior wall behind and below the projecting element shall be of not less than 1-hour fire-resistance-rated construction for a 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>distance not less than the depth of the projecting elements on both sides of the fire wall. Openings within such exterior walls shall be protected by opening protectives having a fire- protection rating of not less than 3/4 hour.</p>		
	<p>706.6 Vertical continuity. Fire walls shall extend from the foundation to a termination point not less than 30 inches (762 mm) above both adjacent roofs.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Stepped buildings in accordance with Section 706.6.1. 2. Two-hour fire-resistance-rated walls shall be permitted to terminate at the underside of the roof sheathing, deck or slab, provided that: <ol style="list-style-type: none"> 2.1. The lower roof assembly within 4 feet (1220 mm) of the wall has not less than a 1-hour fire-resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour. 2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall. 2.3. Each building shall be provided with not less than a Class B roof covering. 3. Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck or slabs where both buildings are provided with not less than a Class B roof covering. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall. 4. In buildings of Types III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks, provided that all of the following requirements are met: <ol style="list-style-type: none"> 4.1. There are no openings in the roof within Roof openings are not less than 4 feet (1220 mm) of the fire wall. 4.2. The roof is covered with a minimum Class B roof covering, and 4.3. The roof sheathing or deck is constructed of fire-retardant-treated wood for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>with 5/8-inch (15.9 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by not less than 2-inch(51 mm) nominal ledgers attached to the sides of the roof framing members for a distance of not less than 4 feet (1220 mm) on both sides of the fire wall.</p> <p>5. In buildings designed in accordance with Section 510.2, fire walls located above the 3-hour horizontal assembly required by Section 510.2, Item 1 shall be permitted to extend from the top of this horizontal assembly.</p> <p>6. Buildings with sloped roofs in accordance with Section 706.6.2.</p>		
	<p>706.6.1 Stepped buildings. Where a <i>fire wall</i> also serves as an <i>exterior wall</i> for a building and separates buildings having different roof levels, such wall shall terminate at a point not less than 30 inches (762 mm) above the lower roof level. provided the exterior wall for a height of 15 feet (4572 mm) Exterior walls above the fire wall extending more than 30 inches (762 mm) above the lower roof is shall be of not less than 1-hour fire-resistance-rated construction from both sides with openings protected by fire assemblies having a <i>fire protection rating</i> of not less than ¾ hour. Portions of the exterior walls greater than 15 feet (4572 mm) above the lower roof shall be of nonfire-resistance-rated construction unless otherwise rated construction is required by other provisions of this code.</p> <p>Exception: Where the fire wall terminates at the underside of the roof sheathing, deck or slab of the lower roof, provided that: A fire wall serving as part of an exterior wall that separates buildings having different roof levels shall be permitted to terminate at the underside of the roof sheathing, deck or slab of the lower roof, provided that Items 1, 2, and 3 are met. The exterior wall above the fire wall is not required to be of fire-resistance-rated construction unless required by other provisions of this code.</p> <p>1. The lower <i>roof assembly</i> within 10 feet (3048 mm) of the <i>fire wall</i> has not less than a 1-hour <i>fire-resistance rating</i>. and the entire length and span of supporting elements for the rated roof assembly has a fire resistance rating of not less than 1 hour.</p> <p>2. The entire length and span of supporting elements for the rated roof assembly shall have a fire-resistance rating of not less than 1 hour.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>23. Openings in the lower roof shall not be located within 10 feet (3048 mm) of the <i>fire wall</i>.</p>		
	<p>706.6.2 Buildings with sloped roofs. Where a fire wall serves as an interior wall for a building, and the roof on one side or both sides of the fire wall slopes toward the fire wall at a slope greater than two units vertical in 12 units horizontal (2:12), the fire wall shall extend to a height equal to the height of the roof located 4 feet (1219 mm) from the fire wall plus 30 inches (762 mm). In no case shall The extension of the fire wall shall be not less than 30 inches (762 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>706.8 Openings. Each opening through a fire wall shall be protected in accordance with Section 716-5 and shall not exceed 156 square feet (15 m²). The aggregate width of openings at any floor level shall not exceed 25 percent of the length of the wall.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Openings are not permitted in party walls constructed in accordance with Section 706.1.1. 2. Openings shall not be limited to 156 square feet (15 m²) where both buildings are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>706.11 Ducts and air transfer openings. Ducts and air transfer openings shall not penetrate fire walls.</p> <p>Exception: Penetrations by ducts and air transfer openings of fire walls that are not on a lot line shall be allowed provided that the penetrations comply with Section 717. The size and aggregate width of all openings shall not exceed the limitations of Section 706.8.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 707 FIRE BARRIERS</p>		
	<p>707.3.10 Fire areas. The fire barriers, fire walls or horizontal assemblies, or combination thereof, separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 707.3.10. The fire barriers, fire walls or horizontal assemblies, or combination thereof, separating fire areas of mixed occupancies shall have a fire-resistance rating of not less than the highest value indicated in Table 707.3.10 for the occupancies under consideration.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p align="center">TABLE 707.3.10 FIRE-RESISTANCE RATING REQUIREMENTS FOR FIRE BARRIERS, ASSEMBLIES FIRE WALLS OR HO+RIZONTAL ASSEMBLIES BETWEEN FIRE AREAS</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>707.4 Exterior walls. Where exterior walls serve as a part of a required fire-resistance-rated shaft, or stairway separation or ramp enclosure <u>for a stairway, ramp or exit passageway</u> or separation, such walls shall comply with the requirements of Section 705 for exterior walls and the fire-resistance-rated enclosure or separation requirements shall not apply.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Exterior walls required to be fire-resistance rated in accordance with Section 1021 for exterior egress balconies, Section 1023.7 for interior exit stairways and ramps, <u>Section 1024.8 for exit passageways</u> and Section 1027.6 for exterior exit stairways and ramps. <u>2. Exterior walls required to be fire-resistance rated in accordance with Section 1207 of the International Fire Code for enclosure of energy storage systems.</u> 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>707.5 Continuity. Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such fire barriers shall be continuous through concealed space, such as the space above a suspended ceiling. Joints and voids at intersections shall comply with Sections 707.8 and 707.9.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 713.12. 2. Interior exit stairway and ramp enclosures required by Section 1023 and exit access stairway and ramp enclosures required by Section 1019 shall be permitted to terminate at a top enclosure complying with Section 713.12. <u>3. An exit passageway enclosure required by Section 1024.3 that does not extend to the underside of the roof sheathing, slab or deck above shall be enclosed at the top with construction of the same fire-resistance rating as required for the exit passageway.</u> 		
	<p>707.5.1 Supporting construction. The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported. Hollow vertical spaces within a fire barrier shall be fire</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>blocked in accordance with Section 718.2 at every floor level.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.9.1.2 shall be 2 hours, but not less than required by Table 601 for the building construction type. 2. Supporting construction for 1-hour fire barriers required by Table 509 in buildings of Types IIB, IIIB and VB construction is not required to be fire-resistance rated unless required by other sections of this code. 		
	<p style="text-align: center;">SECTION 708 FIRE PARTITIONS</p> <p>708.1 General. The following wall assemblies shall comply with this section:</p> <ol style="list-style-type: none"> 1. Separation walls as required by Section 420.2 for Group I-1, R-1, R-2 and R-3 and Group R occupancies. 2. Walls separating tenant spaces in <i>covered</i> and <i>open mall buildings</i> as required by Section 402.4.2.1. 3. <i>Corridor</i> walls as required by Section 1020.3. 4. Enclosed elevator lobby separation as required by Section 3006.3. 5. Egress balconies as required by Section 1049.2 1021.2. 6. Walls separating ambulatory care facilities from adjacent spaces, corridors or tenant as required by Section 422.2. 7. Walls separating dwelling and sleeping units in Groups R-1 and R-2 in accordance with Sections 907.2.8.1 and 907.2.9.1. 8. Vestibules in accordance with Section 1028.2. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>708.3 Fire-resistance rating. Fire partitions shall have a fire-resistance rating of not less than 1 hour.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Corridor walls permitted to have a 1/2-hour fire-resistance rating by Table 1020.1. 2. Dwelling unit and sleeping unit separations in buildings of Types IIB, IIIB and VB construction shall have fire-resistance ratings of not less than 1/2 hour in buildings equipped throughout with an 		

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	<p>automatic sprinkler system in accordance with Section 903.3.1.1.</p>		
	<p>708.4 Continuity. Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the slab or deck above or to the fire resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. In combustible construction where the fire partitions are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fire blocked or draft stopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported, except for walls separating tenant spaces in covered and open mall buildings, walls separating dwelling units, walls separating sleeping units and corridor walls, in buildings of Type IIB, IIIB and VB construction, and be securely attached to one of the following:</p> <ol style="list-style-type: none"> 1. The underside of the floor or roof sheathing, deck or slab above. 2 The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating that is not less than the fire-resistance rating of the fire partition. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The wall need not be extended into the Fire partitions shall not be required to extend into a crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating. 2. Where the room-side fire resistance-rated membrane of the corridor is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, the ceiling of the corridor shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system. Fire partitions serving as a corridor wall shall not be required to extend above the lower membrane of a corridor ceiling provided that the corridor ceiling membrane is equivalent to corridor wall membrane, and either of the following conditions is met: <ol style="list-style-type: none"> 2.1. The room-side membrane of the corridor wall extends to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above. 2.2. The building is equipped with an automatic sprinkler system installed 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>throughout in accordance with Section 903.3.1.1 or 903.3.1.2, including automatic sprinklers installed in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above.</p> <p>3. Where the corridor ceiling is constructed as required for the corridor walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly Fire partitions serving as a corridor wall shall be permitted to terminate at the upper membrane of the corridor ceiling assembly where the corridor ceiling is constructed as required for the corridor wall.</p> <p>4. The fire partitions separating tenant spaces in a covered or open mall building, complying with Section 402.4.2.1, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in attic or ceiling spaces above tenant separation walls Fire partitions separating tenant spaces in a covered or open mall building complying with Section 402.4.2.1 shall not be required to extend above the underside of a ceiling. Such ceiling shall not be required to be part of a fire-resistance-rated assembly, and the attic or space above the ceiling at tenant separation walls shall not be required to be subdivided by fire partitions.</p> <p>5. Attic fire blocking or draft stopping is not required at the partition line in Group R-2 buildings that do not exceed four stories above grade plane, provided the attic space is subdivided by draft stopping into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, whichever is smaller.</p> <p>6. Fire blocking or draft stopping is not required at the partition line in buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.</p>		
	<p>708.4.1 Supporting construction. The supporting construction for a <i>fire partition</i> shall have a <i>fire-resistance rating</i> that is equal to or greater than the required <i>fire-resistance rating</i> of the supported <i>fire partition</i>.</p> <p>Exception: In buildings of Types IIB, IIIB and VB construction, the supporting construction requirement shall not apply to <i>fire partitions</i> separating tenant spaces in</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>covered and open mall buildings, fire partitions separating dwelling units, fire partitions separating sleeping units, and fire partitions serving as corridor walls, fire partitions separating ambulatory care facilities from adjacent spaces or corridors, fire partitions separating dwelling and sleeping units from Group R-1 and R-2 occupancies and fire partitions separating vestibules from the level of exit discharge.</p>		
	<p>708.4.2 Fireblocks and draftstops in combustible construction. In combustible construction where fire partitions do not extend to the underside of the floor or roof sheathing, deck or slab above, the space above and along the line of the fire partition shall be provided with one of the following:</p> <ol style="list-style-type: none"> 1. Fireblocking up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.2.1. 2. Draftstopping up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.3.1 for floors or Section 718.4.1 for attics. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, or in accordance with Section 903.3.1.2 provided that protection is provided in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above as required for systems complying with Section 903.3.1.1. 2. Where corridor walls provide a sleeping unit or dwelling unit separation, draftstopping shall only be required above one of the corridor walls. 3. In Group R-2 occupancies with fewer than four dwelling units, fireblocking and draftstopping shall not be required. 4. In Group R-2 occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane, 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. 5. In Group R-3 occupancies with fewer than three dwelling units, fire-blocking and draftstopping shall not be required in floor assemblies. 		<p>Additional requirements for fire partitions, including fire blocking and draft stopping.</p>

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	SECTION 709 SMOKE BARRIERS		
	<p>709.4.1 Smoke-barrier Walls assemblies separating smoke compartments. Smoke-barrier walls assemblies used to separate <i>smoke compartments</i> shall form an effective membrane enclosure that is continuous from an outside wall or smoke barrier wall to an outside wall or another smoke barrier wall and to the horizontal assemblies.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>709.4.2 Smoke-barrier walls enclosing areas of refuge or elevator lobbies. Smoke-barrier walls used to enclose areas of refuge in accordance with Section 1009.6.4, or to enclose elevator lobbies in accordance with Section 405.4.3, 3007.6.2, or 3008.6.2, shall form an effective membrane enclosure that terminates at a fire barrier wall having a level of fire protection rating not less than 1 hour, another smoke barrier wall or an outside wall. A smoke and draft control door assembly as specified in Section 716.5.3.1 716.2.2.1.1 shall not be required at each elevator hoistway door opening or at each exit doorway between an area of refuge and the exit enclosure.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>709.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section 716.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. 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 709.5.1, the doors shall not be required to be protected in accordance with Section 716. 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. Where permitted by the door manufacturer's listing, positive-latching devices are not required. Factory-applied or field-applied protective plates are not required to be labeled. 2. In Group I-1 Condition 2, Group I-2 and ambulatory care facilities, special purpose horizontal sliding, accordion or folding doors installed in accordance with Section 1010.1.4.3 and protected in accordance with Section 716. 		

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	<p>709.5.1 Group I-2 and ambulatory care facilities. In Group I-2 and ambulatory care facilities, where doors protecting openings in smoke barriers are installed across a corridor and have hold-open devices, the doors shall be automatic-closing by smoke detection in accordance with Section 716.5.9.3 and 716.2.6.6. Such doors 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 710 SMOKE PARTITIONS</p>		
	<p>710.5 Openings. Openings in <i>smoke partitions</i> shall comply with Sections 710.5.1 and 710.5.2 through 710.5.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>710.5.2.1 Louvers. Doors in <i>smoke partitions</i> shall not include louvers.</p> <p style="padding-left: 40px;"><u>Exception: Where permitted in accordance with Section 407.3.1.1.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>710.5.2.3 Self- or automatic-closing doors. Where required elsewhere in the code, doors in smoke partitions shall be self- or automatic-closing by smoke detection in accordance with Section 716.5.9.3 716.2.6.6</p>		
	<p><u>710.5.3 Pass-through openings in Group I-2, Condition 2.</u> <u>Where pass-through openings are provided in <i>smoke partitions</i> in Group I-2, Condition 2 occupancies, such openings shall comply with the following:</u></p> <ol style="list-style-type: none"> <u>1. The <i>smoke compartment</i> in which the pass-through openings occur does not contain a patient care suite or sleeping room.</u> <u>2. Pass-through openings are installed in a wall, door or vision panel that is not required to have a <i>fire-resistance rating</i>.</u> <u>3. The top of the pass-through opening is located a maximum of 48 inches (1219 mm) above the floor.</u> <u>4. The aggregate area of all such pass-through openings within a single room shall not exceed 80 square inches (0.05 m²).</u> 		<p>Added requirements in pass through openings.</p>

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	SECTION 711 FLOOR AND ROOF ASSEMBLIES		
	<p>711.2.3 Supporting construction. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.</p> <p>Exception: In buildings of Type IIB, IIIB or VB construction, the construction supporting the horizontal assembly is not required to be fire-resistance rated at the following:</p> <ol style="list-style-type: none"> 1. Horizontal assemblies at the separations of incidental uses as specified by Table 509 provided that the required fire-resistance rating does not exceed 1 hour. 2. Horizontal assemblies at the separations of dwelling units and sleeping units as required by Section 420.3. 3. Horizontal assemblies at smoke barriers constructed in accordance with Section 709. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>711.2.4.3 Dwelling units and sleeping units. Horizontal assemblies serving as dwelling or sleeping unit separations in accordance with Section 420.3 shall be not less than 1-hour fire-resistance-rated construction.</p> <p>Exception: Horizontal assemblies separating dwelling units and sleeping units shall be not less than 1/2-hour fire-resistance-rated construction in a building of Types IIB, IIIB and VB construction, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	SECTION 712 VERTICAL OPENINGS		
	<p>712.1.7 Atriums. In other than Group H occupancies, atriums complying with Section 404 shall be permitted Atriums complying with Section 404 that connect two or more stories in Group I-2 or I-3 occupancies or three or more stories in other occupancies shall be permitted.</p> <p>Exceptions:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. Atriums shall not be permitted within Group H occupancies.</p> <p>2. Balconies or stories within Groups A-1, A-4 and A-5 and mezzanines that comply with Section 505 shall not be considered a story as it applies to this section.</p>		
	<p>712.1.9 Two-story openings. In other than Groups I-2 and I-3, a vertical opening that is not used as one of the applications listed in this section shall be permitted if the opening complies with all of the following items below:</p> <ol style="list-style-type: none"> 1. Does not connect more than two stories. 2. Does not penetrate a horizontal assembly that separates fire areas or smoke barriers that separate smoke compartments. 3. Is not concealed within the construction of a wall or a floor/ceiling assembly. 4. Is not open to a corridor in Group I and R occupancies. 5. Is not open to a corridor on nonsprinklered floors. 6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures. 		Edits made to clarify code, no major changes to code requirements.
	<p>712.1.10.1 Automobile ramps. Vertical openings for automobile ramps in open and enclosed parking garages shall be permitted where constructed in accordance with Sections 406.5 and 406.6, respectively.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>712.1.10.2 Elevators. Vertical openings for elevator hoistways in open or enclosed parking garages that serve only the parking garage, and complying with Sections 406.5 and 406.6, respectively, shall be permitted.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>712.1.10.3 Duct systems. Vertical openings for mechanical exhaust or supply duct systems in open or enclosed parking garages complying with Sections 406.5 and 406.6, respectively, shall be permitted to be unenclosed where such duct system is contained within and serves only the parking garage.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>712.1.13.2 Access doors. Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and roof/ceiling assemblies, provided that such doors are tested in accordance with ASTM E119 or UL 263 as horizontal assemblies and labeled by an approved agency for such purpose.</p>		Edits made to clarify code, no major changes to code requirements.

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	SECTION 713 SHAFT ENCLOSURES		
	<p>713.7 Openings. Openings in a shaft enclosure shall be protected in accordance with Section 716 as required for fire barriers. Doors shall be self- or automatic-closing by smoke detection in accordance with Section 716.5.9.3 716.2.6.6.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>713.8.1 Prohibited penetrations. Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.</p> <p style="padding-left: 40px;">Exception: Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.4.2.</p>		<p>New exception to penetrations</p>
	<p>713.11 Enclosure at the bottom. Shafts that do not extend to the bottom of the building or structure shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. They shall be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure. 2. They shall terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating and opening protectives shall be not less than the protection required for the shaft enclosure. 3. They shall be protected by approved fire dampers installed in accordance with their listing at the lowest floor level within the shaft enclosure. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The fire-resistance-rated room separation is not required, provided there are no that the only openings in or penetrations of the shaft enclosure to the interior of the building except occur at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 718.3.1 for draftstopping, or the room shall be provided with an approved automatic sprinkler system. 2. A shaft enclosure containing a waste or linen chute shall not be used for any other purpose and 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>shall discharge in a room protected in accordance with Section 713.13.4.</p> <p>3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided that there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.</p>		
	<p>713.12 Enclosure at top. A shaft enclosure that does not extend to the underside of the roof sheathing, deck or slab of the building shall be enclosed at the top with construction of the same fire-resistance rating as the topmost floor</p> <p>penetrated by the shaft, but not less than the fire-resistance rating required for the shaft enclosure. The top of shaft enclosures shall comply with one of the following:</p> <p>1. Extend to the underside of the roof sheathing, deck or slab of the building, and the roof assembly shall comply with the requirements for the type of construction as specified in Table 601.</p> <p>2. Terminate below the roof assembly and be enclosed at the top with construction of the same fire-resistance rating as the topmost floor penetrated by the shaft, but not less than the fire-resistance rating required for the shaft enclosure.</p> <p>3. Extend past the roof assembly and comply with the requirements of Section 511.</p>		<p>Edits made to clarify code and allowing shaft extending through a rooftop.</p>
	<p>713.12.1 Penthouse mechanical rooms. A fire/smoke damper shall not be required at the penetration of the rooftop structure where shaft enclosures extend up through the roof assembly into a rooftop structure conforming to Section 1511. Ductwork in the shaft shall be connected directly to HVAC equipment.</p>		<p>New allowance for no dampers in penthouse mechanical rooms.</p>
	<p>713.13 Waste, recycling and linen chutes and incinerator rooms. Waste, recycling and linen chutes shall comply with the provisions of NFPA 82, Chapter 5-6 and shall meet the requirements of Sections 712 and 713.13.1 through 713.13.6. Incinerator rooms shall meet the provisions of Sections 713.13.4 and 713.13.5.</p> <p>Exception: Chutes serving and contained within a single dwelling unit.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>713.13.1 Waste, recycling and linen chute enclosures. A shaft enclosure containing a recycling, waste or linen chute shall not be used for any other purpose and shall be enclosed in accordance with Section 713.4. A shaft enclosure shall be permitted to contain recycling and waste chutes. Openings into the shaft, from access rooms and discharge rooms, shall be protected in accordance with this</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>section and Section 716. Openings into chutes shall not be located in corridors. Doors into chutes shall be self-closing . Discharge doors shall be self-or automatic-closing upon the actuation of a smoke detector in accordance with Section 716.5.9.3 716.2.6.6, except that heat-activated closing devices shall be permitted between the shaft and the discharge room.</p>		
	<p>713.13.3 Chute access rooms. Access openings for waste, recycling or linen chutes shall be located in rooms or compartments enclosed by not less than 1-hour <i>fire barriers</i> constructed in accordance with Section 707 or <i>horizontal assemblies</i> constructed in accordance with Section 711, or both. Openings into the access rooms shall be protected by opening protectives having a <i>fire protection rating</i> of not less than ¾ hour. Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 716.5.9.3 716.2.6.6. The room or compartment shall be configured to allow the access door to the room or compartment to close and latch with the access panel to the refuse or laundry chute in any position.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>713.13.4 Chute discharge room. Table 509.1Waste, recycling or linen chutes shall discharge into an enclosed room separated by fire barriers with a fire-resistance rating not less than the required fire rating of the shaft enclosure and constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Openings into the discharge room from the remainder of the building shall be protected by opening protectives having a fire protection rating equal to the protection required for the shaft enclosure. Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 716.5.9.3 716.2.6.6. Waste chutes shall not terminate in an incinerator room. Waste and linen rooms that are not provided with chutes need only comply with Table 509.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>713.14 Elevator, dumbwaiter and other hoistways. Elevator, dumbwaiter and other hoistway enclosures shall be constructed in accordance with Sections 712 and 713 and Chapter 30.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 714 PENETRATIONS</p>	<p>SECTION 714 PENETRATIONS</p>	
<p>714.1.1 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts that are not protected with <i>dampers</i> shall comply with Sections 714.2 through 714.3.3.</p>	<p>714.1.1 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts that are not protected with dampers shall comply with Sections 714.2</p>	<p>714.1.1 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts that are not protected with <i>dampers</i> shall comply with Sections 714.3 through 714.4.3. Penetrations of</p>	<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>Penetrations of <i>horizontal assemblies</i> not protected with a shaft as permitted by Section 717.6, and not required to be protected with fire <i>dampers</i> by other sections of this code, shall comply with Sections 714.4 through 714.5.2. Ducts and air transfer openings that are protected with <i>dampers</i> shall comply with Section 717.</p> <p><u>Penetrations may be made in gypsum wallboard membranes for one-hour protection for bathroom and clothes dryer exhaust ducts without fire dampers provided:</u></p> <ol style="list-style-type: none"> <u>1. A minimum of 0.019-inch (26 gauge) steel ducts are used continuously from the opening to the exterior or into a rated shaft.</u> <u>2. Voids around the duct penetration shall be sealed with approved materials to prevent the passage of flame.</u> <u>3. The maximum size of the bathroom fan assembly shall be 100 square inches (645.16 cm²).</u> <u>4. The maximum size of the clothes dryer duct shall be 20 square inches (129.032 cm²).</u> 	<p>through 714.4.3-714.3 through 714.4.3 Penetrations of horizontal assemblies not protected with a shaft as permitted by Section 717.6, and not required to be protected with fire dampers by other sections of this code, shall comply with Sections 714.4 through 714.5.2-714.5 through 714.6.2. Ducts and air transfer openings that are protected with dampers shall comply with Section 717.</p>	<p><i>horizontal assemblies</i> not protected with a <i>shaft</i> as permitted by Section 717.6, and not required to be protected with <i>fire dampers</i> by other sections of this code, shall comply with Sections 714.5 through 714.6.2. Ducts and air transfer openings that are protected with <i>dampers</i> shall comply with Section 717.</p> <p><u>Penetrations may be made in gypsum wallboard membranes for one-hour protection for bathroom and clothes dryer exhaust ducts without fire dampers provided:</u></p> <ol style="list-style-type: none"> <u>1. A minimum of 0.019-inch (26 gauge) steel ducts are used continuously from the opening to the exterior or into a rated shaft.</u> <u>2. Voids around the duct penetration shall be sealed with approved materials to prevent the passage of flame.</u> <u>3. The maximum size of the bathroom fan assembly shall be 100 square inches (645.16 cm²).</u> <u>4. The maximum size of the clothes dryer duct shall be 20 square inches (129.032 cm²).</u> 	<p>No change to Houston amendment.</p>
	<p>714.2 Installation. A listed penetration firestop system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.2-714.3 Installation details.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.3-714.4 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.3.1 through 714.3.3 714.4.1 through 714.4.3. Penetrations in smoke barrier walls shall also comply with Section 714.4.4-714.5.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.3.1-714.4.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 714.3.1.1 or 714.3.1.2-714.34.1.1 or 714.34.1.2.</p> <p>Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space between the penetrating item and the fire-resistance-rated wall is permitted to be protected by either of the following measures:</p> <ol style="list-style-type: none"> 1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (0.0929 m²), concrete, grout or mortar is permitted where installed the full thickness of the 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>wall or the thickness required to maintain the fire-resistance rating.</p> <p>2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.</p>		
	<p>714.3.1.1 714.4.1.1 Fire-resistance-rated assemblies. Penetrations through penetrations shall be protected using systems installed as tested in an the approved fire-resistance-rated assembly.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.3.1.2 714.4.1.2 Through-penetration firestop system.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.3.2 714.4.2 Membrane penetrations. Membrane penetrations shall comply with Section 714.3.1 714.4.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Membrane penetrations of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area, provided that the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m²) in any 100 square feet (9.29 m²) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.2 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following: <ol style="list-style-type: none"> 1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities; 1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>filled with cellulose loose-fill, rockwool or slag mineral wool insulation;</p> <p>1.3. By solid fireblocking in accordance with Section 718.2.1;</p> <p>1.4. By protecting both outlet boxes with listed putty pads; or</p> <p>1.5. By other listed materials and methods.</p> <p>2. Membrane penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.2 mm) unless listed otherwise. Such boxes on opposite sides of the wall or partition shall be separated by one of the following:</p> <p>2.1. By the horizontal distance specified in the listing of the electrical boxes;</p> <p>2.2. By solid fireblocking in accordance with Section 718.2.1;</p> <p>2.3. By protecting both boxes with listed putty pads; or</p> <p>2.4. By other listed materials and methods.</p> <p>3. Membrane penetrations by electrical boxes of any size or type, that have been listed as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.</p> <p>4. Membrane penetrations by boxes other than electrical boxes, provided that such penetrating items and the annular space between the wall membrane and the box, are protected by an approved membrane penetration firestop system installed as tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water, and shall have an F and T rating of not less than the required fire-</p>		
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	<p>resistance rating of the wall penetrated and be installed in accordance with their listing.</p> <p>5. The annular space created by the penetration of an automatic sprinkler, provided that it is covered by a metal escutcheon plate.</p> <p>6. Membrane penetrations of maximum 2-hour fire -resistance-rated walls and partitions by steel electrical boxes that exceed 16 square inches (0.0 103 m²) in area, or steel electrical boxes of any size having an aggregate area through the membrane exceeding 100 square inches (0.0645 m²) in any 100 square feet (9.29 m²) of wall area, provided that such penetrating items are protected by listed putty pads or other listed materials and methods, and installed in accordance with the listing.</p>		
	<p>713.3.3 714.4.3 Dissimilar materials.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.4 714.5 Horizontal assemblies. Penetrations of a fire-resistance-rated floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly not required to be enclosed in a shaft by Section 712.1 shall be protected in accordance with Sections 714.4.1 through 714.4.4 714.5.1 through 714.5.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.4.1 714.5.1 Through penetrations. Through penetrations of horizontal assemblies shall comply with Section 714.4.1.1 or 714.4.1.2 714.45.1.1 or 714.45.1.2.</p> <p>Exceptions:</p> <p>1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistance-rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided that the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 mm²) in any 100 square feet (9.3 m²) of floor area.</p> <p>2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided that the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items shall not be limited to the penetration of a single concrete floor, provided that the area of the opening through each floor does not exceed 144 square inches (92 900 mm²).</p> <p>3. Penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.</p>		
	<p>714.4.1.4 714.5.1.1 Installation Fire-resistance-rated assemblies. Through penetrations shall be protected using systems installed as tested in the approved fire-resistance-rated assembly.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.4.1.2 714.5.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an F rating/T rating of not less than 1 hour but not less than the required rating of the floor penetrated.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating. 2. Floor penetrations by floor drains, tub drains or shower 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>drains contained and located within the concealed space of a horizontal assembly do not require a T rating.</p> <p>3. Floor penetrations of maximum 4-inch (102 mm) nominal diameter metal conduit or tubing penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.</p>		
	<p>714.4.2 714.5.2 Membrane penetrations. Penetrations of membranes that are part of a horizontal assembly shall comply with Section 714.4.1.1 or 714.4.1.2 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Membrane penetrations by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the annular space is protected either in accordance with Section 714.4.1 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm²) in any 100 square feet (9.3 m²) of ceiling area in assemblies tested without penetrations. 2. Ceiling membrane penetrations of maximum 2-hour horizontal assemblies by steel electrical boxes that do not exceed 16 square inches (10 323 mm²) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm²) in any 100 square feet (9.29 m²) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed 1/8 inch (3.2 mm). 3. Membrane penetrations by electrical boxes of any size or type, that have been listed as part of an opening protective material system for use in horizontal assemblies and are installed in accordance with the instructions included in the listing. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4. Membrane penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the ceiling membrane and the box shall not exceed 1/8 inch (3.2 mm) unless listed otherwise.</p> <p>5. The annular space created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.</p> <p>6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.</p> <p>7. The ceiling membrane of 1 and a maximum 2-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with the double wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard, provided that all penetrating items through the double top plates are protected in accordance with Section 714.4.1.1 or 714.4.1.2 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.</p> <p>8. Ceiling membrane penetrations by listed luminaires (light fixtures) or by luminaires protected with listed materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.</p>		
	<p>714.4.3-714.5.3 Dissimilar materials.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>714.4.4-714.5.4 Penetrations in smoke barriers. Penetrations in smoke barriers shall be protected by an approved through-penetration firestop system installed and tested in accordance with the requirements of UL 1479 for air leakage. The L rating of the system measured at 0.30 inch (7.47 Pa) of water in both the ambient temperature and elevated temperature tests shall not exceed either of the following:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. 5.0 cfm per square foot (0.025 m³/ s · m²) of penetration opening for each through-penetration firestop system; or</p> <p>2. A total cumulative leakage of 50 cfm (0.024 m³/s) for any 100 square feet (9.3 m²) of wall area, or floor area.</p>		
	<p>714.5 714.6 Nonfire-resistance-rated assemblies. Penetrations of nonfire-resistance-rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance-rated roof/ceiling assembly shall meet the requirements of Section 713 or shall comply with Section 714.5.1 or 714.5.2 714.6.1 or 714.6.2.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>714.5.1 714.6.1 Noncombustible penetrating items.</p>		
	<p>714.5.2 714.6.2 Penetrating items.</p>		
	<p style="text-align: center;">SECTION 715 FIRE-RESISTANT JOINT SYSTEMS JOINTS AND VOIDS</p> <p>715.1 General. <u>The provisions of this section shall govern the materials and methods of construction used to protect joints and voids in or between horizontal and vertical assemblies.</u></p>		Edits made to clarify code, no major changes to code requirements.
	<p>715.2 Installation. A fire-resistant joint system Systems or materials protecting joints and voids shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases. Fire-resistant joint systems or systems used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections shall also be installed in accordance with the listing criteria.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>715.1 715.3 General. Fire-resistance-rated assembly intersections. Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which the system is installed. Fire-resistant joint systems shall be tested in accordance with Section 715.3.1.</p> <p>Exception: Fire-resistant joint systems shall not be required for joints in the following locations:</p> <ol style="list-style-type: none"> 1. Floors within a single dwelling unit. 		Edits made to clarify code, no major changes to code requirements.

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	<ol style="list-style-type: none"> 2. Floors where the joint is protected by a shaft enclosure in accordance with Section 713. 3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes. 4. Floors within malls. 5. Floors and ramps within open and enclosed parking garages or structures constructed in accordance with Sections 406.5 and 406.6, respectively. 6. Mezzanine floors. 7. Walls that are permitted to have unprotected openings. 8. Roofs where openings are permitted. 9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E119 or UL 263. 10. The intersection of exterior curtain wall assemblies and the roof slab or roof deck. 		
	<p>715.2 Installation. A fire-resistant joint system shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>715.3 715.3.1 Fire test criteria. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E1966 or UL 2079. Nonsymmetrical wall joint systems shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests. Where evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the building official, the wall need not be subjected to tests from the opposite side.</p> <p>Exception: For exterior walls with a horizontal fire separation distance greater than 510 feet (1524-3048 mm), the joint system shall be required to be tested for interior fire exposure only.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>715.4 Exterior curtain wall fire-resistance-rated floor intersections. Where fire-resistance-rated floor or floor/ceiling assemblies are required, voids Voids created at the intersection of the exterior curtain wall assemblies and such floor fire-resistance-rated floor or floor/ceiling assemblies shall be sealed protected with an approved perimeter fire containment system to prevent the interior spread of fire. Such systems shall be securely installed and tested in accordance with ASTM E2307 to provide an F rating for a time period not less than the fire-resistance rating of the floor or floor/ceiling assembly. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.</p> <p>Exception: Voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies where the vision glass extends to the finished floor level shall be permitted to be sealed with an approved material to prevent the interior spread of fire. Such material shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period not less than the fire-resistance rating of the floor assembly.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>715.4.1 Fire test criteria. <u>Perimeter fire containment systems shall be tested in accordance with the requirements of ASTM E2307.</u></p> <p><u>Exception: Voids created at the intersection of the exterior curtain wall assemblies and floor assemblies where the vision glass extends to the finished floor level shall be permitted to be protected with an approved material to prevent the interior spread of fire. Such material shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period not less than the fire-resistance rating of the floor assembly.</u></p>		<p>New requirement to allow for systems tested in accordance with ASTM E2307.</p>
	<p>715.4.1 715.5 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance-rated floor or floor/ceiling assemblies shall be sealed filled with an approved material or system to retard the interior spread of fire and hot gases between stories.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>715.4.2 715.6 Exterior curtain wall/vertical fire barrier intersections. Voids created at the intersection of nonfire-resistance-rated exterior curtain wall assemblies and vertical fire barriers shall be filled An with an approved material or system shall be used to fill the void and shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>otherwise impair its ability to accommodate expected building movements and to retard the passage interior spread of fire and hot gases.</p>		
	<p>715.5 715.7 Spandrel wall. Curtain wall spandrels. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5. Where Section 705.8.5 does not require fire-resistance-rated spandrel wall curtain wall spandrels, the requirements of Section 715.4 Sections 715.4 and 715.5 shall still apply to the intersection between the spandrel curtain wall spandrels and the floor.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>715.6 715.8 Joints and voids in smoke barriers. Fire-resistant joint systems protecting joints in smoke barriers, and joints perimeter fire containment systems protecting voids at the intersection of a horizontal <i>smoke barrier</i> and an exterior curtain wall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The L rating of the joint system shall not exceed 5 cubic feet per minute per linear foot (0.00775 m³/s m) of joint at 0.30 inch (74.7 Pa) of water for both the ambient temperature and elevated temperature tests.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 716 OPENING PROTECTIVES</p> <p>716.1 General. Opening protectives required by other sections of this code shall comply with the provisions of this section. and shall be installed in accordance with NFPA 80.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 716.1(2)</p>		Added double fire walls to openings table.
	<p>TABLE 716.1(3)</p>		Added "C. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the International Fire Code to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted."
	<p>716.1.1 Alternative methods for determining fire protection ratings. The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C. The required fire</p>		More clearly specifies how to provide alternative methods for fire ratings.

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	<p>resistance of an opening protective shall be permitted to be established by any of the following methods or procedures:</p> <ol style="list-style-type: none"> 1. Designs documented in approved sources. 2. Calculations performed in an approved manner. 3. Engineering analysis based on a comparison of opening protective designs having fire protection ratings as determined by the test procedures set forth in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C. 4. Alternative protection methods as allowed by Section 104.11. 		
	<p>716.1.2 Glazing. Glazing used in fire door assemblies and fire window assemblies shall comply with this section in addition to the requirements of Sections 716.2 and 716.3, respectively.</p>		<p>Edits made to clarify code, no major changes to code requirements. Glazing details brought in to meet ASTM and or NFPA requirements.</p>
	<p>716.1.2.1 Safety glazing. Fire-protection-rated glazing and fire-resistance-rated glazing installed in fire door assemblies and fire window assemblies shall comply with the safety glazing requirements of Chapter 24 where applicable.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.1.2.2 Marking fire-rated glazing assemblies. Fire-rated glazing assemblies shall be marked in accordance with Tables 716.1(1), 716.1(2) and 716.1(3)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.1.2.2.1 Fire-rated glazing identification. For fire-rated glazing, the label shall bear the identification required in Tables 716.1(1) and 716.1(2). "D" indicates that the glazing is permitted to be used in fire door assemblies and meets the fire protection requirements of NFPA 252, UL 10B or UL 10C. "H" indicates that the glazing meets the hose stream requirements of NFPA 252, UL 10B or UL 10C. "T" indicates that the glazing meets the temperature requirements of Section 716.2.2.3.1. The placeholder "XXX" represents the fire-rating period, in minutes.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>716.1.2.2.2 Fire-protection-rated glazing identification. For fire-protection-rated glazing, the label shall bear the following identification required in Tables 716.1(1) and 716.1(3): "OH – XXX." "OH" indicates that the glazing meets both the fire protection and the hose-stream requirements of NFPA 257 or UL 9 and is permitted to be used in fire window openings. The placeholder "XXX" represents the fire-rating period, in minutes.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.1.2.2.3 Fire-resistance-rated glazing identification. For fire-resistance-rated glazing, the label shall bear the identification required in Section 703.6 and Table 716.1(1).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.1.2.2.4 Fire-rated glazing that exceeds the code requirements. Fire-rated glazing assemblies marked as complying with hose stream requirements (H) shall be permitted in applications that do not require compliance with hose stream requirements. Fire-rated glazing assemblies marked as complying with temperature rise requirements (T) shall be permitted in applications that do not require compliance with temperature rise requirements. Fire-rated glazing assemblies marked with ratings (XXX) that exceed the ratings required by this code shall be permitted.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.1.2.3 Fire-resistance-rated glazing. Fire-resistance-rated glazing tested as part of a fire-resistance-rated wall or floor/ceiling assembly in accordance with ASTM E119 or UL 263 and labeled in accordance with Section 703.6 shall not otherwise be required to comply with this section where used as part of a wall or floor/ceiling assembly.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.1.2.3.1 Glazing in fire door and fire window assemblies. Fire-resistance-rated glazing shall be permitted in fire door and fire window assemblies where tested and installed in accordance with their listings and where in compliance with the requirements of this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>716.2 Fire resistance-rated glazing. Fire door assemblies. Fire resistance-rated glazing tested as part of a fire resistance-rated wall or floor/ceiling assembly in accordance with ASTM E119 or UL 263 and labeled in accordance with Section 703.6 shall not otherwise be required to comply with this section where used as part of a wall or floor/ceiling assembly. Fire resistance-rated glazing shall be permitted in fire door and fire window assemblies where tested and installed in accordance with their NFPA listings and where in compliance with the requirements of this section. Fire door assemblies required by other sections of this code shall comply with the provisions of this section. Fire door frames with transom lights, sidelights or both shall be permitted in accordance with Section 716.2.5.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.1 Testing requirements. Approved fire door and fire shutter assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Sections 716.2.1.1 through 716.2.1.4 and the fire protection rating indicated in Table 716.1(2).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies. 2. Floor fire door assemblies in accordance with Section 712.1.13.1. 		<p>Edits made to clarify code, no major changes to code requirements. Fire door language more clearly lines up with NFPA requirements.</p>
	<p>716.2.1.1 Side-hinged or pivoted swinging doors. Fire door assemblies with side-hinged and pivoted swinging doors shall be tested in accordance with NFPA 252 or UL 10C. For tests conducted in accordance with NFPA 252, the fire test shall be conducted using the positive pressure method specified in the standard.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.1.2 Other types of assemblies. Fire door assemblies with other types of doors, including swinging elevator doors, horizontal sliding fire doors, rolling steel fire doors, fire shutters, bottom- and side-hinged chute intake doors, and top-hinged chute discharge doors, shall be tested in accordance with NFPA 252 or UL 10B. For tests conducted in accordance with NFPA 252, the neutral pressure plane in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible at the top of the door, as specified in the standard.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>716.2.1.3 Glazing in transoms lights and sidelights in corridors and smoke barriers. Glazing material in any other part of the door assembly, including transom lights and sidelights, shall be tested in accordance with NFPA 257 or UL 9, including the hose stream test, in accordance with Section 716.3.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.1.4 Smoke and draft control. Fire door assemblies that serve as smoke and draft control assemblies shall be tested in accordance with UL 1784.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.2 Performance requirements. Fire door assemblies shall be installed in the assemblies specified in Table 716.1(2) and shall comply with the fire protection rating specified.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.2.1 Door assemblies in corridors and smoke barriers. Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in corridor walls or smoke barrier walls having a fire-resistance rating in accordance with Table 716.1(2) shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have not less than a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700°F (927°C). 2. Corridor door assemblies in occupancies of Group I-2 shall be in accordance with Section 407.3.1. 3. Unprotected openings shall be permitted for corridors in multitheater complexes where each motion picture auditorium has not fewer than one-half of its required exit or exit access doorways opening directly to the exterior or into an exit passageway. 4. Horizontal sliding doors in smoke barriers that comply with Sections 408.6 and 408.8.4 in occupancies in Group I-3. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>716.2.2.1.1 Smoke and draft control. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 m³/s x m²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited. Terminated stops shall be prohibited on doors required by Section 405.4.3 to comply with Section 716.2.2.1 and prohibited on doors required by Item 3 of Section 3006.3, or Section 3007.6.3 or 3008.6.3 to comply with this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.2.2 Door assemblies in other fire partitions. Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in other fire partitions having a fire-resistance rating of 0.5 hour in accordance with Table 716.1(2) shall be tested in accordance with NFPA 252, UL 10B or UL 10C with the hose stream test.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.2.3 Doors in interior exit stairways and ramps and exit passageways. Fire door assemblies in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure.</p> <p>Exception: The maximum transmitted temperature rise 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.2.3.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m²) is not permitted. Fire-resistance-rated glazing in excess of 100 square inches (0.065 m²) shall be permitted in fire doors. Listed fire-resistance-rated glazing in a fire door shall have a maximum transmitted temperature rise in accordance with Section 716.2.2.3 when the fire door is tested in accordance with NFPA 252, UL 10B or UL 10C.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	716.2.3 Fire doors. Fire doors installed within a fire door assembly shall meet the fire rating indicated in Table 716.1(2).		Edits made to clarify code, no major changes to code requirements.
	716.2.4 Fire door frames. Fire door frames installed as part of a fire door assembly shall meet the fire rating indicated in Table 716.1(2).		Edits made to clarify code, no major changes to code requirements.
	716.2.5 Glazing in fire door assemblies. Fire-rated glazing conforming to the opening protection requirements in Section 716.2.1 shall be permitted in fire door assemblies.		Edits made to clarify code, no major changes to code requirements.
	716.2.5.1 Size limitations. Fire-resistance-rated glazing shall comply with the size limitations in Section 716.2.5.1.1. Fire-protection-rated glazing shall comply with the size limitations of NFPA 80, and as provided in Section 716.2.5.1.2.		Edits made to clarify code, no major changes to code requirements.
	716.2.5.1.1 Fire-resistance-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1 hour. Fire-resistance-rated glazing tested to ASTM E119 or UL 263 and NFPA 252, UL 10B or UL 10C shall be permitted in fire door assemblies located in fire walls and in fire barriers in accordance with Table 716.1(2) to the maximum size tested and in accordance with their listings.		Edits made to clarify code, no major changes to code requirements.
	716.2.5.1.2 Fire-protection-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1 hour. Fire-protection-rated glazing shall be prohibited in fire walls and fire barriers except as provided in Sections 716.2.5.1.2.1 and 716.2.5.1.2.2.		Edits made to clarify code, no major changes to code requirements.
	716.2.5.1.2.1 Horizontal exits. Fire-protection-rated glazing shall be permitted as vision panels in self-closing swinging fire door assemblies serving as horizontal exits in fire walls where limited to 100 square inches (0.065 m ²).		Edits made to clarify code, no major changes to code requirements.

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	<p>716.2.5.1.2.2 Fire barriers. Fire-protection-rated glazing shall be permitted in fire doors having a 1 1/2-hour fire protection rating intended for installation in fire barriers, where limited to 100 square inches (0.065 m²).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.5.2 Elevator, stairway and ramp protectives. Approved fire-protection-rated glazing used in fire door assemblies in elevator, stairway and ramp enclosures shall be so located as to furnish clear vision of the passageway or approach to the elevator, stairway or ramp.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.5.3 Glazing in door assemblies in corridors and smoke barriers. In a 20-minute fire door assembly, the glazing material in the door itself shall have a minimum fire-protection-rated glazing of 20 minutes and shall be exempt from the hose stream test.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.5.4 Fire door frames with transom lights and sidelights. Fire-protection-rated glazing shall be permitted in door frames with transom lights, sidelights or both, where a 3/4-hour fire protection rating or less is required and in 2-hour fire-resistance-rated exterior walls in accordance with Table 716.1(2). Fire door frames with transom lights, sidelights, or both, installed with fire-resistance-rated glazing tested as an assembly in accordance with ASTM E119 or UL 263 shall be permitted where a fire protection rating exceeding 3/4 hour is required in accordance with Table 716.1(2).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.5.4.1 Energy storage system separation. Fire-protection-rated glazing shall not be permitted in <i>fire door</i> frames with transom lights and sidelights in <i>fire barriers</i> required by Section 1207 of the <i>International Fire Code</i> to enclose energy storage systems.</p>		<p>Changes brought in to distinguish differences in energy storage construction.</p>

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	<p>716.2.6 Fire door hardware and closures. Fire door hardware and closures shall be installed on fire door assemblies in accordance with the requirements of this section.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.2.6.1 Door closing. Fire doors shall be latching and self- or automatic-closing in accordance with this section.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Fire doors located in common walls separating sleeping units in Group R-1 shall be permitted without automatic- or self-closing devices. 2. The elevator car doors and the associated hoistway enclosure doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation. 		Edits made to clarify code, no major changes to code requirements.
	<p>716.2.6.2 Latch required. Unless otherwise specifically permitted, single side-hinged swinging fire doors and both leaves of pairs of side-hinged swinging fire doors shall be provided with an active latch bolt that will secure the door when it is closed.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.2.6.3 Chute intake door latching. Chute intake doors shall be positive latching, remaining latched and closed in the event of latch spring failure during a fire emergency.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.2.6.4 Automatic-closing fire door assemblies. Automatic-closing fire door assemblies shall be self-closing in accordance with NFPA 80.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.2.6.5 Delayed-action closers. Doors required to be self-closing and not required to be automatic closing shall be permitted to be equipped with delayed-action closers.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.2.6.6 Smoke-activated doors. Automatic-closing doors installed in the following locations shall be permitted to have hold-open devices. Doors shall automatically close by the actuation of smoke detectors installed in accordance with Section 907.3 or by loss of power to the smoke</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>detector or hold-open device. Doors that are automatic-closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated. Automatic-closing doors that protect openings installed in the following locations shall comply with this section:</p> <ol style="list-style-type: none"> 1. In walls that separate incidental uses in accordance with Section 509.4. 2. In fire walls in accordance with Section 706.8. 3. In fire barriers in accordance with Section 707.6. 4. In fire partitions in accordance with Section 708.6. 5. In smoke barriers in accordance with Section 709.5. 6. In smoke partitions in accordance with Section 710.5.2.3. 7. In shaft enclosures in accordance with Section 713.7. 8. In waste and linen chutes, discharge openings and access and discharge rooms in accordance with Section 713.13. Loading doors installed in waste and linen chutes shall meet the requirements of Sections 716.2.6.1 and 716.2.6.3. 		
	<p>716.2.6.7 Doors in pedestrian ways. Vertical sliding or vertical rolling steel fire doors in openings through which pedestrians travel shall be heat activated or activated by smoke detectors with alarm verification.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.7 Swinging fire shutters. Where fire shutters of the swinging type are installed in exterior openings, not less than one row in every three vertical rows shall be arranged to be readily opened from the outside, and shall be identified by distinguishing marks or letters not less than 6 inches (152 mm) high.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.8 Rolling fire shutters. Where fire shutters of the rolling type are installed, such shutters shall include approved automatic-closing devices.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>716.2.9 Labeled protective assemblies. Fire door assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80, and shall be permanently affixed to the door or frame.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.9.1 Fire door labeling requirements. Fire doors shall be labeled showing the name of the manufacturer or other identification readily traceable back to the manufacturer, the name or trademark of the third-party inspection agency, the fire protection rating and, where required for fire doors in interior exit stairways and ramps and exit passageways by Section 716.2.2.3, the maximum transmitted temperature end point. Smoke and draft control doors complying with UL 1784 shall be labeled as such and shall comply with Section 716.2.9.3. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.9.1.1 Light kits, louvers and components. Listed light kits and louvers and their required preparations shall be considered as part of the labeled door where such installations are done under the listing program of the third-party agency. Fire doors and fire door assemblies shall be permitted to consist of components, including glazing, vision light kits and hardware that are listed or classified and labeled for such use by different third-party agencies.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.9.2 Oversized doors. Oversized fire doors shall bear an oversized fire door label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. Where a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the door conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.2.9.3 Smoke and draft control door labeling requirements. Smoke and draft control doors complying with UL 1784 shall be labeled in accordance with Section 716.2.9.1 and shall show the letter "S" on the fire-rating label of the door. This marking shall indicate that the door and frame</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	assembly are in compliance where listed or labeled gasketing is installed.		
	716.2.9.4 Fire door frame labeling requirements. Fire door frames shall be labeled showing the names of the manufacturer and the third-party inspection agency.		Edits made to clarify code, no major changes to code requirements.
	716.2.9.5 Labeling. Fire-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required in Table 716.1(1) that shall be issued by an approved agency and shall be permanently identified on the glazing.		Edits made to clarify code, no major changes to code requirements.
	716.2.9.6 Fire door operator labeling requirements. Fire door operators for horizontal sliding doors shall be labeled and listed for use with the assembly.		Edits made to clarify code, no major changes to code requirements.
	716.3 Marking fire-rated glazing assemblies Fire window assemblies. Fire-rated glazing assemblies shall be marked in accordance with Tables 716.3, 716.5 and 716.6. Fire window assemblies required by other sections of this code shall comply with the provisions of this section.		Edits made to clarify code, no major changes to code requirements.
	716.3.1 Fire-rated glazing identification. Testing requirements. For fire-rated glazing, the label shall bear the identification required in Tables 716.3 and 716.5. "D" indicates that the glazing is permitted to be used in fire door assemblies and that the glazing meets the fire protection requirements of NFPA 252. "H" shall indicate that the glazing meets the hose stream requirements of NFPA 252. "T" shall indicate that the glazing meets the temperature requirements of Section 716.5.5.1. The placeholder "XXX" represents the fire-rating period, in minutes. Fire window assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Sections 716.3.1.1 and 716.3.1.2 and the fire protection rating indicated in Table 716.1(3).		Edits made to clarify code, no major changes to code requirements.
	716.3.1.1 Testing under positive pressure. NFPA 257 or UL 9 shall evaluate fire-protection-rated glazing under positive pressure. Within the first 10 minutes of a test, the pressure in the furnace shall be adjusted so not less than two-thirds of the test specimen is above the neutral pressure plane, and the neutral pressure plane		Edits made to clarify code, no major changes to code requirements.

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	shall be maintained at that height for the balance of the test.		
	716.3.1.2 Nonsymmetrical glazing systems. Nonsymmetrical fire-protection-rated glazing systems in fire partitions, fire barriers or in exterior walls with a fire separation distance of 10 feet (3048 mm) or less pursuant to Section 705 shall be tested with both faces exposed to the furnace, and the assigned fire protection rating shall be the shortest duration obtained from the two tests conducted in compliance with NFPA 257 or UL 9.		Edits made to clarify code, no major changes to code requirements.
	716.3.2 Fire-protection-rated glazing identification. Performance requirements. For fire-protection-rated glazing, the label shall bear the following identification required in Tables 716.3 and 716.6: "OH-XXX." "OH" indicates that the glazing meets both the fire protection and the hose-stream requirements of NFPA 257 or UL 9 and is permitted to be used in fire window openings. The placeholder "XXX" represents the fire rating period, in minutes. Fire window assemblies shall be installed in the assemblies and comply with the fire protection rating specified in Table 716.1(3).		Edits made to clarify code, no major changes to code requirements.
	716.3.2.1 Interior fire window assemblies. Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1 hour in accordance with this section.		Edits made to clarify code, no major changes to code requirements.
	716.3.2.1.1 Where 3/4-hour-fire-protection window assemblies permitted. Fire-protection-rated glazing requiring 45-minute opening protection in accordance with Table 716.1(3) shall be limited to fire partitions designed in accordance with Section 708 and fire barriers utilized in the applications set forth in Sections 707.3.6, 707.3.7 and 707.3.9 where the fire-resistance rating does not exceed 1 hour. Fire-resistance-rated glazing assemblies tested in accordance with ASTM E119 or UL 263 shall not be subject to the limitations of this section.		Edits made to clarify code, no major changes to code requirements.

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	<p>716.3.2.1.1.1 Energy storage system separation. <i>Fire-protection-rated glazing is not permitted for use in fire window assemblies in fire barriers required by Section 1207 of the International Fire Code to enclose energy storage systems.</i></p>		<p>Changes made to clarify difference in energy storage system design.</p>
	<p>716.3.2.1.2 Area limitations. The total area of the glazing in fire-protection-rated window assemblies shall not exceed 25 percent of the area of a common wall with any room.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.3.2.1.3 Where 1/3-hour-fire-protection window assemblies permitted. Fire-protection-rated glazing shall be permitted in window assemblies tested to NFPA 257 or UL 9 in fire partitions requiring 1/3-hour opening protection in accordance with Table 716.1(3).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.3.3 Fire-rated glazing that exceeds the code requirements. Fire window frames. Fire-rated glazing assemblies marked as complying with hose stream requirements (H) shall be permitted in applications that do not require compliance with hose stream requirements. Fire-rated glazing assemblies marked as complying with temperature rise requirements (T) shall be permitted in applications that do not require compliance with temperature rise requirements. Fire-rated glazing assemblies marked with ratings (XXX) that exceed the ratings required by this code shall be permitted. Fire window frames installed with a fire window assembly shall meet the fire-protection rating indicated in Table 716.1(3).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.3.3.1 Window mullions. Metal mullions that exceed a nominal height of 12 feet (3658 mm) shall be protected with materials to afford the same fire-resistance rating as required for the wall construction in which the protective is located.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>716.3.4 Fire-protection-rated glazing. Glazing in fire window assemblies shall be fire protection rated in accordance with this section and Table 716.1(3). Fire-protection-rated glazing in fire window assemblies shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 or UL 9. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 705.3, 705.8, 705.8.5 or 705.8.6 shall have a fire protection rating of not less than</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3/4 hour. Fire-protection-rated glazing in 1/2-hour fire-resistance-rated partitions is permitted to have a 20-minute fire protection rating.</p>		
	<p>716.3.4.1 Glass and glazing. Glazing in fire window assemblies shall be fire-protection-rated glazing installed in accordance with and complying with the size limitations set forth in NFPA 80.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.3.5 Labeled protective assemblies. Glazing in fire window assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80 and Section 716.3.5.2.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.3.5.1 Fire window frames. Fire window frames shall be approved for the intended application.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.3.5.2 Labeling requirements. Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required in Section 716.1.2.2.2 and Table 716.1(3) that shall be issued by an approved agency and permanently identified on the glazing.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.3.6 Installation. Fire window assemblies shall be installed in accordance with the provisions of this section.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.3.6.1 Closure. Fire-protection-rated glazing shall be in the fixed position or be automatic-closing and shall be installed in labeled frames.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.4 Alternative methods for determining fire protection ratings. The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252, NFPA 257 or UL 9. The required fire resistance of an opening protective shall be permitted to be established by any of the following methods or procedures:</p> <ul style="list-style-type: none"> 1. Designs documented in approved sources. 2. Calculations performed in an approved manner. 3. Engineering analysis based on a comparison of opening protective designs having fire protection ratings as 		Code section removed in base code.

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	<p>determined by the test procedures set forth in NFPA 252, NFPA 257 or UL 9.</p> <p>4. Alternative protection methods as allowed by Section 404.11.</p>		
	<p>716.4 Fire protective curtain assembly. <i>Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials tested without hose stream in accordance with UL 10D, and shall comply with Sections 716.4.1 through 716.4.3.</i></p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.4.1 Label. <i>Fire protective curtain assemblies used as opening protectives in fire-rated walls and smoke partitions shall be labeled in accordance with Section 716.2.9.</i></p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.4.2 Smoke and draft control. <i>Fire protective curtain assemblies used to protect openings where smoke and draft control assemblies are required shall comply with Section 716.2.1.4.</i></p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.4.3 Installation. <i>Fire protective curtain assemblies shall be installed in accordance with NFPA 80.</i></p>		Edits made to clarify code, no major changes to code requirements.
	<p>716.5 Fire door and shutter assemblies. Approved fire door and fire shutter assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Section 716.5.1, 716.5.2 or 716.5.3 and the fire protection rating indicated in Table 716.5. Fire door frames with transom lights, sidelights or both shall be permitted in accordance with Section 716.5.6. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies. 2. Floor fire door assemblies in accordance with Section 712.1.13.1. 		
	<p>SECTION 717</p> <p>DUCT AND AIR TRANSFER OPENINGS</p>	<p>SECTION 717</p> <p>DUCT AND AIR TRANSFER OPENINGS</p>	

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	<p>717.1.2 Ducts that penetrate fire-resistance-rated assemblies without dampers. Ducts that penetrate fire-resistance-rated assemblies walls and are not required by this section to have fire dampers shall comply with the requirements of Sections 714.2 through 714.3.3 714.3 through 714.4.3. Ducts that penetrate horizontal assemblies not required to be contained within a shaft and not required by this section to have fire dampers shall comply with the requirements of Sections 714.4 through 714.5.2 714.45 through 714.56.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>717.1.2.1 Ducts that penetrate nonfire-resistance-rated assemblies. The space around a duct penetrating a nonfire-resistance-rated floor assembly shall comply with Section 717.6.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>717.2 Installation. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the manufacturer's instructions, and the dampers' listing <u>and Sections 717.2.1 through 717.2.3.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>717.2.3 Static dampers. Fire dampers and ceiling radiation dampers that are listed for use in static systems shall only be installed in heating, ventilation and air-conditioning systems that are automatically shut down in the event of a fire.</u></p>		<p>New requirement for static dampers.</p>
	<p>717.3.1 Damper testing. Dampers shall be listed and labeled in accordance with the standards in this section.</p> <ol style="list-style-type: none"> 1. Fire dampers shall comply with the requirements of UL 555. Only fire and ceiling radiation dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire. 2. Smoke dampers shall comply with the requirements of UL 555S. 3. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. 4. Ceiling radiation dampers shall comply with the requirements of UL 555C or shall be tested as part of a fire-resistance-rated floor/ceiling or roof/ceiling assembly in accordance with ASTM E119 or UL 263. Only ceiling radiation dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire. 5. Corridor dampers shall comply with requirements of both UL 555 and UL 555S. Corridor dampers shall demonstrate acceptable closure performance when subjected to 150 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	feet per minute (0.76 mps) velocity across the face of the damper during the UL 555 fire exposure test.		
	717.3.2.1 Fire damper ratings. Fire dampers shall have the minimum fire protection rating specified in Table 717.3.2.1 for the type of penetration .		Edits made to clarify code, no major changes to code requirements.
	717.3.2.3 Combination fire/smoke damper ratings. Combination fire/smoke dampers shall have the minimum fire protection rating specified for fire dampers in Table 717.3.2.1 for the type of penetration and shall have a the minimum smoke damper rating as specified for smoke dampers in Section 717.3.2.2.		Edits made to clarify code, no major changes to code requirements.
	717.3.3.1 Fire damper actuation device. The fire damper actuation device Primary heat responsive devices used to actuate fire dampers shall meet one of the following requirements: 1. The operating temperature shall be approximately 50°F (10°C) above the normal temperature within the duct system, but not less than 160°F (71°C). 2. The operating temperature shall be not more than 350°F (177°C) where located in a smoke control system complying with Section 909.		Edits made to clarify code, no major changes to code requirements.
717.4 Access and identification. Fire and smoke dampers shall be provided with an <i>approved</i> means of access that is large enough to <i>permit</i> inspection and maintenance of the damper and its operating parts <u>in accordance with the Mechanical Code</u> . The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the <i>fire-resistance rating</i> of the assembly. Access points shall be permanently identified on the exterior <u>of the duct and at ceiling level</u> by a <i>label</i> having letters not less than ½ inch (12.7 mm) in height reading: FIRE/SMOKE DAMPER, SMOKE DAMPER or FIRE DAMPER. Access doors in ducts shall be tight fitting and suitable for the required duct construction.	717.4 Access and identification. Fire and smoke dampers shall be provided with an approved means of access that is large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the fire-resistance rating of the assembly. Access points shall be permanently identified on the exterior by a label having letters not less than 1/2 inch (12.7 mm) in height reading: FIRE/SMOKE DAMPER, SMOKE DAMPER or FIRE DAMPER. Access doors in ducts shall be tight fitting and suitable for the required duct construction. Access and identification of fire and smoke dampers shall comply with Sections 717.4.1 through 717.4.2.		Edits made to clarify code, no major changes to base code requirements. Houston amendment has been moved according to change in base code sections. Amendment is split between Sections 717.4.1 and 717.4.2
	717.4.1 Access. Fire and smoke dampers shall be provided with an approved means of access that is large enough to permit inspection and maintenance of the damper and its operating parts. Dampers equipped with fusible links, internal operators, or both shall be provided with an access door that is not less than 12 inches (305 mm) square or provided with a removable duct section.	717.4.1 Access. Fire and smoke dampers shall be provided with an approved means of access that is large enough to permit inspection and maintenance of the damper and its operating parts <u>in accordance with the Mechanical Code</u> . Dampers equipped with fusible links, internal operators, or both shall be provided with an access door that is not less than 12	New requirements for access to dampers. No change to Houston amendment.

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		inches (305 mm) square or provided with a removable duct section.	
	717.4.1.1 Access openings. The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the fire-resistance rating of the assembly. Access doors in ducts shall be tight fitting and suitable for the required duct construction.		New requirements for access to dampers
	717.4.1.2 Restricted access. Where space constraints or physical barriers restrict access to a damper for periodic inspection and testing, the damper shall be a single- or multi-blade type damper and shall comply with the remote inspection requirements of NFPA 80 or NFPA 105.		New requirements for access to dampers
	717.4.2 Identification. Access points shall be permanently identified on the exterior by a label having letters not less than 1/2 inch (12.7 mm) in height reading: "FIRE/SMOKE DAMPER," "SMOKE DAMPER" or "FIRE DAMPER."	717.4.2 identification. Access points shall be permanently identified on the exterior of the duct and at ceiling level by a label having letters not less than 1/2 inch (12.7 mm) in height reading: "FIRE/SMOKE DAMPER", "SMOKE DAMPER" or "FIRE DAMPER".	New requirements for labeling access to dampers. No change to Houston amendment.
	717.5.2 Fire barriers. Ducts and air transfer openings of fire barriers shall be protected with approved-listed fire dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for interior exit stairways and ramps and exit passageways, except as permitted by Sections 1023.5 and 1024.6, respectively. Exceptions: Fire dampers are not required at penetrations of fire barriers where any of the following apply: 1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly. 2. Ducts are used as part of an approved smoke control system in accordance with Section 909 and where the use of a fire damper would interfere with the operation of a smoke control system. 3. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall		Edits made to clarify code, no major changes to code requirements.

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	<p>be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Nonmetal flexible air connectors shall be permitted in the following locations:</p> <p>3.1. At the duct connection to the air handling unit or equipment located within the mechanical room in accordance with Section 603.9 of the <i>International Mechanical Code</i>.</p> <p>3.2. From an overhead metal duct to a ceiling diffuser within the same room in accordance with Section 603.6.2 of the <i>International Mechanical Code</i>.</p>		
	<p>717.5.3 Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with <i>listed</i> fire and <i>smoke dampers</i> approved installed in accordance with their listing.</p> <p>Exceptions:</p> <p>1. <i>Fire dampers</i> are not required at penetrations of <i>shafts</i> where any of the following criteria are met:</p> <p>1.1. Steel exhaust subducts having a wall thickness of not less than 0.0187 inch (0.4712 mm) are extended not less than 22 inches (559 mm) vertically in exhaust <i>shafts</i>, provided that there is a continuous airflow upward to the outside and an exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with Section 909.11, so as to maintain a continuous upward airflow to the outdoors.</p> <p>1.2. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.</p> <p>1.3. Ducts are used as part of an <i>approved</i> smoke control system designed and installed in accordance with Section 909 and where the <i>fire damper</i> will interfere with the operation of the smoke control system.</p> <p>1.4. The penetrations are in parking garage exhaust or supply <i>shafts</i> that are separated from other building <i>shafts</i> by not less than 2-hour fire-resistance-rated construction.</p> <p>2. In Group B and R occupancies equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1, <i>smoke dampers</i> are not required at penetrations of <i>shafts</i> where all of the following criteria are met:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a wall thickness of not less than 0.0187 inch (0.4712 mm). (No. 26 gage)</p> <p>2.2. The subducts extend not less than 22 inches (559 mm) vertically.</p> <p>2.3. An exhaust fan is installed at the upper terminus of the <i>shaft</i> that is powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside outdoors.</p> <p>3. <i>Smoke dampers</i> are not required at penetration of exhaust or supply <i>shafts</i> in parking garages that are separated from other building <i>shafts</i> by not less than 2-hour fire-resistance-rated construction.</p> <p>4. <i>Smoke dampers</i> are not required at penetrations of <i>shafts</i> where ducts are used as part of an <i>approved</i> mechanical smoke control system designed in accordance with Section 909 and where the <i>smoke damper</i> will interfere with the operation of the smoke control system.</p> <p>5. <i>Fire dampers</i> and <i>combination fire/smoke dampers</i> are not required in kitchen and clothes dryer exhaust systems where installed in accordance with dampers are prohibited by the International Mechanical Code.</p>		
	<p>717.5.3.1 Continuous upward airflow. <i>Fire dampers and smoke dampers shall not be installed in shafts that are required to maintain a continuous upward airflow path where closure of the damper would result in the loss of the airflow.</i></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>717.5.4.1 Corridors. Duct and air transfer openings that penetrate corridors shall be protected with dampers as follows:</p> <ol style="list-style-type: none"> 1. A corridor damper shall be provided where corridor ceilings, constructed as required for the corridor walls as permitted in Section 708.4, Exception 3, are penetrated. 2. A ceiling radiation damper shall be provided where the ceiling membrane of a fire-resistance-rated floor-ceiling or roof-ceiling assembly, constructed as permitted 		

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	<p>in Section 708.4, Exception 2, is penetrated.</p> <p>3. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a corridor enclosure required to have smoke and draft control doors in accordance with Section 716.5.3 716.2.2.1.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Smoke dampers are not required where the building is equipped throughout with an approved smoke control system in accordance with Section 909, and smoke dampers are not necessary for the operation and control of the system. 2. Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019 inch (0.48 mm) in thickness and there are no openings serving the corridor. 		
	<p>717.6.1 Through penetrations. In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection, provided that a listed fire damper is installed at the floor line or the duct is protected in accordance with Section 714.4 714.5. For air transfer openings, see Section 712.1.9.</p> <p>Exception: A duct is permitted to penetrate three floors or less without a fire damper at each floor, provided that such duct meets all of the following requirements:</p> <ol style="list-style-type: none"> 1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0.0187 inches (0.4712 mm) (No. 26 gage). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. The duct shall open into only one dwelling or sleeping unit and the duct system shall be continuous from the unit to the exterior of the building.</p> <p>3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m²) in any 100 square feet (9.3 m²) of floor area.</p> <p>4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.</p> <p>5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a listed ceiling radiation damper installed in accordance with Section 717.6.2.1.</p>		
	<p>717.6.2 Membrane penetrations. Ducts and air transfer openings constructed of approved materials in accordance with the International Mechanical Code that penetrate the ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with one of the following:</p> <ol style="list-style-type: none"> 1. A shaft enclosure in accordance with Section 713. 2. A listed ceiling radiation damper installed at the ceiling line where a duct penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly. <p style="margin-left: 40px;">Exceptions:</p> <ol style="list-style-type: none"> 1. A fire-resistance-rated assembly tested in accordance with ASTM E119 or UL 263 showing that ceiling radiation dampers are not required in order to maintain the fire-resistance rating of the assembly. 		<p>New exceptions for membrane penetrations.</p>

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	<p>2. Where exhaust duct or outdoor air duct penetrations protected in accordance with Section 714.5.2 are located within the cavity of a wall and do not pass through another dwelling unit or tenant space.</p> <p>3. Where duct and air transfer openings are protected with a duct outlet penetration system tested as part of a fire-resistance-rated assembly in accordance with ASTM E119 or UL 263.</p> <p>3. A listed ceiling radiation damper installed at the ceiling line where a diffuser with no duct attached penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.</p> <p>Exceptions:</p> <p>1. A fire-resistance-rated assembly tested in accordance with ASTM E119 or UL 263 showing that ceiling radiation dampers are not required in order to maintain the fire-resistance rating of the assembly.</p> <p>2. Where duct and air transfer openings are protected with a duct outlet penetration system tested as part of a fire-resistance-rated assembly in accordance with ASTM E119 or UL 263.</p>		
	<p>717.6.2.1 Ceiling radiation dampers. testing and installation. Ceiling radiation dampers shall be tested in accordance with Section 717.3.1. Ceiling radiation dampers shall be installed in accordance with the details listed in the fire-resistance-rated assembly and the manufacturer's instructions and the listing. Ceiling radiation dampers are not required where one of the following applies:</p> <p>1. Tests in accordance with ASTM E119 or UL 263 have shown that ceiling radiation dampers are not necessary in order to maintain the fire resistance rating of the assembly.</p> <p>2. Where exhaust duct penetrations are protected in accordance with Section 714.4.2, are located within the cavity of a</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>wall and do not pass through another dwelling unit or tenant space.</p> <p>3. Where duct and air transfer openings are protected with a duct outlet protection system tested as part of a fire resistance-rated assembly in accordance with ASTM E119 or UL 263.</p>		
	<p><u>717.6.2.1.1 Dynamic systems.</u> Only <u>ceiling radiation dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans or during a fire.</u></p>		<p>New language for dynamic systems</p>
	<p><u>717.6.2.1.2 Static systems.</u> <u>Static ceiling radiation dampers shall be provided with systems that are not designed to operate during a fire.</u></p> <p><u>Exceptions:</u></p> <p><u>1. Where a static ceiling radiation damper is installed at the opening of a duct, a smoke detector shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes in the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.</u></p> <p><u>2. Where a static ceiling radiation damper is installed in a ceiling, the ceiling radiation damper shall be permitted to be controlled by a smoke detection system installed in the same room or area as the ceiling radiation damper.</u></p> <p><u>3. A static ceiling radiation damper shall be permitted to be installed in a room where an occupant sensor is provided within the room that will shut down the system.</u></p>		<p>New code language for static systems.</p>
	<p>SECTION 718 CONCEALED SPACES</p>	<p>SECTION 718 CONCEALED SPACES</p>	

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	<p>718.2.1 Fireblocking materials. <i>Fireblocking</i> shall consist of the following materials:</p> <ol style="list-style-type: none"> 1. Two-inch (51 mm) nominal lumber. 2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints. 3. One thickness of 0.719-inch (18.3 mm) <i>wood structural panels</i> with joints backed by 0.719-inch (18.3 mm) <i>wood structural panels</i>. 4. One thickness of 0.75-inch (19.1 mm) <i>particleboard</i> with joints backed by 0.75-inch (19mm) <i>particleboard</i>. 5. One-half-inch (12.7 mm) <i>gypsum board</i>. 6. One-fourth-inch (6.4 mm) cement-based millboard. 7. Batts or blankets of <i>mineral wool</i>, <i>mineral fiber</i> or other <i>approved</i> materials installed in such a manner as to be securely retained in place. 8. Cellulose insulation installed as tested for the specific application. tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases. 9. Mass timber complying with Section 2304.11. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>718.2.5 Ceiling and floor openings. Where required by Section 712.1.8, Exception 1 of Section 744.4.1.2 714.5.1.2 or Section 744.5 714.56, fireblocking of the annular space around vents, pipes, ducts, chimneys and fireplaces at ceilings and floor levels shall be installed with a material specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and resist the free passage of flame and the products of combustion.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>718.2.6 Exterior wall coverings. Fireblocking shall be installed within concealed spaces of exterior wall coverings and other exterior architectural elements where permitted to be of combustible construction as specified in Section 1404-1405 1406-1405 or where erected with combustible frames. Fireblocking shall be installed at maximum intervals of 20 feet (6096 mm) in either dimension so that there will be no concealed space exceeding 100 square feet (9.3 m²) between fireblocking. Where wood furring strips are used, they shall be of approved wood of natural decay resistance or preservative-treated wood. If noncontinuous, such elements shall have closed ends, with not less than 4 inches (102 mm) of separation between sections.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Fireblocking of cornices is not required in single-family dwellings. Fireblocking of 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>cornices of a two-family dwelling is required only at the line of dwelling unit separation.</p> <p>2. Fireblocking shall not be required where the exterior wall covering is installed on noncombustible framing and the face of the exterior wall covering exposed to the concealed space is covered by one of the following materials:</p> <p>2.1. Aluminum having a minimum thickness of 0.019 inch (0.5 mm).</p> <p>2.2. Corrosion-resistant steel having a base metal thickness not less than 0.016 inch (0.4 mm) at any point.</p> <p>2.3. Other approved noncombustible materials.</p> <p>3. Fireblocking shall not be required where the exterior wall covering has been tested in accordance with, and complies with the acceptance criteria of, NFPA 285. The exterior wall covering shall be installed as tested in accordance with NFPA 285.</p>		
	<p>718.2.7 Concealed sleeper spaces. Where wood sleepers are used for laying wood flooring on masonry or concrete fire-resistance-rated floors, the space between the floor slab and the underside of the wood flooring shall be filled with an approved material to resist the free passage of flame and products of combustion or fireblocked in such a manner that there will be no open spaces under the flooring that will not exceed 100 square feet (9.3 m²) in area and such space shall be filled solidly under permanent partitions so that there is no communication under the flooring between adjoining rooms shall not occur.</p> <p>Exceptions:</p> <p>1. Fireblocking is not required for slab-on-grade floors in gymnasiums.</p> <p>2. Fireblocking is required only at the juncture of each alternate lane and at the ends of each lane in a bowling facility.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>718.3 Draftstopping in floors. In combustible construction, draftstopping shall be installed to subdivide floor/ceiling assemblies in the locations prescribed in Sections 718.3.2 through 718.3.3. Draftstopping shall be installed to subdivide floor/ceiling assemblies where required by Section 708.4.2. In other than Group R occupancies, draftstopping shall be installed to subdivide</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>combustible floor/ceiling assemblies so that horizontal floor areas do not exceed 1,000 square feet (93 m²).</p> <p>Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		
	<p>718.3.2 Groups R-1, R-2, R-3 and R-4. Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more dwelling units, in Group R-3 buildings with two dwelling units and in Group R-4 buildings. Draftstopping shall be located above and in line with the dwelling unit and sleeping unit separations.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 2. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustibile concealed spaces where the draftstopping is being omitted. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>718.3.3 Other groups. In other groups, draftstopping shall be installed so that horizontal floor areas do not exceed 1,000 square feet (93 m²).</p> <p>Exception: Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		
	<p>718.4 Draftstopping in attics. In combustibile construction, draftstopping shall be installed to subdivide attic spaces and concealed roof spaces in the locations prescribed in Sections 718.4.2 and 718.4.3. Ventilation of concealed roof spaces shall be maintained in accordance with Section 1203.2. Draftstopping shall be installed to subdivide attic spaces where required by Section 708.4.2. In other than Group R, draftstopping shall be installed to subdivide combustibile attic spaces and combustibile concealed roof spaces such that any horizontal area does not exceed 3,000 square feet (279 m²). Ventilation of concealed roof spaces shall be maintained in accordance with Section 1202.2.1.</p> <p>Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>718.4.2 Groups R-1 and R-2. Draftstopping shall be provided in attics, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more dwelling units and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, sleeping unit and dwelling unit separation walls that do not extend to the underside of the roof sheathing above.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where corridor walls provide a sleeping unit or dwelling unit separation, draftstopping shall only be required above one of the corridor walls. 2. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 3. In occupancies in Group R-2 that do not exceed four stories above grade plane, 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. 4. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustible concealed space where the draftstopping is being omitted. 		
	<p>718.4.3 Other groups. Draftstopping shall be installed in attics and concealed roof spaces, such that any horizontal area does not exceed 3,000 square feet (279 m²).</p> <p>Exception: Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		
<p>718.5 Combustible materials in concealed spaces in Type I or II construction. Combustible materials shall not be permitted in concealed spaces of buildings of Type I or II construction.</p> <p>Exceptions:</p> <p>{EDITORIAL NOTE: PORTIONS OF SECTION 718.5 NOT SHOWN REMAIN AS SET FORTH IN THE 2015 IBC.}</p> <p>2. Combustible materials exposed within plenums complying with Section 602.2 of the International Mechanical Code.</p>	<p>718.5 Combustible materials in concealed spaces in Type I or II construction. Combustible materials shall not be permitted in concealed spaces of buildings of Type I or II construction.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Combustible materials in accordance with Section 603. 2. Combustible materials exposed within plenums complying with Section 602 of the International Mechanical Code. 	<p>718.5 Combustible materials in concealed spaces in Type I or II construction. Combustible materials shall not be permitted in concealed spaces of buildings of Type I or II construction.</p> <p>Exceptions:</p> <p>{EDITORIAL NOTE: PORTIONS OF SECTION 718.5 NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IBC.}</p> <ol style="list-style-type: none"> 2. Combustible materials exposed within plenums complying with Section 602.2 of the International Mechanical Code. 	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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	<p>3. Class A interior finish materials classified in accordance with Section 803.</p> <p>4. Combustible piping within partitions or shaft enclosures installed in accordance with the provisions of this code.</p> <p>5. Combustible piping within concealed ceiling spaces installed in accordance with the International Mechanical Code and the International Plumbing Code.</p> <p>6. Combustible insulation and covering on pipe and tubing, installed in concealed spaces other than plenums, complying with Section 720.7.</p>		
	<p>SECTION 719</p> <p>FIRE-RESISTANCE REQUIREMENTS FOR PLASTER</p>		
	<p style="text-align: center;">SECTION 720</p> <p style="text-align: center;">THERMAL- AND SOUND-INSULATING MATERIALS</p> <p>720.1 General. Insulating materials, including facings such as vapor retarders and vapor permeable membranes, similar coverings and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted. Insulating materials, when tested in accordance with the requirements of this section, shall include facings, when used, such as vapor retarders, vapor permeable membranes and similar coverings, and all layers of single and multilayer reflective foil insulation and similar materials.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Fiberboard insulation shall comply with Chapter 23. 2. Foam plastic insulation shall comply with Chapter 26. 3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the International Mechanical Code. 4. All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613-2614. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>720.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-developed limitations do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.</p> <p>Exception: All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613-2614.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>720.4 Loose-fill insulation. Loose-fill insulation materials that cannot be mounted in the ASTM E84 or UL 723 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Sections 720.2 and 720.3 when tested in accordance with CAN/ULC S102.2.</p> <p>Exception: Cellulosic fiber loose-fill insulation shall not be required to meet a flame spread index requirement when tested in accordance with CAN/ULC S102.2, provided that such insulation has a smoke-developed index of not more than 450 and complies with the requirements of Section 720.6.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 721</p> <p style="text-align: center;">PRESCRIPTIVE FIRE RESISTANCE</p> <p>721.1 General. The provisions of this section contain prescriptive details of fire-resistance-rated building elements, components or assemblies. The materials of construction listed in Tables 721.1(1), 721.1(2), and 721.1(3) shall be assumed to have the fire-resistance ratings prescribed therein. Where materials that change the capacity for heat dissipation are incorporated into a fire-resistance-rated assembly, fire test results or other substantiating data shall be made available to the building official to show that the required fire-resistance-rating time period is not reduced.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">TABLE 721.1(3)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>721.1.5 Bonded prestressed concrete tendons. For members having a single tendon or more than one tendon installed with equal concrete cover measured from the nearest surface, the cover shall be not less than that set forth in Table 721.1(1). For members having multiple tendons installed with variable concrete cover, the average tendon cover shall be not less than that set forth in Table 721.1(1), provided that.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. The clearance from each tendon to the nearest exposed surface is used to determine the average cover.</p> <p>2. In no case can The clear cover for individual tendons shall not be less than one-half of that set forth in Table 721.1(1). A minimum cover of 3/4 inch (19.1 mm) for slabs and 1 inch (25 mm) for beams is required for any aggregate concrete.</p> <p>3. For the purpose of establishing a fire-resistance rating, tendons having a clear covering less than that set forth in Table 721.1(1) shall not contribute more than 50percent of the required ultimate moment capacity for members less than 350 square inches (0.226 m²) in cross-sectional area and 65 percent for larger members. For structural design purposes, however, tendons having a reduced cover are assumed to be fully effective.</p>		
	<p style="text-align: center;">SECTION 722</p> <p style="text-align: center;">CALCULATED FIRE RESISTANCE</p> <p>722.1 General. The provisions of this section contain procedures by which the <i>fire resistance</i> of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated <i>fire resistance of specific materials or combinations of materials shall be established by one of the following:</i> concrete, concrete masonry and clay masonry assemblies shall be permitted in accordance with ACI 216.1/TMS 0216. The calculated fire resistance of steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29. The calculated fire resistance of exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC National Design Specification for Wood Construction (NDS):</p> <p>1. Concrete, concrete masonry and clay masonry assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.</p> <p>2. Precast and precast, prestressed concrete assemblies shall be permitted in accordance with PCI 124.</p> <p>3. Steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29.</p> <p>4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.1.1 Definitions. The following terms are defined in Chapter 2:</p> <p>CERAMIC FIBER BLANKET.</p> <p>CONCRETE, CARBONATE AGGREGATE.</p>		

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	<p>CONCRETE, CELLULAR.</p> <p>CONCRETE, LIGHTWEIGHT AGGREGATE.</p> <p>CONCRETE, PERLITE.</p> <p>CONCRETE, SAND-LIGHTWEIGHT.</p> <p>CONCRETE, SILICEOUS AGGREGATE.</p> <p>CONCRETE, VERMICULITE.</p> <p>GLASS FIBERBOARD.</p> <p>MINERAL BOARD.</p>		
	<p>722.2.1.4.3 Nonsymmetrical assemblies. For a wall having no without finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of Sections 722.2.1.4.1 and 722.2.1.4.2 shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values.</p> <p>Exception: For an exterior wall with a fire separation distance greater than 5 feet (1524 mm) the fire shall be assumed to occur on the interior side only.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.2.2.1 Reinforced and prestressed floors and roofs. The minimum thicknesses of reinforced and prestressed concrete floor or roof slabs for fire-resistance ratings of 1 hour to 4 hours are shown in Table 722.2.2.1.</p> <p>Exception: Minimum thickness shall not be required for floors and ramps within open and enclosed parking garages constructed in accordance with Sections 406.5 and 406.6, respectively.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>722.2.2.1.4 Flat plate concrete slabs with uniformly spaced hollow voids.</u> <u>Table 722.2.2.1 shall be used to determine the 1- and 2-hour fire-resistance ratings for flat plate concrete slabs with uniformly spaced hollow voids. The equivalent thickness of the slab shall be determined by dividing the net concrete volume of the slab by the floor area. The net concrete volume of the slab shall be equal to the volume of concrete of a solid slab minus the average concrete volume displaced by the hollow voids.</u></p>		<p>Additional requirements for specific concrete slabs.</p>

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	<p>722.2.2.4 Joints in precast slabs. Joints between adjacent precast concrete slabs need not be considered in calculating the slab thickness provided that a concrete topping not less than 1 inch (25 mm) thick is used. Where no concrete topping is not used, joints must be grouted to a depth of not less than one-third the slab thickness at the joint, but not less than 1 inch (25 mm), or the joints must be made fire resistant by other approved methods.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.2.3.3 Prestressed beam cover. The minimum thickness of concrete cover to the positive moment prestressing tendons (bottom steel) for restrained and unrestrained prestressed concrete beams and stemmed units shall comply with the values shown in Tables 722.2.3(4) and 722.2.3(5) for fire-resistance ratings of 1 hour to 4 hours. Values in Table 722.2.3(4) apply to beams 8 inches (203 mm) or greater in width. Values in Table 722.2.3(5) apply to beams or stems of any width, provided that the cross-section area is not less than 40 square inches (25 806 mm²). In case of differences between the values determined from Table 722.2.3(4) or 722.2.3(5), it is permitted to use the smaller value. The concrete cover shall be calculated in accordance with Section 722.2.3.3.1. The minimum concrete cover for nonprestressed reinforcement in prestressed concrete beams shall comply with Section 722.2.3.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.2.4.4 Columns built into walls. The minimum dimensions of Table 722.2.4 do not apply to a reinforced concrete column that is built into a concrete or masonry wall provided that all of the following are met:</p> <ol style="list-style-type: none"> 1. The fire-resistance rating for the wall is equal to or greater than the required rating of the column; ; 2. The main longitudinal reinforcing in the column has cover not less than that required by Section 722.2.4.2; and 3. Openings in the wall are protected in accordance with Table Section 716.5. <p>Where openings in the wall are not protected as required by Section 716.5, the minimum dimension of columns required to have a fire-resistance rating of 3 hours or less shall be 8 inches (203 mm), and 10 inches (254 mm) for columns required to have</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>a fire-resistance rating of 4 hours, regardless of the type of aggregate used in the concrete.</p>		
	<p>722.3.2.3 Nonsymmetrical assemblies. For a wall having without finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values calculated.</p> <p style="padding-left: 40px;">Exception: For exterior walls with a fire separation distance greater than 5 feet (1524 mm), the fire shall be assumed to occur on the interior side only.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.3.4 Concrete masonry lintels. Fire-resistance ratings for concrete masonry lintels shall be determined based upon the nominal thickness of the lintel and the minimum thickness of concrete masonry or concrete, or any combination thereof, covering the main reinforcing bars, as determined in accordance with Table 722.3.4, or by approved alternate methods.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.4.1 Masonry walls. The fire-resistance rating of masonry walls shall be based upon the equivalent thickness as calculated in accordance with this section. The calculation shall take into account finishes applied to the wall and airspaces between wythes in multiwythe construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.4.1.1 Equivalent thickness. The fire-resistance ratings of walls or partitions constructed of solid or hollow clay masonry units shall be determined from Table 722.4.1(1) or 722.4.1(2). The equivalent thickness of the clay masonry unit shall be determined by Equation 7-8 where using Table 722.4.1(1). The fire resistance rating determined from Table 722.4.1(1) shall be permitted to be used in the calculated fire resistance rating procedure in Section 722.4.2.</p> <p style="padding-left: 40px;">$T_e = V_n/LH$ (Equation 7-8)</p> <p style="padding-left: 40px;">where:</p> <p style="padding-left: 40px;">T_e = The equivalent thickness of the clay masonry unit (inches).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>V_n = The net volume of the clay masonry unit (inch³).</p> <p>L = The specified length of the clay masonry unit (inches).</p> <p>H = The specified height of the clay masonry unit (inches).</p>		
	<p>722.4.1.4 Nonsymmetrical assemblies. For a wall having without finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side to be the fire-exposed side of the wall. The fire resistance of the wall shall not exceed the lower of the two values determined.</p> <p>Exception: For exterior walls with a fire separation distance greater than 5 feet (1524 mm), the fire shall be assumed to occur on the interior side only.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>722.4.4 Reinforced clay masonry columns. The fire resistance ratings shall be determined based on the last plan dimension of the column in accordance with Table 722.4.1(6). The minimum cover for longitudinal reinforcement shall be 2 inches (51 mm).</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">TABLE 722.5.1(2)</p>		Table did not change, explanatory materials were updated for fireproofing columns.
	<p>722.5.1.1.3 Weight-to-perimeter ratio. Table 722.5.1(1) contains weight-to-heated-perimeter ratios (W/D) for both contour and box fire-resistant profiles, for the wide flange shapes most often used as columns. For different fire-resistant protection profiles or column cross sections, the weight-to-heated-perimeter ratios (W/D) shall be determined in accordance with the definitions given in this section.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>722.5.1.2 Gypsum wallboard protection. The fire resistance of structural steel columns with weight-to-heated-perimeter ratios (W/D) less than or equal to 3.65 and that are protected with Type X gypsum wallboard shall be permitted to be determined from the following expression:</p>		Edits made to clarify code, no major changes to code requirements.

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	$R = 130 \left[\frac{h(W')}{2} \right]^{0.75} \text{(Equation 7-12)}$ <p>where: R = Fire resistance (minutes). h = Total thickness of gypsum wallboard (inches). D = Heated perimeter of the structural steel column (inches). W' = Total weight of the structural steel column and gypsum wallboard protection (pounds per linear foot). W' = W + 50hD/144.</p>		
	<p>722.5.2 Structural steel beams and girders. The fire resistance ratings of structural steel beams and girders shall be based up on the size of the element and the type of protection provided in accordance with this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.5.2.1.2 Beam and girder substitutions. Except as provided for in Section 722.5.2.2, structural steel beams in approved fire-resistance-rated assemblies shall be considered to be the minimum permissible size. Other beam or girder shapes shall be permitted to be substituted provided that the weight-to-heated-perimeter ratio (W/D) of the substitute beam is equal to or greater than that of the beam specified in the approved assembly.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.6.1.1 Maximum fire-resistance rating. Fire resistance ratings calculated for assemblies using the methods in Section 722.6 shall be limited to a maximum not more than 1 hour.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>722.6.2.4 Floors and roofs. In the case of a floor or roof, the standard test provides only for testing for fire exposure from below. Except as noted in Section 703.2.2, Item 5 Section 703.2.3, floor or roof assemblies of wood framing shall have an upper membrane consisting of a subfloor and finished floor conforming to Table 722.6.2(4) or any other membrane that has a contribution to fire resistance of not less than 15 minutes in Table 722.6.2(1).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>722.7 Fire-resistance rating for mass timber. The required <i>fire resistance of mass timber</i> elements in Section 602.4 shall be determined in accordance with Section 703.2. The <i>fire-resistance rating of building elements</i> shall be as required in Tables 601 and 705.5 and as specified elsewhere in this code. The <i>fire-resistance rating of the mass timber elements</i> shall consist of the <i>fire resistance of the unprotected element added to the protection time of the noncombustible protection.</i></p>		<p>New requirements for Mass Timber</p>
	<p>722.7.1 Minimum required protection. Where required by Sections 602.4.1 through 602.4.3, <i>noncombustible protection</i> shall be provided for <i>mass timber building elements</i> in accordance with Table 722.7.1(1). The rating, in minutes, contributed by the <i>noncombustible protection of mass timber building elements</i>, components or assemblies, shall be established in accordance with Section 703.6. The protection contributions indicated in Table 722.7.1(2) shall be deemed to comply with this requirement where installed and fastened in accordance with Section 722.7.2.</p>		<p>New requirements for Mass Timber</p>
	<p>TABLE 722.7.1(1) TABLE 722.7.1(2)</p>		<p>New tables for passive protection in mass timber construction</p>
	<p>722.7.2 Installation of gypsum board noncombustible protection. <i>Gypsum board</i> complying with Table 722.7.1(2) shall be installed in accordance with this section.</p>		<p>New requirements for Mass Timber</p>
	<p>722.7.2.1 Interior surfaces. Layers of Type X <i>gypsum board</i> serving as <i>noncombustible protection for interior surfaces of wall and ceiling assemblies</i> determined in accordance with Table 722.7.1(1) shall be installed in accordance with the following:</p> <ol style="list-style-type: none"> 1. Each layer shall be attached with Type S drywall screws of sufficient length to penetrate the <i>mass timber</i> at least 1 inch (25 mm) when driven flush with the paper surface of the <i>gypsum board</i>. Exception: The third layer, where determined necessary by Section 722.7, shall be permitted to be attached with 1-inch (25 mm) No. 6 Type S drywall screws to furring channels in accordance with AISI S220. 2. Screws for attaching the base layer shall be 12 inches (305 mm) on center in both directions. 3. Screws for each layer after the base layer shall be 12 inches (305 mm) on center in both directions and 		<p>New requirements for Mass Timber</p>

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	<p><u>offset from the screws of the previous layers by 4 inches (102 mm) in both directions.</u></p> <p><u>4. All panel edges of any layer shall be offset 18 inches (457 mm) from those of the previous layer.</u></p> <p><u>5. All panel edges shall be attached with screws sized and offset as in Items 1 through 4 and placed at least 1 inch (25 mm) but not more than 2 inches (51 mm) from the panel edge.</u></p> <p><u>6. All panels installed at wall-to-ceiling intersections shall be installed such that ceiling panels are installed first and the wall panels are installed after the ceiling panel has been installed and is fitted tight to the ceiling panel. Where multiple layers are required, each layer shall repeat this process.</u></p> <p><u>7. All panels installed at a wall-to-wall intersection shall be installed such that the panels covering the exterior wall or a wall with a greater fire-resistance rating shall be installed first and the panels covering the other wall shall be fitted tight to the panel covering the first wall. Where multiple layers are required, each layer shall repeat this process.</u></p> <p><u>8. Panel edges of the face layer shall be taped and finished with joint compound. Fastener heads shall be covered with joint compound.</u></p> <p><u>9. Panel edges protecting mass timber elements adjacent to unprotected mass timber elements in accordance with Section 602.4.2.2 shall be covered with 1¼-inch (32 mm) metal corner bead and finished with joint compound.</u></p>		
	<p><u>722.7.2.2 Exterior surfaces. Layers of Type x gypsum board serving as noncombustible protection for the outside of the exterior mass timber walls determined in accordance with Table 722.7.1(1) shall be fastened 12 inches (305 mm) on center each way and 6 inches (152 mm) on center at all joints or ends. All panel edges shall be attached with fasteners located at least 1 inch (25 mm) but not more than 2 inches (51 mm) from the panel edge. Fasteners shall comply with one of the following:</u></p> <p><u>1. Galvanized nails of minimum 12 gage with a 7/16-inch (11 mm) head of sufficient length to penetrate the mass timber a minimum of 1 inch (25 mm).</u></p> <p><u>2. Screws that comply with ASTM C1002 (Type S, W or G) of sufficient length to penetrate the mass timber a minimum of 1 inch (25 mm).</u></p>		<p>New requirements for Mass Timber construction</p>

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2015 Houston IBC	2021 IBC – Chapter 8 Interior Finishes	2021 Houston Amendments – Chapter 8	Code Analysis
	<p style="text-align: center;">SECTION 801 General SCOPE</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 802 Definition GENERAL</p> <p>802.1 Definitions. The following terms are defined in Chapter 2:</p> <p>EXPANDED VINYL WALL COVERING.</p> <p>FLAME SPREAD.</p> <p>FLAME SPREAD INDEX.</p> <p>INTERIOR FINISH.</p> <p>INTERIOR FLOOR FINISH.</p> <p>INTERIOR FLOOR-WALL BASE.</p> <p>INTERIOR WALL AND CEILING FINISH.</p> <p>SITE FABRICATED STRETCH SYSTEM.</p> <p>SMOKE DEVELOPED INDEX.</p> <p>TRIM.</p>		
	<p>801.2-802.2 Interior wall and ceiling finish.</p>		
	<p>801.3-802.2 Interior floor finish.</p>		
	<p>[F] 801.4 802.3 Decorative materials and trim.</p>		
	<p>801.5 802.4 Applicability.</p>		

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	801.6 802.5 Application.		
	801.7 802.6 Windows.		
	801.8 802.7 Foam plastics.		
	SECTION 803 WALL AND CEILING FINISHES		
	803.1 General. Interior wall and ceiling finish materials shall be classified for fire performance and smoke development in accordance with Section 803.1.1 or 803.1.2, except as shown in Sections 803.2 803.1.3 through 803.13 803.15 . Materials tested in accordance with Section 803.1.2 803.1.1 shall not be required to be tested in accordance with Section 803.1.4 803.1.2 .		Edits made to clarify code, no major changes to code requirements.
	803.1.1 Interior wall and ceiling finish materials tested in accordance with NFPA 286. Interior wall and ceiling finish materials 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 indexes. NFPA 286 and comply with Section 803.1.1.1. Materials complying with Section 803.1.1 shall be considered to also comply with the requirements of Class A. 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. Exception: Materials tested in accordance with Section 803.1.2.		Edits made to clarify code, no major changes to code requirements.
	803.1.2 Room corner test for interior wall or ceiling finish materials. Interior wall or ceiling finish materials shall be permitted to be tested in accordance with NFPA 286. Interior wall or ceiling finish materials tested in accordance with NFPA 286 shall comply with Section 803.1.2.1.		
	803.1.2.1 803.1.1.1 Acceptance criteria for NFPA 286.		

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	<p>803.1.2 Interior wall and ceiling finish materials tested in accordance with ASTM E84 or UL 723. Interior wall and ceiling finish materials 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.</p> <p>Class A = Flame spread index 0-25; smoke-developed index 0-450.</p> <p>Class B = Flame spread index 26-75; smoke-developed index 0-450.</p> <p>Class C = Flame spread index 76-200; smoke-developed index 0-450.</p> <p>Exception: Materials tested in accordance with Section 803.1.1 and as indicated in Sections 803.1.3 through 803.13.</p>		
	<p>803.1.3 Room corner test for textile wall coverings and expanded vinyl wall coverings Interior wall and ceiling finish materials with different requirements. Textile wall coverings and expanded vinyl wall coverings shall meet the criteria of Section 803.1.3.1 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. The materials indicated in Sections 803.2 through 803.13 shall be tested as indicated in the corresponding sections.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.1.3.1 Acceptance criteria for NFPA 265. The interior finish shall comply with the following:</p> <ol style="list-style-type: none"> 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. The total smoke released throughout the test shall not exceed 1,000 m². 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.1.4 Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E84 or UL 723. Textile wall and ceiling coverings and expanded vinyl 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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E2404.		
	803.3 Heavy timber exemption. Exposed portions of building elements complying with the requirements for buildings of Type IV heavy timber construction in Section 602.4 or Section 2304.11 shall not be subject to interior finish requirements except in interior exit stairways, interior exit ramps, and exit passageways.		Edits made to clarify code, no major changes to code requirements.
	803.5 Textile wall coverings. Where used as interior wall finish materials, textile wall coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and 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 one of the following: Section 803.1.2, 803.1.3 or 803.1.4 803.1.1, 803.15.1 or 803.15.2.		Edits made to clarify code, no major changes to code requirements.
	803.5.1 Room corner test for textile wall coverings and expanded vinyl wall coverings. 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.		Testing to be in accordance with applicable NFPA standard
	803.5.1.1 Acceptance criteria for 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. The total smoke release throughout the test shall not exceed 1,000 m ²		Referencing NFPA standard for testing
	803.5.2 Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E84 or UL 723. Textile wall and ceiling coverings and expanded vinyl 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.		Referencing ASTM and UL standards

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	<p>803.6 Textile ceiling coverings. Where used as interior ceiling finish materials, textile ceiling coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and 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 803.1.2 or 803.1.4 803.1.1 or 803.5.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.7 Expanded vinyl wall coverings. 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 one of the following: Section 803.1.2, 803.1.3 or 803.1.4 803.1.1, 803.5.1 or 803.5.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.8 Expanded vinyl ceiling coverings. 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 803.1.2 or 803.1.4 803.1.1 or 803.5.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.9 High-density polyethylene (HDPE) and polypropylene (PP). Where high-density polyethylene or polypropylene is used as an interior finish, it shall comply with Section 803.1.2 803.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.10 Site-fabricated stretch systems. Where used as interior wall or interior ceiling finish materials, <i>site-fabricated stretch systems</i> containing all three components described in the definition in Chapter 2 shall be tested in the manner intended for use, and shall comply with the requirements of Section 803.1.1 or with the requirements of Class A in accordance with Section 803.1.2. If the materials are tested in accordance with ASTM E84 or UL 723, specimen preparation and mounting shall be in accordance with ASTM E2573.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.11 Laminated products factory produced with a wood substrate. Laminated products factory produced with a wood substrate shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. The laminated product shall meet the criteria of Section 803.1.1.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, as described in Section 5.8 of NFPA 286. 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 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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:</p> <ol style="list-style-type: none"> 1. The facing or veneer shall meet the criteria of Section 803.1.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, as described in Section 5.9 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 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2404. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.14 803.13 Interior finish requirements based on group occupancy. Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.14 803.13 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 803.1.2.4 803.1.1.1, shall be permitted to be used where a Class A classification in accordance with ASTM E84 or UL 723 is required.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.12 803.14 Stability.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.13 803.15 Application of interior finish materials to fire-resistance-rated or noncombustible building elements.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.13.4 803.15.1 Direct attachment and furred construction. Where walls and, ceilings or structural elements are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the interior finish material shall be applied directly against such construction or to furring strips not exceeding 1 3/4 inches (44 mm), applied directly against such surfaces.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.13.4.4 803.15.1.1 Furred construction. If the interior finish material is applied to furring strips, the intervening spaces between such furring strips shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. Be filled with material that is inorganic or noncombustible. 2. Be filled with material that meets the requirements of a Class A material in 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>accordance with Section 803.1.1 or 803.1.2;or</p> <p>3. Be fireblocked at a maximum of not greater than 8 feet (2438 mm) in every direction in accordance with Section 718.</p> <p>Exception: Compliance with Item 1, 2 or 3 is not required where the materials used to create the concealed space are noncombustible.</p>		
	<p>803.13.2 803.15.2 Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.13.4 803.15.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where interior finish materials are protected on both sides by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. 2. Where interior finish materials are attached to noncombustible backing or furring strips installed as specified in Section 803.13.4.1 803.15.1.1. 3. Where the combustible void is filled with a noncombustible material. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.13.2.1 803.15.2.1 Hangers and assembly members.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.13.3 803.15.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of Type IV heavy timber construction in Section 602.4.2 or 2304.11 or to wood furring strips applied directly to the wood decking or planking shall be fireblocked as specified in Section 803.13.4.1 803.15.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>803.13.4 803.15.4 Materials.</p>		

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	<p>SECTION 804 INTERIOR FLOOR FINISH</p>		
	<p>804.2 Classification. Interior floor finish and floor covering materials required by Section 804.4.2 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/cm² or greater; Class II, 0.22 watts/cm² or greater.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>804.3 Testing and identification. Interior floor finish and floor covering materials shall be tested by an 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 804.2. 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 building official upon request.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 805 COMBUSTIBLE MATERIALS IN TYPES I AND II CONSTRUCTION</p>		
	<p>805.1 Application. Combustible materials installed on or embedded in floors of buildings of Type I or II construction shall comply with Sections 805.1.1 through 805.1.3.</p> <p style="padding-left: 40px;">Exception: Stages and platforms constructed in accordance with Sections 410.3 and 410.4 410.2 and 410.3, respectively.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 806 DECORATIVE MATERIALS AND TRIM</p>		
	<p>[F] 806.1 General. Combustible decorative materials, other than decorative vegetation, shall comply with Sections 806.2 through 806.8 The following requirements shall apply to all occupancies:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Furnishings or other objects shall not be placed to obstruct exits, access thereto, egress therefrom or visibility thereof.</p> <p>4. The permissible amount of decorative vegetation and noncombustible decorative materials shall not be limited.</p>		
	<p>[F] 806.2 Noncombustible materials. The permissible amount of noncombustible materials shall not be limited.</p>		
	<p>[F] 806.32 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 similar combustible decorative materials suspended from walls or ceilings shall comply with Section 806.4 and shall not exceed 10 percent of the specific wall or ceiling area to which 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 to be decorative materials or furnishings.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In auditoriums in Group A, the permissible amount of curtains, draperies, fabric hangings and similar combustible decorative materials 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 803.13 803.15 of this code. 2. In Group R-2 dormitories, within sleeping units and dwelling units, the permissible amount of curtains, draperies, fabric hangings and similar decorative materials suspended from walls or ceiling 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 806.4 and shall not be limited. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	4. The 10-percent limit shall not apply to curtains, draperies, fabric hangings and similar combustible decorative materials used as window coverings.		
	806.3 Occupancy-based requirements. Occupancy-based requirements for combustible decorative materials, other than decorative vegetation, not complying with Section 806.4 shall comply with Sections 807.5.1 through 807.5.6 of the International Fire Code.		Edits made to clarify code, no major changes to code requirements.
	[F] 806.7 Interior trim. Material, other than foam plastic used as interior trim, shall have a minimum Class C flame spread and smoke-developed index when tested in accordance with ASTM E84 or UL 723, as described in Section 803.1.1-803.1.2 . Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the specific wall or ceiling area to which it is attached.		Edits made to clarify code, no major changes to code requirements.
	[F] 806.9 Combustible lockers. Where lockers constructed of combustible materials are used, the lockers shall be considered to be <i>interior finish</i> and shall comply with Section 803. Exception: Lockers constructed entirely of wood and noncombustible materials shall be permitted to be used wherever <i>interior finish</i> materials are required to meet a Class C classification in accordance with Section 803.1.2.		Allowing combustible lockers based on flame spread
	SECTION 807 INSULATION		
	SECTION 808 ACOUSTICAL CEILING SYSTEMS		
2015 Houston IBC – Chapter 9 Fire Protection Systems	2021 IBC – Chapter 9 Fire Protection and Life Safety Systems	2021 Houston Amendments – Chapter 9	Code Analysis
901.1 Scope. The provisions of this chapter and the <i>Fire Code</i> shall specify where <i>fire protection systems</i> are required and shall apply to the design, installation and operation of <i>fire protection systems</i> .	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> .	SECTION 901 GENERAL 901.1 Scope. The provisions of this chapter and the Fire Code shall specify where fire protection <i>and life safety systems</i> are required and shall apply to the design, installation, and operation of <i>fire protection and life safety systems</i> .	Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.

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	<p>901.2 Fire protection systems. <i>Fire protection and life safety systems shall be installed, repaired, operated and maintained in accordance with this code and the <i>International Fire Code</i>.</i></p> <p>Any <i>fire protection or life safety system</i> for which an exception or reduction to the provisions of this code has been granted shall be considered to be a required system.</p> <p>Exception: Any <i>fire protection or life safety system</i> or portion thereof not required by this code shall be permitted to be installed for partial or complete protection provided that such system meets the requirements of this code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>901.4 Threads. Threads provided for fire department connections to sprinkler systems, standpipes, yard hydrants or any other fire hose connection shall be compatible with the connections used by the local fire department National Standard hose threads.</p>	<p>No change</p>	<p>901.4 Threads. Threads provided for fire department connections to sprinkler systems, standpipes, yard hydrants or any other fire hose connection shall be compatible with the connections used by the local fire department National Hose Standard hose threads.</p>	<p>No change to Houston amendment.</p>
<p>901.5 Acceptance tests. <i>Fire protection systems shall be tested in accordance with the requirements of this code and the <i>International Fire Code</i>. When required, the tests shall be conducted in the presence of the <i>building official</i>. Tests required by this code, the <i>International Fire Code</i> and the standards listed in this code shall be conducted at the expense of the owner or the owner's authorized agent. It shall be unlawful to occupy portions of a structure until the required <i>fire protection systems</i> within that portion of the structure have been tested and <i>approved</i>.</i></p> <p><u>The location of all fire department connections shall be approved by the fire code official. Inspections of fire-extinguishing systems shall be conducted by the fire code official, and such inspection and reports shall be forwarded to the <i>building official</i> 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.</u></p> <p>Exception: <u>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.</u></p>	<p>901.5 Acceptance tests. Fire protection systems shall be tested in accordance with the requirements of this code and the International Fire Code. When-Where required, the tests shall be conducted in the presence of the building official. Tests required by this code, the International Fire Code and the standards listed in this code shall be conducted at the expense of the owner or the owner's authorized agent. It shall be unlawful to occupy portions of a structure until the required fire protection systems within that portion of the structure have been tested and approved.</p>	<p>901.5 Acceptance tests. <i>Fire protection systems shall be tested in accordance with the requirements of this code and the <i>International Fire Code</i>. When required, the tests shall be conducted in the presence of the <i>building official</i>. Tests required by this code, the <i>International Fire Code</i> and the standards listed in this code shall be conducted at the expense of the owner or the owner's authorized agent. It shall be unlawful to occupy portions of a structure until the required <i>fire protection systems</i> within that portion of the structure have been tested and <i>approved</i>.</i></p> <p><u>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 <i>city fee schedule</i>. The inspection and reports shall be forwarded to the <i>building official</i> 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.</u></p> <p>Exception: <u>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.</u></p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
	<p>901.6.1 Automatic sprinkler systems. Automatic sprinkler systems shall be monitored by an approved supervising station.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A supervising station is not required for automatic sprinkler systems protecting one- and two- family dwellings. 2. Limited area systems serving fewer than 20 sprinklers in accordance with Section 903.3.8. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>901.6.2 Fire alarm systems. Fire alarm systems required by the provisions of Section 907.2 of this code and Section 907.2 and 907.9 of the <i>International Fire Code</i> shall be monitored by an <i>approved</i> supervising station in accordance with Section 907.6.6.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Single- and multiple-station smoke alarms required by Section 907.2.11. 2. Smoke detectors in Group I-3 occupancies. <p>Supervisory service is not required for <i>automatic sprinkler systems</i> in one- and two-family dwellings.</p> <p>Moved to 901.6.3</p>	<p>[F] 901.6.2 Integrated testing. Where two or more fire protection or life safety systems are interconnected, the intended response of subordinate fire protection and life safety systems shall be verified when required testing of the initiating system is conducted. In addition, integrated testing shall be performed in accordance with Sections 901.6.2.1 and 901.6.2.2.</p>		<p>New testing requirements in accordance with NFPA 4</p>
	<p>[F] 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.</p>		<p>New testing requirements in accordance with NFPA 4</p>
	<p>[F] 901.6.2.2 Smoke control systems. Where a fire alarm system is integrated with a smoke control system as 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.</p>		<p>New testing requirements in accordance with NFPA 4</p>
	<p>901.6.2 901.6.3 Fire alarm systems. Fire alarm systems required by the provisions of Section 907.2 of this code and Sections 907.2 and 907.9 of the <i>International Fire Code</i> shall be monitored by an approved supervising station in accordance with Section 907.6.6 of this code.</p> <p>Exceptions:</p>	<p>901.6.3 Fire alarm systems. Fire alarm systems required by the provisions of Section 907.2 of this code and Sections 907.2 and 907.9 of the <i>International Fire Code</i> shall be monitored by an <i>approved</i> supervising station in accordance with Section 907.6.6 of this code.</p> <p>Exceptions:</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment, moved from Section 901.6.2.</p>

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	<p>1. Single- and multiple-station smoke alarms required by Section 907.2.11 907.2.10.</p> <p>2. Smoke detectors in Group I-3 occupancies.</p> <p>3. Supervisory service is not required for automatic sprinkler systems in one- and two-family dwellings.</p>	<p>1. Single- and multiple-station smoke alarms required by Section 907.2.11.</p> <p>2. Smoke detectors in Group I-3 occupancies.</p> <p>3. Supervisory service is not required for <i>automatic sprinkler systems</i> in one- and two-family dwellings.</p>	
	<p>901.6.3 901.6.4 Group H.</p>		
	<p>901.7 Fire areas. Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire walls constructed in accordance with Section 706, fire barriers constructed in accordance with Section 707, or horizontal assemblies constructed in accordance with Section 711, or both a combination thereof having a fire-resistance rating of not less than that determined in accordance with Section 707.3.10.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 901.8 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 room 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 unobstructed passageway large enough to allow removal of the largest piece of equipment.</p>	<p>901.8 Outside sprinkler control valve. 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.</p>	<p>No change to Houston amendment, moved from Section 901.10.</p>

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<p>901.9 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 minimum 2,500-gallon (9,463.530 L) break tank served by the city main, or a break tank sized as required by NFPA 20, whichever is more restrictive.</p>	<p>N/A</p>	<p>901.9 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:</p> <ol style="list-style-type: none"> 1. Correct street address and name of the building or structure. 2. The caller's name and contact phone number. 3. The identity of system that is impaired or shut down, and if known, the nature of the impairment or failure. 4. Estimated length of time system is to be out of service for repairs. <p>The Fire Department Office of Emergency Communications shall again be notified when the system is restored to normal operational status.</p>	<p>New Houston amendment to IBC to match existing amendment in IFC. Provides regulations for when fire protection equipment is placed out of service.</p> <p>Previous Houston amendment for fire pumps has been removed by Public Comment Proposal – For fire pump requirements see Section 913.</p>
<p>901.10 Outside sprinkler control valve. 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.</p>	<p>N/A</p>		<p>Houston amendment moved to Section 901.8.</p>
<p>901.11 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.</p>	<p>N/A</p>		<p>Houston amendment has been moved to Section 905.2.1</p>
<p>901.12 Fire department connections. The location of all FDC (fire department connections) shall be approved by the fire code official, and all such hose connections shall be 2.5 inch.</p>	<p>N/A</p>		<p>Amendment removed, FDC shall be in accordance with the IFC and Section 912.</p>
	<p style="text-align: center;">SECTION 902</p> <p style="text-align: center;">DEFINITIONS-FIRE PUMP AND RISER ROOM SIZE</p> <p>902.4 Definitions</p> <p>The following terms are defined in Chapter 2:</p> <p>[F] ALARM NOTIFICATION APPLIANCE.</p> <p>[F] ALARM SIGNAL.</p> <p>[F] ALARM VERIFICATION FEATURE.</p> <p>[F] ANNUNCIATOR.</p> <p>[F] AUDIBLE ALARM NOTIFICATION APPLIANCE.</p>		

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- ~~[F] AUTOMATIC.~~
- ~~[F] AUTOMATIC FIRE EXTINGUISHING SYSTEM.~~
- ~~[F] AUTOMATIC SMOKE DETECTION SYSTEM.~~
- ~~[F] AUTOMATIC SPRINKLER SYSTEM.~~
- ~~[F] AUTOMATIC WATER MIST SYSTEM.~~
- ~~[F] AVERAGE AMBIENT SOUND LEVEL.~~
- ~~[F] CARBON DIOXIDE EXTINGUISHING SYSTEMS.~~
- ~~[F] CEILING LIMIT.~~
- ~~[F] CLEAN AGENT.~~
- ~~[F] COMMERCIAL MOTOR VEHICLE.~~
- ~~[F] CONSTANTLY ATTENDED LOCATION.~~
- ~~[F] DELUGE SYSTEM.~~
- ~~[F] DETECTOR, HEAT.~~
- ~~[F] DRY-CHEMICAL EXTINGUISHING AGENT.~~
- ~~[F] ELECTRICAL CIRCUIT PROTECTIVE SYSTEM.~~
- ~~[F] ELEVATOR GROUP.~~
- ~~[F] EMERGENCY ALARM SYSTEM.~~
- ~~[F] EMERGENCY VOICE/ALARM COMMUNICATIONS.~~
- ~~[F] FIRE ALARM BOX, MANUAL.~~
- ~~[F] FIRE ALARM CONTROL UNIT.~~
- ~~[F] FIRE ALARM SIGNAL.~~
- ~~[F] FIRE ALARM SYSTEM.~~
- ~~FIRE AREA.~~
- ~~[F] FIRE COMMAND CENTER.~~
- ~~[F] FIRE DETECTOR, AUTOMATIC.~~
- ~~[F] FIRE PROTECTION SYSTEM.~~
- ~~[F] FIRE SAFETY FUNCTIONS.~~
- ~~[F] FOAM-EXTINGUISHING SYSTEM.~~
- ~~[F] HALOGENATED EXTINGUISHING SYSTEM.~~
- ~~[F] INITIATING DEVICE.~~
- ~~[F] MANUAL FIRE ALARM BOX.~~
- ~~[F] MULTIPLE STATION ALARM DEVICE.~~
- ~~[F] MULTIPLE STATION SMOKE ALARM.~~
- ~~[F] NOTIFICATION ZONE.~~

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	<p>[F] NUISANCE ALARM, PRIVATE GARAGE.</p> <p>[F] RECORD DRAWINGS.</p> <p>[F] SINGLE STATION SMOKE ALARM.</p> <p>[F] SMOKE ALARM.</p> <p>[F] SMOKE DETECTOR.</p> <p>[F] SMOKEPROOF ENCLOSURE.</p> <p>[F] STANDPIPE SYSTEM, CLASSES OF.</p> <p>Class I system.</p> <p>Class II system.</p> <p>Class III system.</p> <p>[F] STANDPIPE, TYPES OF.</p> <p>Automatic dry.</p> <p>Automatic wet.</p> <p>Manual dry.</p> <p>Manual wet.</p> <p>Semiautomatic dry.</p> <p>[F] SUPERVISING STATION.</p> <p>[F] SUPERVISORY SERVICE.</p> <p>[F] SUPERVISORY SIGNAL.</p> <p>[F] SUPERVISORY SIGNAL-INITIATING DEVICE.</p> <p>[F] TIRES, BULK STORAGE OF.</p> <p>[F] TROUBLE SIGNAL.</p> <p>[F] VISIBLE ALARM NOTIFICATION APPLIANCE.</p> <p>[F] WET CHEMICAL EXTINGUISHING SYSTEM.</p> <p>[F] WIRELESS PROTECTION SYSTEM.</p> <p>[F] ZONE.</p> <p>[F] ZONE, NOTIFICATION.</p>		
	<p>[F] 902.1 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 room 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 doors and</p>		<p>Additional requirements for room size for fire pump and riser room.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	unobstructed passageways large enough to allow removal of the largest piece of equipment.		
	[F] 902.1.1 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.		Access requirements for fire protection systems rooms .
	[F] 902.1.2 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 requirements on pump rooms
	[F] 902.1.3 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.		Edits made to clarify code, no major changes to code requirements.
	[F] 902.1.4 Lighting. Permanently installed artificial illumination shall be provided in the automatic sprinkler system riser rooms and fire pump rooms.		Edits made to clarify code, no major changes to code requirements.
	SECTION 903 AUTOMATIC SPRINKLER SYSTEMS	SECTION 903 AUTOMATIC SPRINKLER SYSTEMS	
		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 obligated to provide fire inspectors for this purpose. Fees for standby inspectors shall be in accordance with the <i>city fee schedule</i> .	This *new* Houston amendment is based off previous Houston amendments in Section 903.2 and its subsections that provide provisions on the ability to utilize a fire watch in certain scenarios. The actual requirements and language have not changed.

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<p>[F] 903.2 Where required. Approved <i>automatic sprinkler systems</i> in new building and structures shall be provided in the locations described in Section 903.2.1 through 903.2.12.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Spaces or areas in telecommunications buildings use exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an <i>automatic smoke detection system</i> 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 or not less than 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711, or both. 2. In other than Group H occupancies, a sprinkler system shall not be required in open buildings. 	<p>[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.</p> <p>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.</p>	<p>[F] 903.2 Where required. Approved <i>automatic sprinkler systems</i> in new building and structures shall be provided in the locations described in Section 903.2.1 through 903.2.12.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 <i>automatic smoke detection system</i> 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 or not less than 2-hour <i>horizontal assemblies</i> constructed in accordance with Section 711, or both. 2. In other than Group H occupancies, an <i>automatic sprinkler system</i> shall not be required in open buildings. 	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 903.2.1.1 Group A-1. An <i>automatic sprinkler system</i> shall be provided for <i>fire areas</i> containing Group A-1 occupancies and intervening floors of the building where one of the following conditions exists:</p> <ol style="list-style-type: none"> 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 <i>level of exit discharge</i> serving such occupancies. <p>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 fire code official 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</u></p>	<p>[F] 903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for fire areas throughout stories containing Group A-1 occupancies and intervening floors of the building 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:</p> <ol style="list-style-type: none"> 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. 4. The fire area contains a multitheater complex. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p><u>provide fire inspections for this purpose. See the <i>Fire Code</i> for applicable fees and service conditions.</u></p>			
<p>[F] 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for <i>fire areas</i> containing Group A-2 occupancies and intervening floors of the building where one of the following conditions exists:</p> <ol style="list-style-type: none"> 1. The <i>fire area</i> exceeds 5,000 square feet (464.5 m²). 2. The <i>fire area</i> has an <i>occupant load</i> of 100 or more. 3. The <i>fire area</i> is located on a floor other than a <i>level of exit discharge</i> serving such occupancies. <p>Exception: 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 fire code official 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 inspections for this purpose. See the <i>Fire Code</i> for applicable fees and service conditions.</p>	<p>[F] 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for fire areas throughout stories containing Group A-2 occupancies and intervening floors of the building throughout all 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:</p> <ol style="list-style-type: none"> 1. The fire area exceeds 5,000 square feet (464.5 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 903.2.1.3 Group A-3. An automatic sprinkler system 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:</p> <ol style="list-style-type: none"> 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 <i>level of exit discharge</i> serving such occupancies. <p>Exception: 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 fire code official 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 inspections for this purpose. See the <i>Fire Code</i> for applicable fees and service conditions.</p>	<p>[F] 903.2.1.3 Group A-3. An automatic sprinkler system shall be provided for fire areas throughout stories containing Group A-3 occupancies and intervening floors of the building 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:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>[F] 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for <i>fire areas</i> containing Group A-4 occupancies and intervening floors of the building where one of the following conditions exists:</p> <ol style="list-style-type: none"> 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 <i>level of exit discharge</i> serving such occupancies. <p>Exception: 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 fire code official 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 inspections for this purpose. See the <i>Fire Code</i> for applicable fees and service conditions.</p>	<p>[F] 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for fire areas throughout stories containing Group A-4 occupancies and intervening floors of the building 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:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 903.2.1.5 Group A-5. An automatic sprinkler system shall be provided for 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).</p> <p>Exception: 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 fire code official 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 inspections for this purpose. See the <i>Fire Code</i> for applicable fees and service conditions.</p>	<p>[F] 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).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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:</p> <ol style="list-style-type: none"> 1. The enclosed area is 1,000 square feet (93 m²) or less and is 		<p>New sprinkler requirements</p>

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	<p style="background-color: magenta;">not constructed in accordance with Section 1029.1.1.1.</p> <p style="background-color: magenta;">2. The enclosed area exceeds 1,000 square feet (93 m²).</p>		
<p>[F] 903.2.1.6 Assembly occupancies of 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.</p> <p>Exception: Open parking garages of Type I or Type II construction. 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 fire code official 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.</p>	<p>No change</p>	<p>[F] 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.</p> <p style="background-color: yellow;">Exception: Open parking garages of Type I or Type II construction.</p>	<p>No change to amendment; provisions for HFD fire watch have been moved to Section 903.2.1.</p>
	<p>[F] 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:</p> <ol style="list-style-type: none"> 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. <p>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 such care is provided as well as all floors below, and all floors between the level of ambulatory care and the nearest level of exit discharge, including the level of exit discharge.</p> <p style="background-color: magenta;">Exception: Floors classified as an open parking garage are not required to be sprinklered.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[F] 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:</p> <ol style="list-style-type: none"> 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 The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies. <p>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 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.</p> <ol style="list-style-type: none"> 3. The Group E fire area has an occupant load of 300 or more. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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:</p> <ol style="list-style-type: none"> 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). 		
	<p>[F] 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.</p>		<p>New requirements for distillation rooms</p>
	<p>[F] 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</p>		<p>Sprinkler requirements for Mattress factory</p>

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	<p>manufacture of upholstered furniture or mattresses.</p>		
<p>[F] 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.</p> <p><u>Exception: Hazardous materials storage canopies complying with the provisions of Section 414.6.1 for weather protection.</u></p>	<p>No change</p>	<p>[F] 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.</p> <p><u>Exception: Hazardous materials storage canopies complying with the provisions of Section 414.6.1 for weather protection.</u></p>	<p>No change to Houston amendment.</p>
	<p>[F] 903.2.6 Group I. An automatic sprinkler system shall be provided throughout buildings with a Group I fire area.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. An automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be permitted in Group I-1 Condition 1 facilities. 2. An automatic sprinkler system is not required where Group I-4 day care facilities are at the level of exit discharge and where every room where care is provided has not fewer than one exterior exit door. 3. 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, all floors between the level of care and the level of exit discharge, and all floors below the level of exit discharge other than areas classified as an open parking garage. 	<p>[F] 903.2.6 Group I. An <i>automatic sprinkler system</i> shall be provided throughout buildings with a Group I <i>fire area</i>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 <i>facilities</i>. 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 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, all floors between the level of care and the level of exit discharge and all floors below the level of exit discharge other than areas classified as an open parking garage. 	<p>Exception #3 stricken to coincide with specific daycare/educational occupancy requirements of Section 305.4</p>
	<p>[F] 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:</p> <ol style="list-style-type: none"> 1. A Group M fire area exceeds 12,000 square feet (1115 m²). 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m²).</p>		
	<p>[F] 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).</p>		<p>Sprinkler requirements for mattress showrooms.</p>
<p>[F] 903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area. <u>Exception: One- or two-family dwellings.</u></p>	<p>No change</p>	<p>[F] 903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area. Exception: One- or two-family dwellings not greater than three stories in height.</p>	<p>Minor change to Houston amendment to clarify buildings constructed under the IRC are exempt.</p>
	<p>[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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[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.</p>		
	<p>[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:</p> <p style="margin-left: 40px;">1. Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with Section 907.2.10.</p>		

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	<p>2. Attics constructed of noncombustible materials.</p> <p>3. Attics constructed of fire-retardant treated wood framing complying with Section 2303.2.</p> <p>4. The automatic sprinkler system shall be extended to provide protection throughout the attic space.</p>		
	<p>[F] 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:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 903.2.9.3 Group S-1 Distilled spirits or wine. <u>An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.</u></p>		<p>Sprinkler requirements in alcohol storage areas</p>
	<p>[F] 903.2.9.4 Group S-1 upholstered furniture and mattresses. <u>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).</u></p> <p><u>Exception: Self-service storage facilities not greater than one story above grade plane where all storage spaces can be accessed directly from the exterior.</u></p>		<p>Sprinkler requirements in furniture and mattress storage areas.</p>
	<p>[F] 903.2.10 Group S-2 enclosed parking garages. An automatic sprinkler system shall be provided throughout buildings classified as enelosed parking garages in accordance</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>with Section 406.6 where either any of the following conditions exists:</p> <ol style="list-style-type: none"> Where the fire area of the enclosed parking garage in accordance with Section 406.6 exceeds 12,000 square feet (1115 m²). Where the enclosed parking garage in accordance with Section 406.6 is located beneath other groups. <p>Exception: Enclosed parking garages located beneath Group R-3 occupancies.</p> <p>3. Where the fire area of open parking garage in accordance with Section 406.5 exceeds 48,000 square feet (4460 m²).</p>		
	<p>[F] 903.2.10.1 Commercial parking garages. An automatic sprinkler system shall be provided through-out buildings used for storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p>		<p>New requirements for mechanical access parking garages.</p>
	<p>[F] 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 the story does not comply with the following criteria for exterior wall openings:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		
	<p>[F] 903.2.11.1.1 Opening dimensions and access. Openings shall have a minimum dimension of not less than 30 inches (762 mm). 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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 sprinklers shall be accessible. Access to sprinklers in chutes shall be provided for servicing.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Open parking structures. 2. Occupancies in Group F-2. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 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 fire-resistance-rated construction or contains electrical equipment.</p> <ol style="list-style-type: none"> 1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard. 2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, where <i>approved</i> by the fire code <i>building</i> 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. <p>Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with Section 3008.</p>	<p>[F] 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 fire-resistance-rated construction or contains electrical equipment.</p> <ol style="list-style-type: none"> 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 official. 3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours. 4. Rooms or areas that are of noncombustible construction with wholly noncombustible contents. 	<p>[F] 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 fire-resistance-rated construction or contains electrical equipment.</p> <ol style="list-style-type: none"> 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 <i>building</i> 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. 	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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	<p>5. Fire service access elevator machine rooms and machinery spaces.</p> <p>6. Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with Section 3008.</p>		
	<p>[F] 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 m²) 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] TABLE 903.2.11.6</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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:</p> <p>1. Four stories or fewer above <i>grade plane</i>.</p> <p>2. The floor level of the highest <i>story</i> is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.</p> <p>3. 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.</p> <p>The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from the horizontal assembly creating separate buildings grade plane.</p>	<p>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:</p> <ol style="list-style-type: none"> 1. Four stories or fewer above <i>grade plane</i>. 2. For other than Group R2 occupancies, the floor level of the highest <i>story</i> 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 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. 4. 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. 	<p>New Houston amendment accepted during Public Comment. Changes incorporate language approved for the 2024 IBC.</p>

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		<p>The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from grade plane.</p>	
	<p>[F] 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 the building is of Type V construction, provided 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 either of the following conditions exists:</p> <ol style="list-style-type: none"> 1. The building is of Type V construction, provided that there is a roof or deck above. 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. <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 903.3.1.2.2 Open ended corridors <u>Corridors and balconies in the means of egress.</u> Sprinkler protection shall be provided in <u>corridors</u> and for balconies in <u>the means of egress</u> where any of the following conditions apply:</p> <ol style="list-style-type: none"> 1. <u>Corridors with combustible floor or walls.</u> 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Corridors with an interior change of direction exceeding 45 degrees (0.79 rad).</p> <p>3. Corridors that are less than 50 percent open to the outside atmosphere at the ends.</p> <p>4. Open-ended corridors and associated exterior stairways and ramps as specified in Section 1027.6. Exception 3.</p> <p>5. Egress balconies not complying with Sections 1021.2 and 1021.3.</p>		
	<p>[F] 903.3.1.2.3 Attics. Attic protection shall be provided as follows:</p> <p>1. Attics that are used or intended for living purposes or storage shall be protected by an automatic sprinkler system.</p> <p>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.</p> <p>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, 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.</p> <p>3.1. Provide automatic sprinkler system protection.</p> <p>3.2. Construct the attic using noncombustible materials.</p> <p>3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.</p>		<p>Edits made to align with NFPA 13</p>

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	<p>3.4. Fill the attic with noncombustible insulation.</p> <p>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 of the International Fire Code:</p> <p>4. Group R-4, Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following:</p> <p>4.1. Provide automatic sprinkler system protection.</p> <p>4.2. Provide a heat detection system throughout the attic that is arranged to activate the building fire alarm system.</p> <p>4.3. Construct the attic using non-combustible materials.</p> <p>4.4. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.</p> <p>4.5. Fill the attic with noncombustible insulation.</p>		
	<p>[F] 903.3.1.3 NFPA 13D sprinkler systems. Automatic sprinkler systems installed in one- and two-family dwellings; Group R-3; Group R-4, Condition 1; and townhouses shall be permitted to be installed throughout in accordance with NFPA 13D.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[F]903.3.2 Quick-response and residential sprinklers. Where <i>automatic sprinkler systems</i> 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:</p> <ol style="list-style-type: none"> 1. Throughout all spaces within a <i>smoke compartment</i> containing care recipient <i>sleeping units</i> in Group I-2 in accordance with this code. 2. Throughout all spaces within a <i>smoke compartment</i> containing gas fireplace appliances and decorative gas appliances in Group I-2. 3. Throughout all spaces within a <i>smoke compartment</i> containing treatment rooms in <i>ambulatory care facilities</i>. 4. <i>Dwelling units</i> and <i>sleeping units</i> in Group I-1 and R occupancies. 4. Light-hazard occupancies as defined in NFPA 13. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 903.4 Sprinkler system supervision and alarms. Valves controlling the water supply for <i>automatic sprinkler systems</i>, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a <i>listed</i> fire alarm control unit.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. <i>Automatic sprinkler systems</i> protecting one- and two-family <i>dwellings</i>. 2. Limited area sprinkler systems in accordance with Section 903.3.8. 3. <i>Automatic sprinkler systems</i> installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the <i>automatic sprinkler system</i>, 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>and a separate shutoff valve for the <i>automatic sprinkler system</i> is not provided.</p> <p>4. Jockey pump control valves that are sealed or locked in the open position.</p> <p>5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.</p> <p>6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.</p> <p>7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.</p> <p>8. Underground key or hub gate valves in roadway boxes.</p>		
	<p>[F] 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.</p> <p>Exceptions:</p> <p>1. Underground key or hub valves in roadway boxes provided by the municipality or public utility are not required to be monitored.</p> <p>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.</p>		
		<p>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. National Hose Standard hose threads.</p>	<p>No change to Houston amendment. Relocated from Section 901.4.</p>
		<p>903.3.7 Fire department connections. Fire department connections for <i>automatic sprinkler systems</i> shall be installed in accordance with section 912. 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.</p>	<p>New Houston amendment brought to IBC from previous IFC Houston amendments.</p>

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	<p style="text-align: center;">SECTION 904 ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS</p>	<p style="text-align: center;">SECTION 904 ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS</p>	
<p>[F] 904.2.2 Commercial hood and duct systems. Each required commercial kitchen exhaust hood and duct system required by Section 609 of the <i>International Fire Code</i> or Chapter 5 Section 508.1 of the <i>International Mechanical Code</i> to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.</p>	<p>[F] 904.2.2 Commercial hood and duct systems. Each required commercial kitchen exhaust hood and duct system required by Section 606 of the International Fire Code or Chapter 5 of the International Mechanical Code to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.</p>	<p>[F] 904.2.2 Commercial hood and duct systems. Each required commercial kitchen exhaust hood and duct system required by Section 606 of the <i>International Fire Code</i> or Chapter 5 Section 508.1 of the <i>International Mechanical Code</i> to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.</p>	<p>Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.</p>
<p>[F] 904.12 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, 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:</p> <p>{EDITORIAL NOTE: PORTIONS OF 904.12 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</p> <p>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 of the <i>International Mechanical Code</i>.</p> <p>Moved to 904.13</p>	<p>[F] 904.12 Aerosol fire-extinguishing systems. Aerosol fire-extinguishing systems shall be installed, maintained, periodically inspected and tested and maintained in accordance Sections 904 and 904.4, with NFPA 2010, and in accordance with their listing.</p> <p>Such devise and appurtenances shall be listed and installed in compliance with manufacturers' instructions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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</p>	<p>[F] 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:</p>	<p>Edits made to clarify code, no major changes to code requirements. No change to Houston amendment, moved from Section 904.12.</p>

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	<p>accordance with the referenced standard indicated, as follows:</p> <ol style="list-style-type: none"> 1. Carbon dioxide extinguishing systems, NFPA 12. 2. Automatic sprinkler systems , NFPA 13. 3. Automatic water mist systems, NFPA 750. 3-4. Foam-water sprinkler system or foam-water spray systems, NFPA 16. 4-5. Dry-chemical extinguishing systems, NFPA 17. 5-6. Wet-chemical extinguishing systems, NFPA 17A. <p>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.</p>	<p>EDITORIAL NOTE: THE PORTION OF THE TEXT BETWEEN THE SECTION NUMBER AND TITLE AND THE EXCEPTION SHALL REMAIN AS SET FORTH IN THE 2021 IBC.]</p> <p>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 of the International Mechanical Code.</p>	
	<p>[F] 904.12.1 904.13.1 Manual system operation.</p>		
	<p>[F] 904.12.2 904.13.2 System interconnection.</p>		
	<p>[F] 904.12.3 904.13.3 Carbon dioxide systems.</p>		
	<p>[F] 904.12.3.1 904.13.3.1 Ventilation system.</p>		
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 904.12.4.1 904.13.4.1 Listed sprinklers.</p>		

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	<p>[F] 904.13 904.14 Domestic cooking systems in Group I-2 Condition 4 facilities. In Group I-2 Condition 1, occupancies where cooking facilities are installed in accordance with Section 407.2.6 of this 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. Cooktops and ranges installed in the following occupancies shall be protected in accordance with Section 904.14.1:</p> <ol style="list-style-type: none"> 1. In Group I-1 occupancies where domestic cooking facilities are installed in accordance with Section 420.9. 2. In Group I-2, Condition 4 occupancies where domestic cooking facilities are installed in accordance with Section 407.2.7. 3. In Group R-2 college dormitories where domestic cooking facilities are installed in accordance with Section 420.11. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 904.13.1 904.14.1 Manual system operation and interconnection Protection from fire. Manual actuation and system interconnection for the hood suppression system shall be installed in accordance with Sections 904.12.1 and 904.12.2, respectively. Cooktops and ranges shall be protected in accordance with Section 904.13.1.1 or 904.13.1.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Interconnection of the fuel and electric power supply shall be in accordance with Section 904.12.2.</p>		
	<p>[F] 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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 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.</p>		
	<p>[F] 904.14 Aerosol fire-extinguishing systems. Aerosol fire-extinguishing systems shall be installed, periodically inspected, tested and maintained in accordance with Sections 901 and 904.4, NFPA 2010, and in accordance with their listing.</p> <p>Such devices and appurtenances shall be listed and installed in compliance with manufacturer's instructions.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 905 STANDPIPE SYSTEMS</p>	<p>SECTION 905 STANDPIPE SYSTEMS</p>	
		<p>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.</p>	No change to Houston amendment; relocated from previous Section 901.11.
<p>[F] 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 (9144 mm) above the lowest level of 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. Class I manual standpipes are allowed in <i>open parking garages</i> where the highest floor is located not 	<p>[F] 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 (9144 mm) above the lowest level of 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, any of the following conditions exist:</p> <ol style="list-style-type: none"> Four or more stories are above or below grade plane. The floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of fire department vehicle access. 		Edits made to clarify code, no major changes to code requirements.

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<p>more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access.</p> <p>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.</p> <p>4.2. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.</p> <p>5.3. In determining the lowest level of fire department vehicle access, it shall not be required to consider:</p> <p>5.3.1. Recessed loading docks for four vehicles or less; and</p> <p>5.3.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.</p>	<p>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.</p> <p>Exceptions:</p> <p>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.</p> <p>2. Class I standpipes are allowed in Group B and E occupancies.</p> <p>2.3. 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.</p> <p>3.4. 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</p> <p>4.5.4. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.</p> <p>6.5. Class I standpipes are allowed in buildings where occupant-use hose lines will not be utilized by trained personnel or the fire department.</p> <p>5.7.6. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following:</p> <p>5.7.6.1. Recessed loading docks for four vehicles or less.</p> <p>5.7.6.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.</p>		
<p>[F] 905.3.2 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an occupant load exceeding 1,000 persons.</p> <p>Exceptions:</p> <p>4. Open-air-seating spaces without enclosed spaces.</p>	<p>No change</p>	<p>[F] 905.3.2 Group A. Class I automatic wet standpipes shall be provided in non-sprinklered Group A buildings having an occupant load exceeding 1,000 persons.</p> <p>Exceptions:</p> <p>4. Open-air-seating spaces without enclosed spaces.</p>	<p>No change to Houston amendment.</p>

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<p>2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.</p>		<p>2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.</p>	
	<p>[F] 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 to not 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:</p> <ol style="list-style-type: none"> 1. Within the mall at the entrance to each exit passageway 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 905.3.4 Stages. Stages greater than 1,000 square feet in area (93 m²) shall be equipped with a Class III wet standpipe system with 1½-inch and 2½-inch (38mm and 64mm) hose connections on each side of the stage.</p> <p>Exception: Where the building or area is equipped throughout with an <i>automatic sprinkler system</i>, the hose connections are allowed to be supplied from the automatic sprinkler system 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.</p>	<p>No change</p>	<p>[F] 905.3.4 Stages. Stages greater than 1,000 square feet in area (93 m²) shall be equipped with a Class III wet standpipe system with 1½-inch and 2½-inch (38 mm and 64 mm) hose connections on each side of the stage.</p> <p>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.</p>	<p>Minor change to Houston amendment to coincide with updates to the IFC and Houston Fire Department regulation.</p>
<p>[F] 905.3.5 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.</p>	<p>No change</p>	<p>[F] 905.3.5 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.</p>	<p>No change to Houston amendment.</p>

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	<p>[F] 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.</p>		
<p>[F] 905.4 Location of Class I standpipe hose connections. Class I standpipe hose connection shall be provided in all of the following locations:</p> <p>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 <u>an intermediate landing between stories</u>, unless otherwise approved by the fire code official.</p> <p><small>{EDITORIAL NOTE: REMAINDER OF SECTION REMAINS AS IS IN THE 2015 INTERNATIONAL BUILDING CODE.}</small></p>	<p>[F] 905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations:</p> <p>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 an intermediate landing between stories, the main floor landing unless otherwise approved by the fire code official.</p> <p style="padding-left: 40px;">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.</p> <p>2. On each side of the wall adjacent to the exit opening of a horizontal exit.</p> <p style="padding-left: 40px;">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.</p> <p>3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.</p> <p style="padding-left: 40px;">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.</p> <p>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.</p> <p>5. Where the roof has a slope less than 4 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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Previous Houston amendment removed to go with base code provisions on standpipe locations.</p>

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	<p>of an interior exit stairway with access to the roof provided in accordance with Section 1011.12.</p> <p>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.</p>		
	<p>[F] 905.5 Location of Class II standpipe hose connections. Class II standpipe hose connections shall be accessible and 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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 905.7.2 Locking cabinet doors. Cabinets shall be unlocked.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access. 2. Approved locking arrangements. 3. Group I-3 occupancies. 		Edits made to clarify code, no major changes to code requirements.
<p>[F] 905.8 Dry standpipes. Dry standpipes shall not be installed.</p> <p>Exception: Where subject to freezing and in accordance with NFPA 14.</p>	No change	<p>[F] 905.8 Dry standpipes. Dry standpipes shall not be installed.</p> <p>Exception: Where subject to freezing and in accordance with NFPA 14.</p>	No change to Houston amendment.
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Valves to underground key or hub valves in roadway boxes provided by the municipality or public utility do not require supervision. 2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system. 		

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<p>905.11 Design pressure. Design pressure at the uppermost valve for a Class II standpipe system shall be 35 psi. Move to 905.12</p>	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
		<p>905.12 Design pressure. Design pressure at the uppermost valve for a Class II standpipe system shall be 35 psi (241.317 kPa).</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 906 PORTABLE FIRE EXTINGUISHERS</p> <p>[F] 906.1 Where required. Portable fire extinguishers shall be installed in all of the following locations:</p> <p>1. In Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies.</p> <p>Exceptions:</p> <p>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.</p> <p>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.</p> <p>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:</p> <p>3.1. Use of vehicle-mounted extinguishers shall be approved by the fire code official.</p> <p>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.</p> <p>3.3. Not less than two spare extinguishers of equal or greater rating shall be available on site to replace a discharged extinguisher.</p> <p>3.4. Vehicle operators shall be trained in the proper operation, use and inspection of extinguishers.</p> <p>3.5. Inspections of vehicle-mounted extinguishers shall be performed daily.</p>		<p>Additional requirements for locations requiring portable fire extinguishers.</p>

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	<p>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.</p> <p>3. In areas where flammable or <i>combustible liquids</i> are stored, used or dispensed.</p> <p>4. On each floor of structures under construction, except Group R-3 occupancies, in accordance with Section 3315.1 of the <i>International Fire Code</i>.</p> <p>5. Where required by the <i>International Fire Code</i> sections indicated in Table 906.1.</p> <p>6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the fire code official.</p> <p>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.</p>		
<p>[F] 906.2 General requirements. Portable fire extinguishers shall be selected, and installed and maintained in accordance with this section, and NFPA 10 and LSB 1.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The distance of travel to reach an extinguisher shall not apply to the spectator seating portions of Group A-5 occupancies. 2. In Group I-3, portable fire extinguishers shall be permitted to be located at staff locations. 	<p style="text-align: center;">No change</p>	<p>[F] 906.2 General requirements. Portable fire extinguishers shall be selected, and 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."</p> <p>EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2021 IBC.</p>	<p>No major change to amendment; provides clarifying language on LSB. Editorial note provided to limit characters in amendment.</p>
	<p>[F] 906.4 Cooking grease-equipment fires. Fire extinguishers provided for the protection of cooking grease-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 904.42.5-906.1, Item 2, 906.4.1 and 906.4.2 of the International Fire Code, as applicable.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 906.5 Conspicuous location. Portable fire extinguishers shall be located in conspicuous locations where they will be readily accessible have ready access 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[F] 906.8 Cabinets. Cabinets used to house portable fire extinguishers shall not be locked.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where portable fire extinguishers subject to malicious use or damage are provided with a means of ready access. 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 907 FIRE ALARM AND DETECTION SYSTEMS</p>	<p>SECTION 907 FIRE ALARM AND DETECTION SYSTEMS</p>	
	<p>[F] 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:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>[F] 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 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.</p> <p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 to the public. 3. <u>In other than Group H occupancies, a fire alarm system shall not be required in open buildings.</u> 	<p>[F] 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.</p> <p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 	<p>[F] 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 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.</p> <p>Not fewer than one manual fire alarm box shall be provided in an <i>approved</i> location to initiate a <i>fire alarm signal</i> 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 <i>open buildings</i>.</u> 	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
	<p>[F] 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 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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>[F] 907.2.2 Group B. A manual fire alarm system shall be installed in Group B occupancies where one of the following conditions exists:</p> <ol style="list-style-type: none"> 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. <p>Exception: <u>In other than high-rise buildings, manual</u> 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.</p>	<p>[F] 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 exist:</p> <ol style="list-style-type: none"> 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 <i>ambulatory care facility</i>. <p>Exception: 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.</p>	<p>[F] 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:</p> <ol style="list-style-type: none"> 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 <i>ambulatory care facility</i>. <p>Exception: Manual <u>In other than high-rise buildings,</u> 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.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
	<p>[F] 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.</p> <p>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 waterflow.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 907.2.3 Group E. A manual <u>and automatic</u> 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.</p> <p>{EDITORIAL NOTE: THE EXCEPTIONS TO 907.2.3 REMAIN AS SET FORTH IN THE 2015 IBC.}</p>	<p>[F] 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 <i>automatic sprinkler systems</i> or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A manual fire alarm system shall not be required in Group E occupancies with an <i>occupant load</i> of 50 or less. 2. Emergency voice/alarm communication systems meeting the requirements of Section 907.5.2.2 and 	<p>[F] 907.2.3 Group E. A manual <u>and automatic</u> 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.</p> <p>EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2021 IBC.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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	<p>installed in accordance with Section 907.6 shall not be required in Group E occupancies with <i>occupant loads</i> of 100 or less, provided that activation of the manual fire alarm system initiates an <i>approved</i> occupant notification signal in accordance with Section 907.5.</p> <p>3. Manual fire alarm boxes shall not be required in Group E occupancies where all of the following apply:</p> <p>3.1. Interior <i>corridors</i> are protected by smoke detectors.</p> <p>3.2. Auditoriums, cafeterias, gymnasiums and similar areas are protected by <i>heat detectors</i> or other <i>approved</i> detection devices.</p> <p>3.3. Shops and laboratories involving dusts or vapors are protected by <i>heat detectors</i> or other <i>approved</i> detection devices.</p> <p>3.4. Manual activation is provided from a normally occupied location.</p> <p>4. Manual fire alarm boxes shall not be required in Group E occupancies where all of the following apply:</p> <p>4.1. The building is equipped throughout with an <i>approved automatic sprinkler system</i> installed in accordance with Section 903.3.1.1.</p> <p>4.2. The emergency voice/alarm communication system will activate on sprinkler waterflow.</p> <p>4.3. Manual activation is provided from a normally occupied location.</p>		
<p><u>907.2.3.1 Group E educational.</u> 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.</p> <p><u>Exception:</u> Approved heat detectors may be installed in lieu of smoke detectors with fire marshal approval.</p>	<p><u>N/A</u></p>	<p><u>907.2.3.1 Group E educational.</u> 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.</p> <p><u>Exception:</u> Approved heat detectors may be installed in lieu of smoke detectors with fire marshal approval.</p>	<p>No change to Houston amendment.</p>
<p><u>907.2.3.2 Group E child day care facilities.</u> 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 alarms shall be interconnected in such a manner that activation of one alarm shall activate all the alarms.</p>	<p><u>N/A</u></p>	<p><u>907.2.3.2 Group E child day care facilities.</u> 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.</p>	<p>Minor change to smoke alarm wording to correlate provisions to smoke alarm Sections.</p>

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<p>907.2.3.3 Smoke detectors. <u>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.</u></p> <p>Moved to Section 907.2.11.8.1</p>	<p style="text-align: center;"><u>N/A</u></p>		<p>Houston amendment relocated to Section 907.2.11.8.1</p>
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 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 of the International Fire Code. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.2.6.1 Group I-1. In Group I-1 occupancies, an automatic smoke detection system shall be installed in corridors, waiting areas open to corridors and habitable spaces other than sleeping units and kitchens. The system shall be activated in accordance with Section 907.5.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. For Group I-1 Condition 1 occupancies, smoke detection in habitable spaces is not required where the facility is equipped throughout with an automatic sprinkler system installed in 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>accordance with Section 903.3.1.1.</p> <p>2. Smoke detection is not required for exterior balconies.</p>		
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p><u>907.2.6.4 Group I-4.</u> Group I-4 occupancies shall have a manual fire alarm and an automatic fire detection system installed in accordance with Section 907.2.3.</p>		<p><u>907.2.6.4 Group I-4.</u> Group I-4 occupancies shall have a manual fire alarm and an automatic fire detection system installed in accordance with Section 907.2.3.</p>	<p>No change to Houston amendment.</p>

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	<p>[F] 907.2.8.3 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11 907.2.10 907.2.11.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.2.9.2 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11 907.2.10 907.2.11.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>Exception: 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.</p>		<p>Self storage fire alarm requirements</p>
	<p>[F] 907.2.10 907.2.11 Group R-4 Single- and multiple-station smoke alarms. 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 Listed single- and multiple-station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.10.1 through 907.2.10.7 and NFPA 72.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>Exceptions:</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Manual fire alarm boxes are not required throughout the building where all of the following conditions are met:</p> <p>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.</p> <p>2.2. The notification appliances will activate upon sprinkler water flow.</p> <p>2.3. Not fewer than one manual fire alarm box is installed at an approved location.</p> <p>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.</p>		
	<p>[F] 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.</p> <p>Exceptions:</p> <p>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.</p> <p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	exit or to an exterior exit access that leads directly to an exit.		
	[F] 907.2.10.3 Smoke alarms. Single and multiple station smoke alarms shall be installed in accordance with Section 907.2.11.		Edits made to clarify code, no major changes to code requirements.
	[F] 907.2.11 Single and multiple station smoke alarms. Listed single and multiple station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.11.1 through 907.2.11.6 and NFPA 72.		Edits made to clarify code, no major changes to code requirements.
	[F] 907.2.11.1 907.2.10.1 907.2.11.1 Group R-1.		
	[F] 907.2.11.2 907.2.10.2 907.2.11.2 Groups R-2, R-3, R-4 and I-1. Single or multiple-station smoke alarms shall be installed and maintained in Groups R-2, R-3, R-4 and I-1 regardless of occupant load at all of the following locations: <ol style="list-style-type: none"> 1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms. 2. In each room used for sleeping purposes. 3. In each story within a dwelling unit, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level. 		
	[F] 907.2.11.3 907.2.10.3 907.2.11.3 Installation near cooking appliances.		

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	[F] 907.2.11.4 907.2.10.4 907.2.11.4 Installation near bathrooms.		
	[F] 907.2.11.5 907.2.10.5 907.2.11.5 Interconnection.		
	[F] 907.2.11.6 907.2.10.6 907.2.11.6 Power source.		
	[F] 907.2.11.7 907.2.10.7 907.2.11.7 Smoke detection system.		
<u>907.2.11.8 Group E child day care facilities.</u> 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.	N/A	<u>907.2.11.8 Group E child day care facilities.</u> 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.
		<u>907.2.11.8.1 Detector Spacing.</u> 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.
	[F] 907.2.12 907.2.11 907.2.12 Special amusement buildings.		
	[F] 907.2.12.1 907.2.11.1 907.2.12.1 Alarm.		

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	[F] 907.2.12.2 907.2.11.2 907.2.12.2 System response.		
	[F] 907.2.12.3 907.2.11.3 907.2.12.3 Emergency voice/alarm communication system. An emergency voice/alarm communication system, which is also allowed to serve as a public address system, shall be installed in accordance with Section 907.5.2.2 and be audible throughout the entire special amusement building.		
	[F] 907.2.13 907.2.12 907.2.13 High-rise buildings.		
	[F] 907.2.13.1 907.2.12.1 907.2.13.1 Automatic smoke detection.		
	[F] 907.2.13.1.1 907.2.12.1.1 907.2.13.1.1 Area smoke detection.		
	[F] 907.2.13.1.2 907.2.12.1.2 907.2.13.1.2 Duct smoke detection.		
	[F] 907.2.12.1 907.2.13.2 Fire department communication system. Where a wired communication system is <i>approved</i> in lieu of an in-building two-way emergency responder radio communication coverage system in accordance with Section 510 of the <i>International Fire Code</i> , 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 911, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, <i>areas of refuge</i> and inside <i>interior exit stairways</i> . The fire department communication device shall be provided at each floor level within the <i>interior exit stairway</i> .		

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	<p>[F] 907.2.12.3 907.2.13.3 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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 907.2.14 907.2.13 907.2.14 Atriums connecting more than two stories.</p>		
	<p>[F] 907.2.15 07.2.14 907.2.15 High-piled combustible storage areas.</p>		
	<p>[F] 907.2.16 907.2.15 907.2.16 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 the International Fire Code.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 907.2.17 907.2.16 907.2.17 Lumber, wood structural panel and veneer mills.</p>		
	<p>[F] 907.2.18 907.2.17 907.2.18 Underground buildings with smoke control systems.</p>		
	<p>[F] 907.2.18.1 907.2.17.1 907.2.18.1 Smoke detectors.</p>		
	<p>[F] 907.2.18.2 907.2.17.2 907.2.18.2 Alarm required.</p>		
	<p>[F] 907.2.19 907.2.18 907.2.19 Deep underground buildings.</p>		

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	<p>[F] 907.2.19 907.2.20 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.2.20 907.2.21 Residential aircraft hangars.</p>		
	<p>[F] 907.2.21 907.2.22 Airport traffic control towers.</p>		
	<p>[F] 907.2.21.1 907.2.22.1 Airport traffic control towers with multiple exits and automatic sprinklers.</p>		
	<p>[F] 907.2.21.2 907.2.22.2 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:</p> <ol style="list-style-type: none"> 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 Utility shafts where access to smoke detectors can be provided. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.2.23 07.2.22 907.2.23 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 with a liquid capacity of more than</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>50 gallons (189 L) as required in Section 1207.5.4 of the International Fire Code.</p>		
	<p>[F] 907.2.23 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.</p>		
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.3.2 Delayed egress locks Special locking systems. Where delayed egress locks special locking systems are installed on means of egress doors in accordance with Sections 1010.1.9.6 or 1010.1.9.7, an automatic smoke or heat detection system shall be installed as required by that section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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 be installed in accordance with Section 907.4.1 through 907.4.3.1.</p> <ul style="list-style-type: none"> 1. Manual fire alarm boxes. 2. Automatic fire detectors. 3. Automatic sprinkler system waterflow devices. 4. Automatic fire-extinguishing systems. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	so that the exit access travel distance of travel to the nearest box does not exceed 200 feet (60 960 mm).		
	<p>[F] 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 <i>approved</i> permanent sign shall be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS CALL FIRE DEPARTMENT.</p> <p>Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.</p>	<p>907.4.2.4 Signs. Where fire alarm systems are not monitored by an <i>approved</i> supervising station in accordance with Section 907.6.6, an <i>approved</i> permanent sign shall be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS CALL FIRE DEPARTMENT.</p> <p>Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>New Houston amendment to strikethrough Section 907.4.2.4 to coincide with IFC amendment.</p>
	<p>[F] 907.4.2.6 Unobstructed and unobscured. Manual fire alarm boxes shall be accessible provided with ready access, unobstructed, unobscured and visible at all times.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 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.</p> <ol style="list-style-type: none"> 1. Automatic fire detectors. 2. Automatic sprinkler system waterflow devices. 3. Manual fire alarm boxes. 4. Automatic fire extinguishing systems. <p>Exception: Where notification systems are allowed elsewhere in Section 907 to annunciate at a constantly attended location.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>907.5.1 907.5.1.1 Presignal feature. A presignal feature shall not be installed unless provided only 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, a constantly attended</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>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.</p>		
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Audible alarm notifications 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 <i>alarm notification appliance</i> 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 a suite or unit in Group I-2, Condition 2 occupancies that are in compliance with Section 907.6.2, Exception 2. 3. Where provided, audible notification appliances located in each enclosed occupant evacuation elevator lobby in accordance with Section 3008.9.1 shall be connected to a separate notification zone for manual paging only. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.5.2.1.2 Maximum sound pressure. The maximum total 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 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p style="background-color: cyan;">with Section 907.5.2.1.3.1 and 907.5.2.1.3.2.</p>		
	<p style="background-color: cyan;">[F] 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.</p>		<p>Edits made to bring code up to NFPA 72 standard</p>
	<p style="background-color: cyan;">[F] 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 <i>dwelling unit</i> or <i>sleeping unit</i> shall be a 520-Hz signal complying with 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 <i>listed notification appliance</i> or a smoke detector with an integral 520-Hz sounder.</p>		<p>Edits made to bring code up to NFPA 72 standard</p>
<p>[F] 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 of the International Fire Code. In high-rise buildings, the system shall operate on a minimum of 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:</p> <ol style="list-style-type: none"> 1. Elevator groups. 2. Interior exit stairways. 3. Each floor. 	<p>[F] 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 approved information and directions for a general or staged evacuation in accordance with the building's fire safety and evacuation plans required by Section 404 of the International Fire Code. 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:</p> <ol style="list-style-type: none"> 1. Elevator groups. 2. Interior exit stairways. 		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Houston amendment removed, no longer needed. Also removed in IFC amendments.</p>

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<p>4. <i>Areas of refuge</i> as defined in Chapter 2.</p> <p><u>Alarms shall not sound in elevator groups or exit stairs.</u></p> <p>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.</p>	<p>3. Each floor.</p> <p>4. Areas of refuge as defined in Chapter 2.</p> <p>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.</p>		
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.5.2.2.4 Emergency voice/alarm communication captions. Where stadiums, arenas and grandstands are required to caption have 15,000 fixed seats or more and provide audible public announcements in accordance with Section 1108.2.7.3, the emergency/voice alarm communication system shall be captioned. provide pre-recorded or real-time captions. Prerecorded or live emergency captions shall be from an approved location constantly attended by personnel trained to respond to an emergency.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.5.2.2.5 Standby Emergency power. Emergency voice/alarm communications systems shall be provided with emergency standby power in accordance with Section 2702. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Visible alarm notification appliances are not required in <i>alterations</i>, except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed. 		<p>Additional exception for visual notification in I2 occupancies.</p>

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	<p>2. Visible alarm notification appliances shall not be required in <i>exits</i> as defined in Chapter 2.</p> <p>3. Visible alarm notification appliances shall not be required in elevator cars.</p> <p>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.</p> <p>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.</p>		
	<p>[F] 907.5.2.3.2 Groups I-1 and R-1. Group I-1 and R-4 Habitable spaces 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, activated by both. Visible alarms shall be activated by the in-room smoke alarm and the building fire alarm system.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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 capability to support future visible alarm notification appliances in accordance with Chapter 4011 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 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:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. The interconnection of the building fire alarm system with the unit smoke alarms.</p> <p>2. The replacement of audible appliances with combination audible/visible appliances.</p> <p>3. The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.</p>		
	<p>[F] 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:</p> <p>1. The replacement of audible appliances with combination audible/visible appliances or additional visible notification appliances.</p> <p>2. The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.</p> <p>3. 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 907.6.2 Power supply. The primary and secondary power supply for the fire alarm system shall be provided in accordance with NFPA 72.</p> <p>Exception: Back-up power for single-station and multiple-station smoke alarms as required in Section 907.2.11.6 907.2.110.6.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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:</p> <ol style="list-style-type: none"> 1. Smoke detectors. 2. Sprinkler waterflow devices. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Manual fire alarm boxes.</p> <p>4. Other <i>approved</i> types of automatic fire detection devices or suppression protection systems.</p>		
	<p>[F] 907.6.6 Monitoring. Fire alarm systems required by this chapter or by the International Fire Code shall be monitored by an approved supervising station in accordance with NFPA 72.</p> <p>Exception: Monitoring by a supervising station is not required for:</p> <ol style="list-style-type: none"> 1. Single- and multiple-station smoke alarms required by Section 907.2.11 907.2.10. 2. Smoke detectors in Group I-3 occupancies. 3. Automatic sprinkler systems in one- and two-family dwellings. 		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 907.6.6.1 Automatic telephone dialing devices. 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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 907.6.6.2 MIY Monitoring. Direct transmission of alarms associated with monitor it yourself (MIY) transmitters to a public safety answer point (PSAP) shall not be permitted unless <i>approved by the fire code official</i>.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[F] 907.6.6.2 907.6.6.3 Termination of monitoring service.</p>		
	<p style="text-align: center;">SECTION 908</p> <p style="text-align: center;">EMERGENCY ALARM SYSTEMS</p>		
	<p>[F] 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 415.11.3.5. A continuous gas detection system shall be provided for HPM gases in accordance with Section 415.11.7.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>[F] 908.3 Highly toxic and toxic materials. A gas detection system shall be provided to detect the presence of highly toxic or toxic gas at or below the permissible exposure limit (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 immediately dangerous to life and health (IDLH) limit.</p> <p>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.</p>		
	<p>[F] 908.3.1 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 visible and audible and shall provide warning both inside and outside the area where gas is detected. The audible alarm shall be distinct from all other alarms.</p> <p>Exception: Signal transmission to a constantly attended control station is not required when not more than one cylinder of highly toxic or toxic gas is stored.</p>		
	<p>[F] 908.3.2 Shutoff 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.</p> <p>Exception: Automatic shutdown is not required for reactors utilized for the production of highly toxic or toxic compressed gases where such reactors are:</p> <ol style="list-style-type: none"> 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. 		
	<p>[F] 908.3.3 Valve closure. The automatic closure of shutoff valves shall be in accordance with the following:</p> <ol style="list-style-type: none"> 1. When the gas detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close. 2. Where the gas detection sampling point initiating the gas detection system alarm is within a gas room and compressed gas containers are not in gas cabinets or exhausted enclosures, the shutoff 		

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	<p>valves on all gas lines for the specific gas detected shall automatically close.</p> <p>3. Where the gas detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve for the compressed container of specific gas detected supplying the manifold shall automatically close.</p> <p>Exception: When the gas detection sampling point initiating the gas detection system alarm is at a use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve in the gas valve enclosure for the branch line located in the piping distribution manifold enclosure shall automatically close.</p>		
	<p>[F] 908.4 Ozone gas generator rooms. Ozone gas generator rooms shall be equipped with a continuous gas detection system that will shut off the generator and sound a local alarm when concentrations above the PEL occur.</p>		
	<p>[F] 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 406.8.5.</p>		
	<p>[F] 908.6 Refrigerant detector. Machinery rooms shall contain a refrigerant detector with an audible and visual alarm. The 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 for the refrigerant classification 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.</p>		
	<p>[F] 908.7 Carbon dioxide (CO2) systems. Emergency alarm systems in accordance with Section 5307.5.2 of the International Fire Code shall be provided where required for compliance with Section 5307.5 of the International Fire Code.</p>		
	<p>[F] 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.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p style="text-align: center;">SECTION 909 SMOKE CONTROL SYSTEMS</p> <p>[F] 909.1 Scope and purpose. This section applies to mechanical or passive smoke control systems where they are required by other provisions of 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. 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. 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. 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 716.5.3 716.2.6.5. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>5. Group I-3.</p> <p>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.</p>		
	<p>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 716.5.9.3 716.2.6.5 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>In buildings 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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 Airflow 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>[F] 909.12.2 Wiring. In addition to meeting requirements of NEPA 70 <u>the Electrical Code</u>, mechanical smoke control all wiring, regardless of voltage, shall be fully enclosed within continuous raceways. <u>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.</u></p>	<p>No change</p>	<p>[F] 909.12.2 Wiring. In addition to meeting requirements of NEPA 70 <u>the Electrical Code</u>, all mechanical smoke control wiring, regardless of voltage, shall be fully enclosed within continuous raceways. <u>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.</u></p>	<p>No change to Houston amendment.</p>
	<p>[F] 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 readily accessible to the provided with ready access for the fire department and any smoke detectors required by engineering analysis.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>[F] 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 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 BCuP-5 brazing alloy with solidus above 1,100°F (593°C) and liquids below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only.</p> <p>Exception: Nonmetallic tubing used within control panels and at the final connection to devices provided all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. Tubing shall comply with the requirements of Section 602.2.3-3 of the International Mechanical Code. <p>{EDITORIAL NOTE: THE REMAINDER OF SECTION 909.13.1 SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</p>	<p>[F] 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 BCuP-5 brazing alloy with solidus above 1,100°F (593°C) and liquids below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only.</p> <p>Exception: Nonmetallic tubing used within control panels and at the final connection to devices provided that all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. Tubing shall comply with the requirements of Section 602.2.1.3 of the International Mechanical Code. 2. Tubing and connected devices 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. 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 serving connected to devices on doors shall be fastened along hinges. 	<p>[F] 909.13.1 Materials. Control-air tubing shall be hard-drawn copper, Type L, ACR in accordance with ASTM B42, ASTM B43, ASTM B68/68M, 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 BCuP-5 brazing alloy with solidus above 1,100°F (593°C) and liquids below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only.</p> <p>Exception: Nonmetallic tubing used within control panels and at the final connection to devices provided all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. Tubing shall comply with the requirements of Section 602.2.3-3 of the International Mechanical Code. <p><u>{EDITORIAL NOTE: THE REMAINDER OF SECTION 909.13.1 SHALL REMAIN AS SET FORTH IN THE 2021 IBC.}</u></p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 909.16.2 Smoke control panel. The fire fighter's control panel shall provide control capability over the complete smoke control system equipment within the building as follows:</p> <ol style="list-style-type: none"> 1. ON-AUTO-OFF control over each individual piece of operating smoke control equipment that 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>can also be controlled from other sources within the building. This includes stairway pressurization fans; smoke exhaust fans; supply, return and exhaust fans; elevator shaft fans and other operating equipment used or intended for smoke control purposes.</p> <p>2. OPEN-AUTO-CLOSE control over individual dampers relating to smoke control and that are also controlled from other sources within the building.</p> <p>3. ON-OFF or OPEN-CLOSE control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the fire fighter's control panel.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Complex systems, where approved, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit. 2. Complex systems, where approved, where the control is accomplished by computer interface using approved, plain English commands. 		
	<p>[F] 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 <i>dampers</i> and fans) in the sequence necessary to prevent physical damage to the fans, <i>dampers</i>, 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>909.20 Smokeproof enclosures. Where required by Section 1021.12, a <i>smokeproof enclosure</i> shall be constructed in accordance with this section. A <i>smokeproof enclosure</i> shall consist of an <i>interior exit stairway</i> or <i>ramp</i> that is enclosed in accordance with the applicable provisions of Section 1023 and an open exterior balcony, ventilated vestibule or pressurized stair and pressurized</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>entrance vestibule meeting the requirements of this section. Where access to the roof is required by the <i>International Fire Code</i>, such access shall be from the <i>smokeproof enclosure</i> where a <i>smokeproof enclosure</i> is required.</p>		
	<p>909.20.2.1 Door closers. Doors in a smokeproof enclosure shall be self- or automatic closing by actuation of a smoke detector in accordance with Section 716.5.9.3 716.2.6.6 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 716.5.</p>		
	<p>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 716.5. The door assembly from the vestibule to the stairway shall have not less than a 20-minute fire protection rating complying with Section 716.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>909.20.4.1 Vestibule doors. The door assembly from the building into the vestibule shall be a fire door assembly complying with Section 716.5.3 716.2.2.1. The door assembly from the vestibule to the stairway or ramp shall not have less than a 20-minute fire protection rating and shall meet the requirements for a smoke door assembly in accordance with Section 716.5.3 716.2.2.1. The door shall be installed in accordance with NFPA 105.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 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 inches 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>909.20.6 Pressurized stair and vestibule alternative. The provisions of Sections 909.20.6.1 through 909.20.6.3 shall apply to <i>smokeproof enclosures</i> using a pressurized stair and pressurized entrance vestibule.</p>		New alternatives allowed
	<p>909.20.6.1 Vestibule doors. The door assembly from the building into the vestibule shall be a <i>fire door assembly</i> complying with Section 716.2.2.1. The door assembly from the vestibule to the <i>stairway</i> shall have not less than a 20-minute <i>fire protection rating</i> and meet the requirements for a smoke door assembly in accordance with Section 716.2.2.1. The door shall be installed in accordance with NFPA 105.</p>		New requirement
	<p>909.20.6.2 Pressure difference. The stair enclosure shall be pressurized to not less than 0.05 inch of water gage (12.44 Pa) positive pressure relative to the vestibule with all <i>stairway</i> doors closed under the maximum anticipated stack pressures. The vestibules, with doors closed, shall have not less than 0.05 inch of water gage (12.44 Pa) positive pressure relative to the fire floor. The pressure difference across doors shall not exceed 30 pounds (133-N) maximum force to begin opening the door.</p>		New requirement
	<p>909.20.6.3 Dampered relief opening. A controlled relief vent having the capacity to discharge not less than 2,500 cubic feet per minute (1180 L/s) of air at the design pressure difference shall be located in the upper portion of the pressurized exit enclosure.</p>		New requirement
	<p>909.20.6 909.20.7 Ventilating equipment. The activation of ventilating equipment required by the alternatives in Sections 909.20.4, 909.20.5 and 909.20.6 shall be by smoke detectors installed at each floor level at an <i>approved</i> location at the entrance to the <i>smokeproof enclosure</i>. When the closing device for the <i>stairway</i> and <i>ramp shaft</i> and vestibule doors is activated by smoke detection of 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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>909.20.6.1 909.20.7.1 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:</p>		Edits made to clarify code, no major changes to code requirements.

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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 or horizontal assemblies constructed in accordance with Section 711, 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 or horizontal assemblies constructed in accordance with Section 711, 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 or horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. Control wiring and power wiring utilizing a 2-hour rated cable located outside of a 2-hour fire barrier construction shall be protected using any one of the following methods:

1.1. 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.

1.2. Where encased with not less than 2 inches (51 mm) of concrete.

1.3. Electrical circuit protective systems shall have a fire-resistance rating of not less than 2

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	<p>hours. Electrical circuit protective systems shall be installed in accordance with their listing requirements.</p> <p>2. Where encased with not less than 2 inches (51 mm) of concrete.</p> <p>3. Control wiring and power wiring protected by a listed electrical circuit protective system with a fire resistance rating of not less than 2 hours.</p>		
	<p>909.20.6.2 909.20.7.2 Standby power.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>909.20.6.3 909.20.7.3 Acceptance and testing.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 910 SMOKE AND HEAT REMOVAL</p>		
	<p><u>[F] 910.3.4 Vent operation.</u> Smoke and heat vents shall be capable of being operated by <i>approved</i> automatic and manual means.</p>		New requirement
	<p><u>[F] 910.3.5 Fusible link temperature rating.</u> 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).</p>		New requirements
	<p>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/sec).</p>		Edits made to clarify code, no major changes to code requirements.
	<p>910.4.5 Manual control location. Manual controls shall be located so as to be accessible to where they are able to be 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</p>		Edits made to clarify code, no major changes to code requirements.

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	than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.		
	SECTION 911 FIRE COMMAND CENTER		
	[F] 911.1 General. Where required by other sections of this code, and in buildings classified as high-rise buildings by this code and in all F-1 and S-1 occupancies with a building footprint of over 500,000 square feet (46 452 m²). a fire command center for fire department operations shall be provided and shall comply with Sections 911.1.1 through 911.1.7.		Edits made to clarify code, no major changes to code requirements.
[F] 911.1.1 Location and access. The location and accessibility of the fire command center shall be <i>approved</i> by the fire chief code official. The fire command center 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 1-hour rated corridor leading directly to the exterior.	[F] 911.1.1 Location and access. The location and accessibility of access to the fire command center shall be <i>approved</i> by the fire chief code official .	[F] 911.1.1 Location and access. The location and access of the fire command center shall be <i>approved</i> by the <i>fire code official</i> . The fire command center 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 1-hour rated corridor leading directly to the exterior.	Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.
	[F] 911.1.3 Size. The fire command center shall not be less than 0.015 percent of the total building area of the facility served or 200 square feet (19 m ²) in area, whichever is greater, with a minimum dimension 0.7 times the square foot of the room area or 10 feet (3048 mm), whichever is greater. Where a fire command is required for Group F-1 and S-1 occupancies with a building footprint greater than 500,000 square feet (46 452 m²) in area, the fire command center shall have a minimum size of 96 square feet (9 m²) with a minimum dimension of 8 feet (2348 mm) where <i>approved</i> by the <i>fire code official</i>.		New requirement
[F] 911.1.6 Required features. The fire command center shall comply with NFPA 72 and shall contain all of the following features: {EDITORIAL NOTE: EXISTING ITEMS 1-18 SHALL REMAIN AS SET FORTH IN THE 2015 IBC.} <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>	[F] 911.1.6 Required features. The fire command center shall comply with NFPA 72 and shall contain all of the following features: 1. The emergency voice/alarm communication system control unit. 2. The fire department communications system. 3. Fire detection and alarm system annunciator. 4. Annunciator unit visually indicating the location of the elevators and whether they are operational. 5. Status indicators and controls for air distribution systems. 6. The fire fighter's control panel required by Section 909.16 for smoke control systems installed in the building.	[F] 911.1.6 Required features. The fire command center shall comply with NFPA 72 and shall contain all of the following features: {EDITORIAL NOTE: EXISTING ITEMS 1-18 SHALL REMAIN AS SET FORTH IN THE 2021 IBC.} 19. A means to automatically switch an alarm signal to an approved central station. 20. Two handsets per each 10 stories in building height. 21. A dry erase board, minimum size 36x60 inch, must be provided in fire command centers. A dry erase marker shall be provided.	Edits made to clarify code, no major changes to code requirements. New requirement for HFD to require dry erase board in fire command centers.

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	<p>7. Controls for unlocking interior exit stairway doors simultaneously.</p> <p>8. Sprinkler valve and waterflow detector display panels.</p> <p>9. Emergency and standby power status indicators.</p> <p>10. A telephone for fire department use with controlled access to the public telephone system.</p> <p>11. Fire pump status indicators.</p> <p>12. Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, fire fighter air replenishment system, fire-fighting equipment and fire department access and the location of fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions.</p> <p>13. An approved Building Information Card that contains, but is not limited to, the following information:</p> <p style="padding-left: 20px;">13.1. General building information that includes: property name, address, the number of floors in the building above and below grade, use and occupancy classification (for mixed uses, identify the different types of occupancies on each floor), and the estimated building population during the day, night and weekend.</p> <p style="padding-left: 20px;">13.2. Building emergency contact information that includes: a list of the building's emergency contacts including but not limited to building manager and building engineer and their respective work phone number, cell phone number, e-mail address.</p> <p style="padding-left: 20px;">13.3. Building construction information that includes: the type of building construction including but not limited to floors, walls, columns, and roof assembly.</p> <p style="padding-left: 20px;">13.4. Exit access and exit stairway information that includes: number of exit access and exit stairways in the building, each exit access and exit stairway designation and floors served, location where each exit access and exit stairway discharges, interior exit stairways that are pressurized, exit stairways provided with emergency lighting, each exit stairway that allows reentry, exit stairways providing roof access; elevator information that includes: number of elevator banks, elevator bank designation, elevator car numbers and respective floors that they serve; location of elevator machine rooms, control rooms and control spaces; location of sky lobby, location of freight elevator banks.</p> <p style="padding-left: 20px;">13.5. Building services and system information that includes: location of mechanical rooms, location of</p>		
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	<p>building management system, location and capacity of all fuel oil tanks, location of emergency generator, location of natural gas service.</p> <p>13.6. Fire protection system information that includes: location of standpipes, location of fire pump room, location of fire department connections, floors protected by automatic sprinklers, location of different types of automatic sprinkler systems installed including, but not limited to, dry, wet and pre-action.</p> <p>13.7 Hazardous material information that includes: location of hazardous material, quantity of hazardous material.</p> <p>14. Work table.</p> <p>15. Generator supervision devices, manual start and transfer features.</p> <p>16. Public address system, where specifically required by other sections of this code.</p> <p>17. Elevator fire recall switch in accordance with ASME A17.1/CSA B44.</p> <p>18. Elevator emergency or standby power selector switch(es), where emergency or standby power is provided.</p>		
	<p>[F] 911.1.7 Fire command center identification. The fire command center shall be identified by a permanent easily visible sign reading "FIRE COMMAND CENTER" located on the door to the fire command center.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 912 FIRE DEPARTMENT CONNECTIONS</p>		
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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		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.	Amendment copied from previous Amendment requirement in Section 901.4.
	[F] 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 this section 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.		Edits made to clarify code, no major changes to code requirements.
	[F] 912.4.2 Clear space around connections. A working space of not less than 36 inches (762 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 .		Edits made to clarify code, no major changes to code requirements.
	SECTION 913 FIRE PUMPS		
	[F] 913.1 General. Where provided, fire pumps <u>for fire protection systems</u> shall be installed in accordance with this section and NFPA 20. <u>Exception: Pumps for automatic sprinkler systems installed in accordance with Section 903.3.1.3, or Section P2904 of the <i>International Residential Code</i>.</u>		Edits made to clarify code, no major changes to code requirements.
		[F] 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 Amendment accepted from Public Comment to change historic break tank/fire pump requirements.
		[F] 913.1.2 Automatic Operation. Fire pumps shall be automatic operation. (See the Electrical Code for additional requirements.)	New Amendment accepted from Public Comment to change historic break tank/fire pump requirements.
	[F] 913.2.2 Circuits supplying fire pumps. Cables used for survivability of circuits supplying fire pumps shall be listed in accordance with UL 2196. Electrical circuit protective systems shall be installed in accordance with		Edits made to clarify code, no major changes to code requirements.

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	<p>their listing Requirements protected using one of the following methods:</p> <ol style="list-style-type: none"> 1. Cables used for survivability of required critical circuits 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. <i>Electrical circuit protective systems</i> shall have a <i>fire-resistance rating</i> of not less than 1 hour. <i>Electrical circuit protective systems</i> shall be installed in accordance with their listing requirements. 3. Construction having a <i>fire-resistance rating</i> of not less than 1 hour. 4. The cable of raceway is encased in a minimum of 2 inches (51 mm) of concrete. <p>Exception: This section shall not apply to cables, or portions of cables, located within a fire pump room or generator room which is separated from the remainder of the occupancy with <i>fire-resistance-rated construction</i>.</p>		
		<p>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:</p> <ol style="list-style-type: none"> 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. 	<p>New IBC amendment that is brought from IFC amendments to correlate HFD requirements.</p>
		<p>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 of the <i>Fire Code</i>. 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.</p>	<p>New Amendment accepted from Public Comment to change historic break tank/fire pump requirements.</p>

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	<p>SECTION 914 EMERGENCY RESPONDER SAFETY FEATURES</p>		
	<p>SECTION 915 CARBON MONOXIDE DETECTION</p>		
	<p>[F] 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.</p> <p>Exception: Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms if a carbon monoxide detection 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where there are no without communicating openings between the fuel-burning appliance or fuel-burning 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: <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>appliance or fuel-burning fireplace.</p>		
	<p>[F] 915.1.5 Private garages. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms in buildings with attached private garages.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Carbon monoxide detection shall not be required where there are no in dwelling units, sleeping units and classrooms without 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 915.3 Carbon monoxide detection equipment. Carbon monoxide detection required by Sections 915.1 through 915.2.3 shall be provided by carbon monoxide alarms complying with Section 915.4 or carbon monoxide detection systems complying with Section 915.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	[F] 915.4 Carbon monoxide alarms. Carbon monoxide alarms shall comply with Sections 915.4.1 through 915.4.3-915.4.4 .		Edits made to clarify code, no major changes to code requirements.
	[F] 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 requirements
	[F] 915.4.3-915.4.4 Combination alarms.		Edits made to clarify code, no major changes to code requirements.
	[F] 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.		Edits made to clarify code, no major changes to code requirements.
	SECTION 916 EMERGENCY RESPONDER RADIO COVERAGE GAS DETECTION SYSTEMS		Edits made to clarify code, no major changes to code requirements.
	[F] 916.1 General Gas detection systems. Emergency responder radio coverage shall be provided in all new buildings in accordance with Section 510 of the International Fire Code. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.		Edits made to clarify code, no major changes to code requirements.
	[F] 916.2 Permits. Permits shall be required as set forth in Section 105.7.11 of the International Fire Code.		Edits made to clarify code, no major changes to code requirements.
	[F] 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.		Edits made to clarify code, no major changes to code requirements.
	[F] 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.		Edits made to clarify code, no major changes to code requirements.

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	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:</p> <ol style="list-style-type: none"> 1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes. 2. For toxic gases, sample analysis shall be performed at intervals not exceeding 5 minutes in accordance with Section 6004.2.2.7 of the International Fire Code. 3. Where a less frequent or delayed sampling interval is approved. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:</p> <ol style="list-style-type: none"> 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. <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[F] 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	[F] 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.		Edits made to clarify code, no major changes to code requirements.
	[F] 916.11 Inspection, testing and sensor calibration. Gas detection systems and sensors shall be inspected, tested and calibrated in accordance with the International Fire Code.		Edits made to clarify code, no major changes to code requirements.
	SECTION 917 MASS NOTIFICATION SYSTEMS [F] 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.		Edits made to clarify code, no major changes to code requirements.
	SECTION 916-918 EMERGENCY RESPONDER RADIO COMMUNICATION COVERAGE [F] 916-918.1 General. In-building two-way emergency responder radio communication coverage shall be provided in all new buildings in accordance with Section 510 of the <i>International Fire Code</i> .		Edits made to clarify code, no major changes to code requirements.
2015 Houston IBC – Chapter 10 Means of Egress	2021 IBC – Chapter 10 Means of Egress	2021 Houston Amendments– Chapter 10	Code Analysis
	SECTION 1001 ADMINISTRATION.	SECTION 1001 ADMINISTRATION	
<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 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>		<u>1001.1.1 Accessory stairs, ramps, doors and landings. Unless specifically addressed 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 this code for the application and scope of work proposed.</u>	Minor change to Houston amendment to remove language requiring accessory items be designed as components of a means of egress.

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<p>[F] 1001.3 Maintenance. <i>Means of egress shall be maintained in accordance with Section 1031 of the International Fire Code</i></p>			<p>Amendment no longer needed.</p>
	<p style="text-align: center;">[F] SECTION 1002</p> <p style="text-align: center;">DEFINITIONS MAINTENANCE AND PLANS</p> <p>[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.</p> <p>ACCESSIBLE MEANS OF EGRESS.</p> <p>AISLE.</p> <p>AISLE ACCESSWAY.</p> <p>ALTERNATING TREAD DEVICE.</p> <p>AREA OF REFUGE.</p> <p>BLEACHERS.</p> <p>BREAKOUT.</p> <p>COMMON PATH OF EGRESS TRAVEL.</p> <p>CORRIDOR.</p> <p>DOOR, BALANCED.</p> <p>EGRESS COURT.</p> <p>EMERGENCY ESCAPE AND RESCUE OPENING.</p> <p>EXIT.</p> <p>EXIT ACCESS.</p> <p>EXIT ACCESS DOORWAY.</p> <p>EXIT ACCESS RAMP.</p> <p>EXIT ACCESS STAIRWAY.</p> <p>EXIT DISCHARGE.</p> <p>EXIT DISCHARGE, LEVEL OF.</p> <p>EXIT, HORIZONTAL.</p> <p>EXIT PASSAGEWAY.</p> <p>EXTERIOR EXIT RAMP.</p> <p>EXTERIOR EXIT STAIRWAY.</p> <p>FIRE EXIT HARDWARE.</p> <p>FIXED SEATING.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>FLIGHT.</p> <p>FLOOR AREA, GROSS.</p> <p>FLOOR AREA, NET.</p> <p>FOLDING AND TELESCOPIC SEATING.</p> <p>GRANDSTAND.</p> <p>GUARD.</p> <p>HANDRAIL.</p> <p>INTERIOR EXIT RAMP.</p> <p>INTERIOR EXIT STAIRWAY.</p> <p>LOW ENERGY POWER-OPERATED DOOR.</p> <p>MEANS OF EGRESS.</p> <p>MERCHANDISE PAD.</p> <p>NOSING.</p> <p>OCCUPANT LOAD.</p> <p>OPEN-ENDED CORRIDOR.</p> <p>PANIC HARDWARE.</p> <p>PHOTOLUMINESCENT.</p> <p>POWER-ASSISTED DOOR.</p> <p>POWER-OPERATED DOOR.</p> <p>PUBLIC WAY.</p> <p>RAMP.</p> <p>SCISSOR STAIRWAY.</p> <p>SELF-LUMINOUS.</p> <p>SMOKE-PROTECTED ASSEMBLY SEATING.</p> <p>STAIR.</p> <p>STAIRWAY.</p> <p>STAIRWAY, SPIRAL.</p> <p>WINDER.</p>		
	<p>[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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	SECTION 1003 GENERAL MEANS OF EGRESS		
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Sloped ceilings in accordance with Section 1208.2-1207.2. 2. Ceilings of dwelling units and sleeping units within residential occupancies in accordance with Section 4207.2-1207.2. 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exception: Door closers and stops shall not reduce headroom to less than 78 inches (1981 mm).</p> <p>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 floor.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p style="padding-left: 40px;">Exception: These requirements shall not apply to sloping portions of handrails between the top and bottom riser of stairs and above the ramp run.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 floor shall not project horizontally more than 4 inches (102 mm) into the circulation path.</p> <p style="padding-left: 40px;">Exception: Handrails are permitted to protrude 4 1/2 inches (114 mm) from the wall or guard.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements. Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1014 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the <i>stair</i>.</p> <p>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.</p> <p>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.</p>		
	<p>SECTION 1004 OCCUPANT LOAD</p>		
	<p>1004.1.1-1004.2 Cumulative occupant loads.</p>		
	<p>1004.1.1.1-1004.2.1 Intervening spaces or accessory areas.</p>		
	<p>1004.1.1.2-1004.2.2 Adjacent levels for mezzanines.</p>		
	<p>1004.1.1.3-1004.2.3 Adjacent stories.</p>		
	<p>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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>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.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 1004.1.2-1004.5 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT</p>		
	<p>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 m²) 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1004.3-1004.9 Posting of occupant load 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. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or the owner's authorized agent. 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>The occupant load of wheelchair spaces and the associated companion seat shall be based on one occupant for each wheelchair space and one occupant for the associated companion seat provided in accordance with Section 1108.2.3.</p> <p>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.</p> <p>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.</p>		
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Edits made to clarify code, no major changes to code requirements.</p>

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permanent design and shall be maintained by the owner or the owner's authorized agent.

**SECTION 1005
MEANS OF EGRESS SIZING**

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.

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	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1006</p> <p style="text-align: center;">NUMBER OF EXITS AND EXIT ACCESS DOORWAYS</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1006.2.1 Egress based on occupant load and common path of egress travel distance. Two exits or exit access doorways from any space shall be provided where the design occupant load or the common path of egress travel distance exceeds the values listed in Table 1006.2.1. The</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>cumulative occupant load from adjacent rooms, areas or spaces shall be determined in accordance with Section 1004.2.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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>. Care suites in Group I-2 occupancies complying with Section 407.4. Unoccupied mechanical rooms and penthouses are not required to comply with the common path of egress travel distance measurement. 		
	<p style="text-align: center;">TABLE 1006.2.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY</p>		<p>Changes to foot note g.</p>
	<p>1006.2.2 Egress based on use. The numbers, configuration and types of components 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>All portions of machinery rooms shall be within 150 feet (45 720 mm) of an <i>exit</i> or <i>exit access</i></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><i>doorway</i>. An increase in <i>exit access</i> travel distance is permitted in accordance with Section 1017.1.</p> <p>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 occupant load served. Doors-Exit and exit access doorways shall be tight fitting and <i>self-closing</i>.</p>		
	<p>1006.2.2.4 Day care means of egress. Day care facilities, rooms or spaces where care is provided for more than 10 children that are 2 1/2 years of age or less, shall have access to not less than two exits or exit access doorways.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 2 1/2 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><u>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.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>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:</p> <ol style="list-style-type: none"> 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. <u>3. Exit access stairways and ramps within an atrium complying with Section 404.</u> 3. <u>4. Exit access stairways and ramps in open parking garages that serve only the parking garage.</u> 4. <u>5. Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.</u> 5. <u>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.</u> <u>7. Exterior exit access stairways and ramps between occupied roofs.</u> 		<p>Exceptions are added to original code.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	Table 1006.3.1 Table 1006.3.2 Table 1006.3.3		Edits made to clarify code, no major changes to code requirements.
	<p>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:</p> <ol style="list-style-type: none"> 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. 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: <ol style="list-style-type: none"> 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. 		Edits made to clarify code, no major changes to code requirements.
	TABLE 1006.3.2(1) 1006.3.23(1) STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES		Changes to foot note b.
	TABLE 1006.3.2(2) 1006.3.3(2) STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES		Edits made to clarify code, no major changes to code requirements.
	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,		Edits made to clarify code, no major changes to code requirements.

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	<p>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.</p>		
	<p>TABLE 1006.3.3(1) TABLE 1006.3.4(1)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 1006.3.3(2) TABLE 1006.3.4(2)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1007 EXIT AND EXIT ACCESS DOORWAY CONFIGURATION</p>		
	<p style="text-align: center;">SECTION 1008 MEANS OF EGRESS ILLUMINATION</p>		
	<p>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.</p> <p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>that the required illumination is automatically restored upon activation of a premises' <i>fire alarm system</i>.</p> <ol style="list-style-type: none"> 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. 		
	<p>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 1010.6.1-1010.1.6, means of egress illumination levels for the exit discharge shall be provided such that failure of any single lighting until lamp in a luminaire shall not reduce the illumination level on that landing to less than 1 footcandle (11 lux).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exception: Illumination shall not be required where the path of the exit discharge meets both of the following requirements:</p> <ol style="list-style-type: none"> The path of exit discharge is illuminated from the exit to a safe dispersal area complying with Section 1028.5. A dispersal area shall be illuminated to a level not less than 1 footcandle (11 lux) at the walking surface. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p> <ol style="list-style-type: none"> <i>Aisles.</i> <i>Corridors.</i> <i>Exit access stairways and ramps.</i> 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p> <ol style="list-style-type: none"> <i>Interior exit access stairways and ramps.</i> <i>Interior and exterior exit stairways and ramps.</i> <i>Exit passageways.</i> 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4. Vestibules and areas on the level of discharge used for <i>exit discharge</i> in accordance with Section 1028.2.</p> <p>5. Exterior landings as required by Section 1010.1.5 for <i>exit doorways</i> that lead directly to the <i>exit discharge</i>.</p>		
	<p>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).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1009</p> <p style="text-align: center;">ACCESSIBLE MEANS OF EGRESS</p> <p>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.</p> <p>Exceptions:</p> <p>1. Accessible means of egress are not required to be provided in existing buildings.</p> <p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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>.</p> <p>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.</p>		
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exception: Exit access stairways providing means of egress from mezzanines are permitted as part of an accessible means of egress.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1009.3.2 Stairway width. Stairways shall have a clear width of 48 inches (1219 mm) minimum between handrails.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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</p> <p>Exceptions:</p> <p>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.</p> <p>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.</p> <p>6. 3. Areas of refuge are not required at stairways serving open parking garages.</p> <p>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.</p> <p>8. 5. Areas of refuge are not required at stairways in Group R-2 occupancies.</p> <p>9. 6. Areas of refuge are not required for stairways accessed from a refuge area in conjunction with a horizontal exit.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1009.4.2 Area of refuge. The elevator shall be accessed from an area of refuge complying with Section 1009.6.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>system installed in accordance with Section 903.3.1.1 or 903.3.1.2.</p> <p>3. Areas of refuge are not required at elevators not required to be located in a shaft in accordance with Section 712.</p> <p>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.</p> <p>5. Areas of refuge are not required for elevators accessed from a refuge area in conjunction with a horizontal exit.</p>		
	<p>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.</p> <p><u>Exception: An interior area of refuge at the level of exit discharge that provides direct access to an exterior exit door.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 1219 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>.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exception: The fire-resistance rating and opening protectives are not required in the exterior wall</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		
	<p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		
	<p align="center">SECTION 1010 DOORS, GATES AND TURNSTILES</p> <p>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.</p> <p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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).</p> <p>Exceptions:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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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 dwelling and sleeping units that are not required to be an Accessible unit, Type A unit or Type B unit, the minimum and maximum width shall not apply to door openings that are not part of the required means of egress.~~
2. In Group I-3, door openings to resident sleeping units that are not required to be an Accessible unit 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 power-operated doors 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 dwelling unit or sleeping unit 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 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~~

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	<p>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.</p> <p>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).</p> <p>12. The minimum clear opening width shall not apply to the doors for nonaccessible toilet stalls.</p>		
	<p>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).</p> <p>Exception: Door closers, overhead door stops, power door operators, and electromagnetic door steps locks shall be permitted to be 78 inches (1980 mm) minimum above the floor.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. <i>Private garages</i>, 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. 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><i>means of egress</i> from spaces with an <i>occupant load</i> of 10 or less.</p>		
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p> <ol style="list-style-type: none"> 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). <p>The force to open doors shall comply with the following:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 rebounding into a partially open position when the door is closed.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1010.1.4.4.1 Remote operation of locks. Remote operation of locks complying with Section 1010.1.4.4 shall be permitted.</p> <p>Removed?</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. 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 flight of stairs, provided that the door does not swing over the top step. <ol style="list-style-type: none"> 1.1. 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. 1.2. Screen doors and storm doors are permitted to swing over stairs or landings. 2. 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. 3. 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 7¾ 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. 4. Variations in elevation due to differences in finish materials, but not more than ½ inch (12.7 mm). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>5. Exterior decks, patios or balconies that are part of Type B <i>dwelling units</i> 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 <i>dwelling unit</i> or sleeping unit.</p> <p>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.</p>		
	<p>4010.1.7 1010.1.5 Landings at doors.</p>		
	<p>4010.1.7 1010.1.6 Thresholds.</p>		
	<p>4010.1.8 1010.1.7 Door arrangement.</p>		
	<p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.1.9.34 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 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 openable from the inside without the use of a key or tool. 5. Fire doors after the minimum elevated temperature has disabled the unlatching 		

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	<p>mechanism in accordance with listed fire door test procedures.</p> <p>6. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.</p>		
	<p>1010.1.9.4 1010.1.9.5 Bolt locks. Manually operated flush bolts or surface bolts are not permitted.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>capacity requirements and the inactive leaf shall not contain doorknobs, panic bars or similar operating hardware.</p>		
	<p>1010.1.9.5 1010.1.9.6 Unlatching. The unlatching of any door or leaf shall not require more than one operation.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1010.1.9.8 Sensor release of electrically locked egress doors. The electric locks on sensor released doors located in a <i>means of egress</i> 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 any occupancy except Group H are permitted where installed and operated in accordance with all of the following criteria:</p> <ol style="list-style-type: none"> 1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors. The doors shall be arranged to unlock by a signal from or loss of power to the sensor. 2. Loss of power to the lock or locking system shall automatically unlock the doors. 3. The doors shall be arranged to unlock from a manual unlocking device a minimum of 1½ inches (38 mm) in diameter located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1,524 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 lock—independent of other electronics—and the doors shall remain unlocked for not less than 30 seconds. 	<p>N/A</p>		<p>Houston amendment moved to Section 1010.1.9.8.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p>4. Activation of the building <i>fire alarm system</i>, where provided, shall automatically unlock the doors, and the doors shall remain unlocked until the fire alarm system has been reset.</p> <p>5. Activation of the building <i>automatic sprinkler system</i> or <i>fire detection system</i>, where provided, shall automatically unlock the doors. The doors shall remain unlocked until the <i>fire alarm system</i> has been reset.</p> <p>The door locking system units shall be listed in accordance with UL 294.</p> <p>Moved to 1010.1.9.8</p>			
<p>1010.1.9.9 Electromagnetically locked egress doors. Doors in the <i>means of egress</i> 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 any occupancy except Group H shall be permitted to be locked with an electromagnetic locking system where equipped with hardware that incorporates a built-in switch and where installed and operated in accordance with all of the following:</p> <p>{EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</p> <p>Removed</p>	<p>N/A</p>		<p>Houston amendment removed as it's no longer needed due to base code changes.</p>
<p>1010.1.9.12 Controlled egress doors from elevator lobbies. Exit doors in the <i>means of egress</i> 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 shall be permitted to be locked from the egress side with an electric locking system. The locking system shall be installed and operated in accordance with all of the following:</p> <ol style="list-style-type: none"> 1. The door locks shall unlock on actuation of the <i>automatic sprinkler system</i> or automatic fire detection system. 2. The door locks shall unlock on loss of power controlling the lock or lock mechanism. 3. If the lock is controlled by a relay, removal of power from the relay or any failure of the wiring or other device in the circuit to the lock shall cause the lock to unlock/fail open. 4. The door locks shall be capable of being unlocked 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 or 	<p>N/A</p>		<p>Amendment relocated to Section 1010.2.16.</p>

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<p><u>other approved central location that contains the alarm panels.</u></p> <p>5. <u>The door locks shall unlock without delay with an emergency release device (direct inline power interrupting switch) such as a manual fire alarm box on the egress side, resettable only by manual use of a key, and the doors shall remain unlocked until the fire alarm system has been reset.</u></p> <p>6. <u>A sign shall be provided adjacent to the emergency release device and shall comply with the visual character requirements in ICC A117.1. The sign shall read: "PUSH/PULL TO RELEASE DOOR IN AN EMERGENCY".</u></p> <p>7. <u>A building occupant shall not be required to pass through more than two doors equipped with a controlled egress locking system before entering an exit.</u></p> <p>8. <u>The doors shall not require more than one operation to unlatch or unlock, which includes the operation of activating the emergency release device.</u></p> <p>9. <u>Emergency lighting shall be provided on the egress side of the door.</u></p> <p>10. <u>The door locking system units shall be listed in accordance with UL 294.</u></p> <p>Moved to Section 1010.2.16</p>			
	<p>1010.1.9 1010.2 Door operations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.1.9.6 1010.2.1 Unlatching. The unlatching of any door or leaf for egress shall require not require more than one operation motion in a single linear or rotational direction to release all latching and all locking devices.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p><u>1010.2.2 Security gates.</u> In locations other than on doors where panic hardware is required, security gates may be installed provided they remain open when the premises is occupied by anyone other than security personnel.</p> <p>Removed</p>	<p>4010.1.9.1 1010.2.2 Hardware.</p>		<p>Houston amendment removed as it's no longer needed due to base code changes.</p>
	<p>4010.1.9.2 1010.2.3 Hardware height.</p>		
	<p>4010.1.9.4 1010.2.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:</p> <ol style="list-style-type: none"> 1. Places of detention or restraint. <u>2. 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 2.3 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: <ol style="list-style-type: none"> 2.4 3.1 The locking device is readily distinguishable as locked. 2.2 3.2 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 3.3 The use of the key-operated locking device is revocable by the building official for due cause. 3.4 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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hardware.

~~4.5.~~ 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.

~~5.6.~~ Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.

~~6.7.~~ Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.

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:

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.

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.

8.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.

8.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m²) in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.

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

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	<p>OCCUPIED. The letters on the sign shall be not less than 1 inch (25.4 mm) high on a contrasting background.</p> <p>8.6. The occupant load of the occupied exterior area shall not exceed 300 occupants in accordance with Section 1004.</p> <p>9. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.</p> <p>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.</p>		
	<p>4010.1.9.5 1010.2.5 Bolt locks.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 operable from inside the closet, and bathroom doors that latch in the closed position shall be capable of being unlocked from the ingress side.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.1.9.11 1010.1.9.12 1010.2.7 Stairway doors. Interior stairway means of egress doors shall be operable from both sides without the use of a key or special knowledge or effort.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Stairway discharge doors shall be operable 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 operable 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>location inside the main entrance to the building.</p> <p>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.</p> <p>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 single exit stairway where permitted in Section 1006.3.2 1006.3.3.</p>		
	<p>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:</p> <ol style="list-style-type: none"> 1. The door shall be capable of being unlocked from outside the room with a key or other approved 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</i>, <i>fire door</i> hardware or door closers. 4. Modifications to <i>fire door assemblies</i> shall be in accordance with NFPA 80. <p>Remote locking or unlocking of doors from an approved location shall be permitted in addition to the unlocking operation in Item 1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p>3. Exit access doors serving occupied exterior areas shall be permitted to be locked in accordance with Section 1010.2.4, Item 8.</p> <p>4. Courtrooms shall be permitted to be locked in accordance with Section 1010.2.13, Item 3.</p> <p>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,</p> <p>shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.</p>		
	<p>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 or fire exit hardware</i>.</p>		<p>New exit door requirements</p>
	<p>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.</p>		<p>New requirements</p>
	<p>4010.1.10.1 1010.2.9.3 Installation.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4010.1.10.2 1010.2.9.4 Balanced doors.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4010.1.9.3 1010.2.10 Monitored or recorded egress.</p>		
	<p>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:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4010.1.9.9 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:</p> <ol style="list-style-type: none"> 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. 	<p>1010.2.12 Sensor release of electrically locked egress doors. Sensor release of electric locking systems shall be permitted on doors located in a <i>means of egress</i> in any occupancy except Group H where installed and operated in accordance with all of the following criteria:</p> <ol style="list-style-type: none"> 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. 3. Loss of power to the lock or locking system shall automatically unlock the electric locks. 	<p>Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.</p>

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	<p>2. The electric locks shall be arranged to unlock by a signal from or loss of power to the sensor.</p> <p>2. 3. Loss of power to the lock or locking system shall automatically unlock the door electric locks.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>7. <u>Emergency lighting shall be provided on the egress side of the door.</u></p> <p>6-7-8. 8. The door locking system units shall be <i>listed</i> in accordance with UL 294.</p>	<p>4. The doors shall be arranged to unlock from a manual unlocking device <u>a minimum of 1½ inches (38 mm) in diameter</u> 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 electric lock shall remain unlocked for not less than 30 seconds.</p> <p>5. Activation of the building <i>fire alarm system</i>, where provided, shall automatically unlock the electric lock, and the electric lock shall remain unlocked until the fire alarm system has been reset.</p> <p>6. Activation of the building <i>automatic sprinkler system</i> or fire detection system, where provided, shall automatically unlock the electric lock. The electric lock shall remain unlocked until the <i>fire alarm system</i> has been reset.</p> <p>7. Emergency lighting shall be provided on the egress side of the door.</p> <p>8. The door locking system units shall be <i>listed</i> in accordance with UL 294.</p>	
	<p>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:</p> <p>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.</p> <p>2. The delay electronics of the delayed egress locking system shall deactivate</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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~~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.~~

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	<p>6.3. The sign shall comply with the visual character requirements in ICC A117.1.</p> <p>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.</p> <p>7. Emergency lighting shall be provided on the egress side of the door.</p> <p>8. The delayed egress locking system units shall be listed in accordance with UL 294.</p> <p>1. Group B, F, I, M, R, S and U occupancies.</p> <p>2. Group E classrooms with an <i>occupant load</i> of less than 50.</p> <p>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 throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1.</p> <p>Exception: 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, serving a courtroom in buildings equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1.</p>		
	<p>4010.1.9.8.1 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:</p> <p>1. The delay electronics of the delayed egress locking system shall activate upon actuation of the <i>automatic sprinkler system</i> or <i>automatic fire detection system</i>, allowing immediate free egress.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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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 of 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.

Exceptions:

1. In **Group I-1, Condition 2**, 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, Condition 1** 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 *automatic sprinkler system* in accordance with **Section 903.3.1.1**.

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."

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	<p>6.3. The sign shall comply with the visual character requirements in ICC A117.1.</p> <p>7. Emergency lighting shall be provided on the egress side of the door.</p> <p>8. The delayed egress locking system units shall be <i>listed</i> in accordance with UL 294.</p>		
	<p>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 system</i> installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following:</p> <ol style="list-style-type: none"> 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. 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. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. 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. 2. Items 1 through 4 shall not apply to doors to areas where a <i>listed</i> egress control system is utilized to reduce 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>the risk of child abduction from nursery and obstetric areas of a Group I-2 <i>hospital</i>.</p>		
	<p>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:</p> <ol style="list-style-type: none"> 1. Activation of an automatic sprinkler system installed in accordance with Section 903.3.1.1. 2. Activation of an approved manual fire alarm box. 3. A signal from a constantly attended location. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
		<p>1010.2.16 Controlled egress doors from elevator lobbies. Exit doors in the <i>means of egress</i> 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 shall be permitted to be locked from the egress side with an electric locking system. The locking system shall be installed and operated in accordance with all of the following:</p> <ol style="list-style-type: none"> 1. The door locks shall unlock on actuation of the <i>automatic sprinkler system</i> or automatic fire detection system. 2. The door locks shall unlock on loss of power controlling the lock or lock mechanism. 3. If the lock is controlled by a relay, removal of power from the relay or any failure of the wiring or other device in the circuit to the lock shall cause the lock to unlock/fail open. 4. The door locks shall be capable of being unlocked 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 or other <i>approved</i> central location that contains the alarm panels. 5. The door locks shall unlock without delay with an emergency release device (direct inline power interrupting switch) such as a manual fire alarm box on the egress side, resettable only by manual use of a key, 	<p>No change to Houston amendment. (Previously Section 1010.1.9.12)</p>

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		<p><u>and the doors shall remain unlocked until the fire alarm system has been reset.</u></p> <p><u>6. A sign shall be provided adjacent to the emergency release device and shall comply with the visual character requirements in ICC A117.1. The sign shall read: "PUSH/PULL TO RELEASE DOOR IN AN EMERGENCY".</u></p> <p><u>7. A building occupant shall not be required to pass through more than two doors equipped with a controlled egress locking system before entering an exit.</u></p> <p><u>8. The doors shall not require more than one operation to unlatch or unlock, which includes the operation of activating the emergency release device.</u></p> <p><u>9. Emergency lighting shall be provided on the egress side of the door.</u></p> <p><u>10. The door locking system units shall be listed in accordance with UL 294.</u></p>	
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.1.4.4 1010.3.1 Revolving doors. Revolving doors shall comply with the following:</p> <ol style="list-style-type: none"> 1. Revolving doors shall comply with BHMA A156.27 and shall be installed in accordance with the manufacturer's instructions. 2. 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). 3. 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. 4. 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). 5. 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 (640 864 mm) and 48 inches (1219 mm) above the floor. The activation area of the emergency stop switch 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>button shall be not less than 1 inch (25 mm) in diameter and shall be red.</p> <p>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.</p> <p>7. Revolving doors shall not be part of an <i>accessible route</i> required by Section 1009 and Chapter 11.</p>		
	<p>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 1010.1.4.1 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).</p> <p>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:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 1010.1.4.1(1) TABLE 1010.3.1(1)</p>		<p>Numbering change</p>

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	<p>TABLE 1010.1.4.1(2) TABLE 1010.3.1(2)</p>		<p>Numbering change</p>
	<p>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:</p> <ol style="list-style-type: none"> 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 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.1.4.1.4 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:</p> <ol style="list-style-type: none"> 1. Revolving doors shall not be given credit for more than 50 percent of the minimum width or required capacity. 2. Each revolving door shall be credited with a capacity based on not more than a 50-person occupant load . 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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).</p>		
	<p>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).</p> <p>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:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.1.4.2 1010.3.2 Power-operated doors.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. The doors shall be power operated and shall be capable of being operated manually in the event of power failure.</p> <p>2. The doors shall be openable by a simple method from both sides without special knowledge or effort from the egress side or sides.</p> <p>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.</p> <p>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.</p> <p>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</p> <p>be installed in accordance with NFPA 80 and shall comply with Section 716.</p> <p>6. The door assembly shall have an integrated standby power supply.</p> <p>7. The door assembly power supply shall be electrically supervised.</p> <p>8. The door shall open to the minimum required width within 10 seconds after activation of the operating device.</p>		
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1010.2 1010.4 Gates.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4010.2.1 1010.4.1 Stadiums.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4010.3 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.</p> <p>Exception:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4010.3.1 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:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4010.3.1.1 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 width between 34 inches (864 mm) and 80 inches (2032 mm) and shall consist of a mechanism other than a revolving device.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4010.3.1 4010.3.2 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:</p> <p>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:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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~~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.

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:

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	<p>5.2.1. On the egress side of each security access turnstile lane.</p> <p>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.</p> <p>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.</p> <p>Exception: Actuation of a manual fire alarm box.</p> <p>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.</p>		
	<p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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).</p> <p>Exception: A side-hinged swinging door is not required at security access turnstiles that comply with Section 1010.3.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1011 STAIRWAYS</p>		
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Exceptions:</p> <ol style="list-style-type: none"> 1. <i>Spiral stairways</i> in accordance with Section 1011.10. 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 7¼ 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 ¼ 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). 		
	<p>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 <i>winder</i> tread depth at the walkline within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1011.5.5.3 Solid risers. Risers shall be solid.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 perpendicular 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>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 <i>stairways</i> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><u>than that described by an arc with a radius equal to the width of the flight served.</u></p>		
	<p>1011.7 Stairways construction. Stairways 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Wood handrails shall be permitted in all types of construction. 2. Interior exit stairways in accordance with Section 510.2. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>A spiral stairway shall have a 7 1/2 6 3/4 -inch (191 171 mm) minimum clear tread depth at a point</p> <p>12 inches (305 mm) from the narrow edge. The risers shall be sufficient to provide a headroom</p> <p>of 78 inches (1981 mm) minimum, but riser height shall not be more than 9 1/2 inches (241 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>The minimum stairway clear width at and below the handrail shall be 26 inches (660 mm).</p>		
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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, handrails shall not be required on the stairway, provided that all of the following criteria are met: <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, changes made to platform life requirements.</p>
<p>1011.14.1 Handrails of alternating tread devices. Handrails shall be provided on both sides of alternating tread devices and shall comply with Section 4024 <u>1014</u>.</p>	<p>No change.</p>		<p>Amendment no longer needed.</p>

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	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>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:</p> <p>{EDITORIAL NOTE: PORTIONS OF 1011.6 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</p> <p>6. Ladders shall be constructed in accordance with Section 306.5 304.3.1.2 of the <i>International Mechanical Code</i>.</p>	<p>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 <i>International Mechanical Code</i> and designed for the live loads indicated in Section 1607.17. Permanent ladders shall be permitted to provide access to the following areas:</p> <ol style="list-style-type: none"> 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 <i>International Mechanical Code</i> Where permitted to access equipment and appliances in accordance with Section 306.5 of the <i>International Mechanical Code</i>. 	<p>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 <i>International Mechanical Code</i> and designed for the live loads indicated in Section 1607.17. Permanent ladders shall be permitted to provide access to the following areas:</p> <ol style="list-style-type: none"> 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 <i>International Mechanical Code</i>. 	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No real change to Houston amendment. Includes additional reference to Section 304.3.1.2 of the UMC.</p>
	<p>SECTION 1012 RAMPS</p>		
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1013 EXIT SIGNS</p> <p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		
	<p>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.</p> <p>The bottom of the sign shall be not less than 10 inches (254 mm) nor more than 12-18 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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</p> <p>Exceptions:</p> <p>4. 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1014 HANDRAILS</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. 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. 2. 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>the fittings or bendings shall be permitted to exceed the maximum height.</p> <p>3. Handrails on top of a guard where permitted along stepped aisles and ramped aisles in accordance with Section 1029.15-1029.16.</p>		
	<p>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).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1014.4 Continuity. Handrail gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Handrails within dwelling units are permitted to be interrupted by a newel post at a turn or landing. 2. Within a dwelling unit, the use of a volute, turnout, starting easing or starting newel 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 1/2 inches (38 mm) of the bottom of the handrail shall not be considered obstructions. For each 1/2 inch (12.7 mm) of additional handrail perimeter dimension above 4 inches (102 mm), the vertical clearance dimension of 1 1/2 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 1029.15.4-1029.16.1. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	SECTION 1015 GUARDS		
	<p>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.</p> <p>Exceptions: <i>Guards</i> are not required for the following locations:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1015.3 Height. Required guards shall be not less than 42 inches (1067 mm) high, measured vertically as follows:</p> <ol style="list-style-type: none"> 1. From the adjacent walking surfaces. 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. <p style="padding-left: 40px;">Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p>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.</p> <p>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.</p> <p>4. The guard height in assembly seating areas shall comply with Section 1029.17 as applicable.</p> <p>4. 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.</p> <p>5. 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</p>		
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), guards shall not have openings 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>thatallow passage of a sphere 4 3/8 inches (111 mm) in diameter.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>		
	<p>1015.5 Screen porches. Porches and decks that are enclosed with insect screening shall be provided with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		
	<p>1015.7 Roof access. Guards 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. The guard shall extend not less than 30 inches (762 mm) beyond each end of the hatch parallel to the roof edge. The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1016 EXIT ACCESS</p>	<p style="text-align: center;">SECTION 1016 EXIT ACCESS</p>	

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<p>1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.</p> <p>1. <i>Exit access</i> through an enclosed elevator lobby is permitted. 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 3006.2, 3007 or 3008. Where the path of exit access 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.</p> <p>{EDITORIAL NOTE: THE REMAINDER OF THIS SECTION SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</p>	<p>1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>3. An <i>exit access</i> shall not pass through a room that can be locked to prevent egress.</p> <p>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.</p> <p>5. Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 	<p>1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.</p> <p>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, 3007, or 3008. 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.</p> <p>{EDITORIAL NOTE: PORTIONS OF SECTION 1016.2 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2021 IBC.}</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
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	the required width and lead directly from the retail area to the exit without obstructions.		
	SECTION 1017 EXIT ACCESS TRAVEL DISTANCE		
	Table 1017.2		Additional requirements for I4 occupancy
	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.		Edits made to clarify code, no major changes to code requirements.
	1017.2.2 Groups F-1 and S-1 increase.		Edits made to clarify code, no major changes to code requirements.
	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 exit. Where more than one exit is required, exit access travel distance shall be measured to the nearest exit. Exceptions: 1. In open parking garages, exit access travel distance is permitted to be measured to the closest riser of an exit access stairway or the closest slope of an exit access ramp. 2. In smoke protected seating and open air assembly seating, exit access travel distance shall be measured in accordance with Section 1030.7.		Edits made to clarify code, no major changes to code requirements.
	1017.3.2 Atriums. Exit access travel distance for areas open to an atrium shall comply with the requirements of Sections 1017.3.2.1 through 1017.3.2.3.		New travel distance requirements

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	<p>1017.3.2.1 Egress not through the atrium. <u>Where required access to the exits is not through the atrium, exit access travel distance shall comply with Section 1017.2.</u></p>		New travel distance requirements
	<p>1017.3.2.2 Exit access travel distance at the level of exit discharge. <u>Where the path of egress travel is through an atrium space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017.2.</u></p>		New travel distance requirements
	<p>1017.3.2.3 Exit access travel distance at other than the level of exit discharge. <u>Where the path of egress travel is not at the level of exit discharge from the atrium, that portion of the total permitted exit access travel distance that occurs within the atrium shall be not greater than 200 feet (60 960 mm).</u></p>		New travel distance requirements
	<p>SECTION 1018 AISLES</p>		
	<p>SECTION 1019 EXIT ACCESS STAIRWAYS AND RAMPS</p>		
	<p>1019.3 Occupancies other than Groups I-2 and I-3. In other than Group I-2 and I-3 occupancies, floor openings containing <i>exit access stairways</i> 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. <i>Exit access stairways</i> and <i>ramps</i> that serve or atmospherically communicate between only two <u>adjacent</u> stories. Such interconnected stories shall not be open to other stories. 2. In Group R-1, R-2 or R-3 occupancies, <i>exit access stairways</i> 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. <i>Exit access stairways</i> serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed. 4. <i>Exit access stairways</i> and <i>ramps</i> in buildings equipped throughout with an automatic sprinkler system in 		Edits made to clarify code, no major changes to code requirements.

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	<p>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.</p> <p>5. <i>Exit access stairways</i> and <i>ramps</i> within an <i>atrium</i> complying with the provisions of Section 404.</p> <p>6. <i>Exit access stairways</i> and <i>ramps</i> in <i>open parking garages</i> that serve only the parking garage.</p> <p>7. <i>Exit access stairways</i> and <i>ramps</i> serving smoke-protected or <i>open-air assembly seating</i> complying with the exit access travel distance requirements of Section 1030.7.</p> <p>8. <i>Exit access stairways</i> and <i>ramps</i> 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.</p> <p>9. Exterior exit access stairways or ramps between occupied roofs.</p>		
	<p style="text-align: center;">SECTION 1020 CORRIDORS</p> <p><u>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.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4020.1 <u>1020.2</u> Construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">Table 4020.1 <u>Table 1020.2</u></p>		<p>Numbering change</p>
	<p>4020.1.1 <u>1020.2.1</u> Hoistway opening protection.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4020.2 <u>1020.3</u> Width and capacity.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Table 1020.2 Table 1020.3</p>		<p>Numbering change</p>
	<p>1020.3 1020.4 Obstruction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1020.5 1020.6 Air movement in corridors. <i>Corridors</i> shall not serve as supply, return, exhaust, relief or ventilation air ducts.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	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.		
	4020.5.1 1020.6.1 Corridor ceiling.		Edits made to clarify code, no major changes to code requirements.
	4020.6 1020.7 Corridor continuity.		Edits made to clarify code, no major changes to code requirements.
	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.		Edits made to clarify code, no major changes to code requirements.
	SECTION 1022 EXITS		
	SECTION 1023 INTERIOR EXIT STAIRWAYS AND RAMPS	SECTION 1023 INTERIOR EXIT STAIRWAYS AND RAMPS	
	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 <i>stairways</i> and <i>ramps</i> shall have a <i>fire-resistance rating</i> not less than the floor assembly penetrated, but need not exceed 2 hours. Exceptions:		Edits made to clarify code, no major changes to code requirements.

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	<p>1. <i>Interior exit stairways and ramps</i> in Group I-3 occupancies in accordance with the provisions of Section 408.3.8.</p> <p>2. <i>Interior exit stairways</i> within an <i>atrium</i> enclosed in accordance with Section 404.6.</p> <p>3. Interior exit stairways in accordance with Section 510.2.</p>		
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1023.4 Openings. Interior exit stairway and ramp opening protectives shall be in accordance with the requirements of Section 716.</p> <p>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.</p> <p>Elevators shall not open into interior exit stairways and ramps.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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 m²). 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:</p> <ol style="list-style-type: none"> 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 systems. 6. Electrical raceway serving the interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m²). 7. Structural elements supporting the interior exit stairway or ramp or enclosure, such as beams or joists. <p>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.</p> <p>Exception: Membrane penetrations shall be permitted on the outside of the interior exit stairway and ramp. Such penetrations shall be protected in accordance with Section 714.3.2 714.4.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1023.8 Discharge identification Barrier at level of exit discharge. An interior exit stairway and ramp shall not continue below its level of exit discharge unless an approved barrier is provided at the level of exit discharge to prevent persons from unintentionally continuing into levels below. Directional exit signs shall be provided as specified in Section 1013.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an interior exit stairway and ramp connecting more than three stories designating the floor level, the terminus of the top and bottom of the interior exit stairway and ramp, and the identification of the stairway or ramp. The signage shall also state the store of, and the direction to, the exit discharge and the availability of roof access from the interior exit stairway and ramp 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</p>	<p>1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an interior exit stairway and ramp connecting more than three stories designating the floor level, the terminus of the top and bottom of the interior exit stairway and ramp and the identification of the stairway or ramp. The signage shall also state the story of, and the direction to, the exit discharge, and the availability of roof access from the interior exit stairway and ramp 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</p>	<p>1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an interior exit stairway and ramp connecting more than three stories designating the floor level, the terminus of the top and bottom of the interior exit stairway and ramp, and the identification of the stairway or ramp. The signage shall state the story of, and the direction to the exit discharge and the availability of roof access from the interior exit stairway and ramp 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</p>	<p>Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.</p>

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<p><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.</p> <p>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>.</p>	<p>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.</p>	<p>visible when the doors are in the open and closed positions. See Appendix H of the <i>Fire Code</i> for sign installation requirements.</p> <p>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 the <i>Fire Code</i>.</p>	
<p>1023.9.2 Signs on occupancy side of stairway doors. <i>Approved</i> 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.</p> <p>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 replacement signs shall be installed in accordance with Appendix H of the <i>Fire Code</i>.</p>	<p>N/A</p>	<p>1023.9.2 Signs on occupancy side of stairway doors. <i>Approved</i> 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 of the <i>Fire Code</i> for installation requirements.</p> <p>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 the <i>Fire Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>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>.</p>	<p>N/A</p>		<p>Amendment removed due to base code changes, no longer needed.</p>
	<p>1023.11 Tactile floor-level signs. Where floor level signs are provided in <i>interior exit stairways</i> and <i>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</i> and <i>ramp</i> into the <i>corridor</i>.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		
	<p>1023.11.2 1023.12.2 Enclosure access.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1023.12 1023.13 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1024 EXIT PASSAGEWAYS</p> <p>1024.1 Exit passageways General.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1024.2 Width and capacity.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1024.6 Penetrations. Penetrations into or through an exit passageway 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 exit passageway and terminating</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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:</p> <ol style="list-style-type: none"> 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). <p>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.</p> <p>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 714.3.2 714.4.2.</p>		
	<p>1024.8 Exit passageway exterior walls. <i>Exterior walls of the exit passageway shall comply with Section 705. Where nonrated walls or unprotected openings enclose the exterior of the exit passageway 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 exterior walls within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening shall have a fire-resistance rating of not less than 1 hour. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating 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 exit passageway, or to the roof line, whichever is lower.</i></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1024.8 1024.9 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1025</p> <p style="text-align: center;">LUMINOUS EGRESS PATH MARKINGS</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		
	<p>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.</p> <p>Exception: The minimum width of 1 inch (25 mm) shall not apply to markings listed in accordance with UL 1994.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1025.2.6.2 Door hardware markings. Door hardware shall be marked with not less than 16 square inches (406 mm²) 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1026 HORIZONTAL EXITS</p> <p>1026.1 Exterior exit stairways and ramps General.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exception: A fire-resistance rating is not required at horizontal exits between a building area and an above-</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>grade pedestrian walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096 mm).</p> <p>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.</p>		
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 m²) for each occupant to be accommodated therein.</p> <p>1. Six square feet (0.6 m²) per occupant for occupancies in Group I-3.</p> <p>2. Fifteen square feet (1.4 m²) per occupant for ambulatory occupancies in Group I-2.</p> <p>3. Thirty square feet (2.8 m²) per occupant for nonambulatory occupancies in Group I-2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1026.5 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1027</p> <p style="text-align: center;">EXTERIOR EXIT STAIRWAYS AND RAMPS</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p> <ol style="list-style-type: none"> 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. <p>For the purposes of this section, other portions of the building shall be treated as separate buildings.</p> <p>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).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p> <p>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:</p> <p>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.</p> <p>3.2. The open-ended corridors comply with Section 1020.</p> <p>3.3. The open-ended corridors are connected on each end to an exterior exit stairway or ramp complying with Section 1027.</p> <p>3.4. The exterior walls and openings adjacent to the exterior exit stairway or ramp comply with Section 1023.7.</p> <p>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.</p> <p>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.</p>		
	<p align="center">SECTION 1028 EXIT DISCHARGE</p> <p>1028.1 General. The exit discharge shall comply with Section 1028 and 1029 and the applicable requirements of Sections 1003 through 1015.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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~~1028.1~~ 1028.2 **General Exit discharge.** Exits shall discharge directly to the exterior of the building. The *exit discharge* shall be at grade or shall provide a direct path of egress travel to grade. The *exit discharge* 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 *exits*.

Exceptions:

1. Not more than 50 percent of the number and minimum width or required capacity of *interior exit stairways* and *ramps* 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 *interior exit stairways* and *ramps* shall be provided with a free unobstructed path of travel to an exterior *exit* door and such *exit* is readily visible and identifiable from the point of termination of the enclosure.

1.2. The entire area of the *level of exit discharge* is separated from areas below by construction conforming to the *fire-resistance rating* for the enclosure.

1.3. The egress path from the *interior exit stairway* and *ramp* on the *level of exit discharge* is protected throughout by an *approved automatic sprinkler system*. Portions of the *level of exit discharge* with access to the egress path shall be either equipped throughout with an *automatic sprinkler system* 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 *interior exit stairways* or *ramps*.

1.4. Where a required *interior exit stairway* or *ramp* and an *exit access stairway* or *ramp* serve the same floor level and terminate at the same *level of exit discharge*, the termination of the *exit access stairway* or *ramp* and the *exit discharge* door of the *interior exit stairway* or *ramp* 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 *exit discharge* door from the *interior exit stairway* or *ramp* and the last tread of the *exit access stairway* or termination of slope of the *exit access ramp*.

2. Not more than 50 percent of the number and minimum width or required capacity of the *interior exit stairways* and *ramps* is permitted to egress through a vestibule provided that all of the following are met:

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	<p>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>.</p> <p>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).</p> <p>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.</p> <p style="padding-left: 40px;">Exception: The maximum transmitted temperature rise is not required.</p> <p>2.4. The area is used only for <i>means of egress</i> and <i>exits</i> directly to the outside.</p> <p>3. <i>Horizontal exits</i> complying with Section 1026 shall not be required to discharge directly to the exterior of the building.</p>		
	<p>1028.2 1028.3 Exit discharge width or capacity.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1028.3 1028.4 Exit discharge components.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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).</p> <p style="padding-left: 40px;">The width of the egress court shall be not less than the required capacity.</p> <p style="padding-left: 40px;">Exception: Encroachments complying with Section 1005.7.</p> <p style="padding-left: 40px;">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</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>path of egress travel. The width of the egress court shall not be less than the required capacity.</p>		
	<p>SECTION 1029 EGRESS COURTS</p> <p>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</u> of Sections 1028.4.1 and 1028.4.2 <u>of this section.</u></p>		Edits made to clarify code, no major changes to code requirements.
	<p>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></p> <p>Exception: <u>Encroachments complying with Section 1005.7.</u></p>		Edits made to clarify code, no major changes to code requirements.
	<p>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></p> <p>Exceptions:</p> <ol style="list-style-type: none"> <u>1. Egress courts serving an occupant load of less than 10.</u> <u>2. Egress courts serving Group R-3.</u> 		Edits made to clarify code, no major changes to code requirements.
	<p>1029.1 1030.1 General.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1029.1.1 1030.1.1 Bleachers.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>1029.1.1.1 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.2 1030.2 Assembly main exit.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.3 1030.3 Assembly other exits.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.4 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 up on 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.5 1030.5 Interior balcony and gallery means of egress.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.6 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1029.6.4 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:</p> <ol style="list-style-type: none"> 1. Not less than 0.3 inch (7.6 mm) of aisle capacity for each occupant served shall be provided on stepped aisles having 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 1029.6.2 TABLE 1030.6.2</p>		<p>Numbering change</p>

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	<p>1029.6.2.1 1030.6.2.1 Smoke control.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.6.2.2 1030.6.2.2 Roof height.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. 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. 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1029.6.3 1030.6.3 Outdoor smoke-protected Open-air assembly seating. In 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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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></p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. <u>The floor area used for contests, performances or entertainment, provided that the roof construction is more than 50 feet (15 240 mm)</u> 		<p>Sprinkler requirements</p>

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	<p><u>above the floor level and the use is restricted to low fire hazard uses.</u></p> <p><u>2. Press boxes and storage facilities less than 1,000 square feet (93 m²) in area.</u></p> <p><u>3. Open-air assembly seating facilities where seating and the means of egress in the seating area are essentially open to the outside.</u></p>		
	<p>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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 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): <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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):</p> <p style="padding-left: 40px;">2.2. The closest slope of an exit access ramp.</p> <p style="padding-left: 40px;">2.3. An exit.</p> <p>3. In facilities with open-air assembly seating of Type I or II construction, the total exit access travel distance shall not be limited.</p>		
	<p>4029.8 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.8.1 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.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.9 1030.9 Assembly aisles are required.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.9.1 1030.9.1 Minimum aisle width. The minimum clear width for aisles shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. Forty-eight inches (1219 mm) for stepped aisles having seating on each side both sides. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Exception: Thirty-six inches (914 mm) where the stepped aisles serve less than 50 seats.</p> <p>2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side.</p> <p style="padding-left: 40px;">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.</p> <p>3. 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.</p> <p>4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.</p> <p style="padding-left: 40px;">Exceptions:</p> <ol style="list-style-type: none"> 1. Thirty-six inches (914 mm) where the aisle serves less than 50 seats. 2. 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. <p>5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.</p> <p style="padding-left: 40px;">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.</p>		
	<p>4029.9.2 1030.9.2 Aisle catchment area.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.9.3 1030.9.3 Converging aisles.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4029.9.4 1030.9.4 Uniform width and capacity.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.9.5 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.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Dead-end aisles shall be not greater than 20 feet (6096 mm) in length. 2. 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 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. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.9.6 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.</p> <p>Exception: The clear width of aisles adjacent to seating at tables shall be permitted to be measured in accordance with Section 1029.1.2.4 1029.123.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	4029.9.6.4 1030.9.6.1 Assembly aisle obstructions.		Edits made to clarify code, no major changes to code requirements.
	4029.9.7 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 4029.13 1029.14 . Transitions between stairways and stepped aisles shall comply with Section 1029.10.		Edits made to clarify code, no major changes to code requirements.
	4029.9.8 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 4029.13 1029.14 . Transitions between stairways and stepped aisles shall comply with Section 1029.10.		Edits made to clarify code, no major changes to code requirements.
	4029.10 1030.10 Transitions.		Edits made to clarify code, no major changes to code requirements.
	4029.10.1 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 4029.13 1029.14 as one exit access component.		Edits made to clarify code, no major changes to code requirements.
	4029.10.2 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.		Edits made to clarify code, no major changes to code requirements.
	4029.10.2.1 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: <ol style="list-style-type: none"> 1. A depth of not less than 22 inches (559 mm) where the treads on the descending side of the transition have greater depth. 		Edits made to clarify code, no major changes to code requirements.

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	2. A depth of not less than 30 inches (762 mm) where the treads on the descending side of the transition have lesser depth.		
	1029.10.2.2 1030.10.2.2 Stairways and stepped aisles that change direction from stepped aisles.		Edits made to clarify code, no major changes to code requirements.
	4029.10.3 1030.10.3 Transition marking.		Edits made to clarify code, no major changes to code requirements.
	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.		Edits made to clarify code, no major changes to code requirements.
	1029.11.1 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.		Edits made to clarify code, no major changes to code 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.		Edits made to clarify code, no major changes to code requirements.
	1029.12 1030.12 Construction.		Edits made to clarify code, no major changes to code requirements.
	1029.12.1 1030.12.1 Walking surface.		Edits made to clarify code, no major changes to code requirements.
	1029.12.2 1030.12.2 Outdoor conditions.		Edits made to clarify code, no major changes to code requirements.

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	4029.13 1030.13 Aisle accessways.		Edits made to clarify code, no major changes to code requirements.
	4029.13.1 1030.13.1 Seating at tables.		Edits made to clarify code, no major changes to code requirements.
	4029.13.1.1 1030.13.1.1 Aisle accessway capacity and width for seating at tables.		Edits made to clarify code, no major changes to code requirements.
	4029.13.1.2 1030.13.1.2 Seating at table aisle accessway length.		Edits made to clarify code, no major changes to code requirements.
	4029.13.2 1030.13.2 Clear width of aisle accessways serving seating in rows.		Edits made to clarify code, no major changes to code requirements.
	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.		Edits made to clarify code, no major changes to code requirements.
	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		Edits made to clarify code, no major changes to code requirements.

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	<p>minimum clear width is not required to exceed 22 inches (559 mm).</p> <p>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.</p>		
	4029.14 1030.14 Assembly aisle walking surfaces.		Edits made to clarify code, no major changes to code requirements.
	4029.14.1 1030.14.1 Ramped aisles.		Edits made to clarify code, no major changes to code requirements.
	TABLE 1030.13.2.1 SMOKE-PROTECTED OR OPEN-AIR ASSEMBLY AISLE ACCESSWAYS		Edits made to clarify code, no major changes to code requirements.
	4029.14.1 1030.14.1 Ramped aisles.		Edits made to clarify code, no major changes to code requirements.
	4029.14.1.2 1030.14.1.2 Landings.		Edits made to clarify code, no major changes to code requirements.
	4029.14.1.3 1030.14.1.3 Edge protection.		Edits made to clarify code, no major changes to code requirements.
	4029.14.2 1030.14.2 Stepped aisles.		Edits made to clarify code, no major changes to code requirements.
	4029.14.2.1 1030.14.2.1 Treads.		Edits made to clarify code, no major changes to code requirements.

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	4029.14.2.2 1030.14.2.2 Risers.		Edits made to clarify code, no major changes to code requirements.
	4029.14.2.2.1 1030.14.2.2.1 Construction tolerances.		Edits made to clarify code, no major changes to code requirements.
	4029.14.2.3 1030.14.2.3 Tread contrasting marking stripe.		Edits made to clarify code, no major changes to code requirements.
	4029.14.2.4 1030.14.2.4 Nosing and profile.		Edits made to clarify code, no major changes to code requirements.
	4029.15 1030.15 Seat stability.		Edits made to clarify code, no major changes to code requirements.
	<p>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. 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>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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>. 		Edits made to clarify code, no major changes to code requirements.

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	<p>4029.16.1 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.16.2 1030.16.2 Handrail termination.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.16.3 1030.16.3 Mid-aisle termination.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.16.4 1030.16.4 Rails.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.17 1030.17 Assembly guards.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.17.1 1030.17.1 Perimeter guards.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.17.2 1030.17.2 Cross aisles.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4029.17.3 1030.17.3 Sightline-constrained guard heights.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1031 EMERGENCY ESCAPE AND RESCUE</p> <p>1031.1 General. Emergency escape and rescue openings shall comply with the requirements of this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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:</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p style="background-color: magenta;">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:</p> <p style="background-color: magenta;">4.1. One means of egress and one emergency escape and rescue opening.</p> <p style="background-color: magenta;">4.2. Two means of egress.</p>		
	<p>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:</p> <ol style="list-style-type: none"> 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. <p><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>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 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: 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4-15.1. One means of egress and one emergency escape and rescue opening.</p> <p>4-25.2. Two means of egress.</p>		
	<p>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.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1031.3 Emergency escape and rescue openings. Emergency escape and rescue openings shall comply with Sections 1031.3.1 through 1031.3.3.</p>		Emergency escape requirement
	<p>1031.3.1 Minimum size. Emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.53 m²).</p> <p>Exception: The minimum net clear opening for grade-floor emergency escape and rescue openings shall be 5 square feet (0.46 m²).</p>		New requirement
	<p>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.</p>		New requirement
	<p>1031.3.3 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.</p>		New requirement
	<p>1031.4 Emergency escape and rescue doors. Where a door is provided as the required emergency escape and rescue opening, it shall be a swinging door or a sliding door.</p>		New requirement
	<p>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.</p> <p>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</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>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.</p> <p>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.</p>		
	<p>1030.4 1031.5 Window Area wells. An emergency escape and rescue opening 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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 emergency escape and rescue opening to be fully opened.</p> <p>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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1030.4.2 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>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.</p>		<p>New requirement</p>

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	<u>1031.5.2.2 Steps.</u> 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 requirement
	<u>1031.5.3 Drainage.</u> Area wells shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section 1805. <u>Exception:</u> 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 requirement
	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.		New requirement
2015 Houston IBC – Chapter 11 Accessibility	2021 IBC – Chapter 11 Accessibility	2021 Houston Amendments – Chapter 11	Code Analysis
	SECTION 1101 GENERAL	[EDITORIAL NOTE: THE EXISTING PROVISIONS OF CHAPTER 11 ARE NOT ADOPTED AND ARE REPLACED BY THE PROVISIONS BELOW.]	No change to Houston amendment.
{EDITORIAL NOTE: THE EXISTING PROVISIONS OF CHAPTER 11 ARE NOT ADOPTED AND ARE REPLACED BY THE PROVISIONS BELOW.} 1101.2 Design. Buildings and facilities shall be designed and constructed to be <i>accessible</i> in accordance with the provisions of this code, the <i>Texas Accessibility Standards</i> , and federal law ICC A117.1. Moved to 1102.1	1101.2 Design. Buildings and facilities shall be designed and constructed to be accessible in accordance with this code and ICC A117.1.	SECTION 1101 GENERAL	
1101.3 State law. Accessibility for publicly and privately owned buildings and facilities are governed by state law and regulations, including Chapter 469 of the Texas Government Code and various regulations, standards and specifications issued thereunder. Any references to provisions from Chapter 11 of this code that occur	N/a	1101.2 State law. Accessibility for publicly and privately owned buildings and facilities is governed by state law, including Chapter 469 of the <i>Texas Government Code</i> and various regulations, standards and specifications issued thereunder. Any references to provisions of Chapter 11 that occur elsewhere in this code shall be	No change to Houston amendment.

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<p>elsewhere in this code shall be construed to mean that compliance shall be with applicable sections of the <i>Texas Accessibility Standards</i> (TAS).</p>		<p>construed to mean that compliance shall be with applicable sections of the <i>Texas Accessibility Standards</i> (TAS).</p>	
<p>1101.4 Responsibility of owners. It is the responsibility of the owner to ensure compliance with state and federal requirements. As provided by Section 469.102 of the <i>Texas Government Code</i>, the applicant for a building permit for an affected building or facility shall provide evidence of registration with the Texas Department of Licensing and Regulation as a part of the building permit application.</p>	<p>N/a</p>	<p>1101.3 Responsibility of owners. It is the responsibility of the owner to ensure compliance with state and federal requirements. As provided by Section 469.102 of the <i>Texas Government Code</i>, the applicant for a building permit for an affected building or facility shall provide evidence of registration with the Texas Department of Licensing and Regulation as a part of the building permit application.</p>	<p>No change to Houston amendment.</p>
<p>1101.5 Jurisdiction is not an agent of the state. This <i>jurisdiction</i> has not contracted with the State and is not authorized to review plans, grant waivers or modifications, perform inspections, or take any other action with respect to compliance with State of Federal accessibility requirements. No action taken by this <i>jurisdiction</i> or the <i>building official</i> shall be deemed as excusing compliance with State or Federal requirements.</p> <p>{EDITORIAL NOTE: THE REMAINDER OF CHAPTER 11 IS NOT ADOPTED BY THIS JURISDICTION.}</p>	<p>N/a</p>	<p>1101.4 Jurisdiction is not an agent of the state. This <i>jurisdiction</i> has not contracted with the state and is not authorized to review plans, grant waivers or modifications, perform inspections, or take any other action with respect to compliance with state or federal accessibility requirements. No action taken by this <i>jurisdiction</i> or the <i>building official</i> shall be deemed as excusing compliance with state or federal requirements.</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 1102 COMPLIANCE</p> <p>1102.1 Definitions-Design. The following terms are defined in Chapter 2: Buildings and facilities shall be designed and constructed to be accessible in accordance with this code and ICC A117.1.</p> <p>ACCESSIBLE.</p> <p>ACCESSIBLE ROUTE.</p> <p>ACCESSIBLE UNIT.</p> <p>AREA OF SPORT ACTIVITY.</p> <p>CIRCULATION PATH.</p> <p>COMMON USE. ACCESSIBLE.</p> <p>ACCESSIBLE ROUTE.</p> <p>ACCESSIBLE UNIT.</p> <p>AREA OF SPORT ACTIVITY.</p> <p>CIRCULATION PATH.</p> <p>COMMON USE.</p>	<p style="text-align: center;">SECTION 1102 COMPLIANCE</p> <p>1102.1 Design. Buildings and facilities shall be designed and constructed to be <i>accessible</i> in accordance with the provisions of this code the <i>Texas Accessibility Standards</i>, and federal law ICC A117.1.</p> <p>{EDITORIAL NOTE: THE REMAINDER OF CHAPTER 11 IS NOT ADOPTED BY THIS JURISDICTION.}</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment moved from 1101.2, no changes.</p>

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	<p>SECTION 1103 SCOPING REQUIREMENTS</p>		
	<p>1103.2.14 Walk-in coolers and freezers. Walk-in coolers and freezers intended for employee use only are freezer equipment accessed only from employee work areas is not required to comply with this chapter.</p>		
	<p>SECTION 1104 ACCESSIBLE ROUTE</p>		
	<p>1104.3 Connected spaces. When Where a building or portion of a building is required to be accessible, at least one accessible route shall be provided to each portion of the building, to accessible building entrances connecting accessible pedestrian walkways and to the public way.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Stories and mezzanines exempted by Section 1104.4. 2. In a building, room or space used for assembly purposes with fixed seating, an accessible route shall not be required to serve levels where wheelchair spaces are not provided. 3. Vertical access to elevated employee work stations within a courtroom complying with Section 1108.4.1.4. 4. An accessible route to recreational facilities shall only be required to the extent specified in Section 1110. 		
	<p>1104.4 Multistory buildings and facilities. At least one accessible route shall connect each accessible story, and mezzanine and occupied roofs story, and mezzanine and occupied roofs in multilevel buildings and facilities.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. An accessible route is not required to story, and mezzanine and occupied roofs story, and mezzanine and occupied roofs that have an aggregate area of not more than 3,000 square feet (278.7 m²) and are located above and below accessible levels. This exception shall not apply to: <ol style="list-style-type: none"> 1.1. Multiple tenant facilities of Group M occupancies containing five or more tenant spaces used for the sales or rental of goods and where at least one such 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>tenant space is located on a floor level above or below the accessible levels.</p> <p>1.2. <i>Stories or mezzanines</i> containing offices of health care providers (Group B or I); or.</p> <p>1.3. Passenger transportation facilities and airports (Group A-3 or B).</p> <p>1.4. Government buildings.</p> <p>1.5. Structures with four or more dwelling units.</p> <p>2. <i>Stories or mezzanines or occupied roofs</i> that do not contain accessible elements or other spaces as determined by Section 1108 or 1109 are not required to be served by an accessible route from an <i>accessible</i> level.</p> <p>3. In air traffic control towers, an <i>accessible route</i> is not required to serve the cab and the floor immediately below the cab.</p> <p>4. Where a two-story building or facility has one <i>story</i> or <i>mezzanine</i> with an <i>occupant load</i> of five or fewer persons that does not contain <i>public use</i> space, that <i>story</i> or <i>mezzanine</i> shall not be required to be connected by an <i>accessible route</i> to the <i>story</i> above or below.</p>		
	<p>1104.5 Location. Accessible routes shall coincide with or be located in the same area as a general circulation path. Where the circulation path is interior, the accessible route shall also be interior. Where only one accessible route is provided, the accessible route shall not pass through kitchens, storage rooms, restrooms, closets or similar spaces.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Accessible routes from parking garages contained within and serving Type B units are not required to be interior. 2. A single accessible route is permitted to pass through a kitchen or storage room in an Accessible unit, Type A unit or Type B unit. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 1105</p> <p>ACCESSIBLE ENTRANCES</p>		
	<p>1105.1.1 Automatic doors. In facilities with the occupancies and building <i>occupant loads</i> indicated in Table 105.1.1, <i>public entrances</i> that are required to be <i>accessible</i> shall have one door be either a full <i>power-operated door</i> or a <i>low-energy power-operated door</i>. Where the <i>public entrance</i> includes a vestibule, at least one door into and</p>		<p>New requirement</p>

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	<u>one door out of the vestibule shall meet the requirements of this section.</u>		
	TABLE 1105.1.1 PUBLIC ENTRANCE WITH POWER-OPERATED DOOR^a		Edits made to clarify code, no major changes to code requirements.
	4405.1.1 1105.1.2 Parking garage entrances.		Edits made to clarify code, no major changes to code requirements.
	4405.1.2 1105.1.3 Entrances from tunnels or elevated walkways.		Edits made to clarify code, no major changes to code requirements.
	4405.1.3 1105.1.4 Restricted entrances.		Edits made to clarify code, no major changes to code requirements.
	4405.1.4 1105.1.5 Entrances for inmates or detainees.		Edits made to clarify code, no major changes to code requirements.
	4405.1.5 1105.1.6 Service entrances.		Edits made to clarify code, no major changes to code requirements.
	4405.1.6 1105.1.7 Tenant spaces.		Edits made to clarify code, no major changes to code requirements.
	4405.1.7 1105.1.8 Dwelling units and sleeping units.		Edits made to clarify code, no major changes to code requirements.

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	<p>SECTION 1106</p> <p>PARKING AND PASSENGER LOADING FACILITIES</p> <p>1106.1 General. Parking shall comply with Sections 1106.2 through 1106.8. Passenger loading zones shall comply with Section 1106.9.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1106.1 1106.2 Required. Where parking is provided, accessible parking spaces shall be provided in compliance with Table 1106.2, except as required by Sections 1106.3 through 1106.5. Where more than one parking facility is provided on a site, the number of parking spaces required to be accessible shall be calculated separately for each parking facility.</p> <p style="padding-left: 40px;">Exception: This section does not apply to parking spaces used exclusively for buses, trucks, other delivery vehicles, law enforcement vehicles or vehicular impound and motor pools where lots accessed by the public are provided with an accessible passenger loading zone.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 1106.1 TABLE 1106.2</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1106.2 1106.3 Groups I-1, R-1, R-2, R-3 and R-4. Accessible parking spaces shall be provided in Group I-1, R-1, R-2, R-3 and R-4 occupancies in accordance with Items 1 through 4 as applicable.</p> <ol style="list-style-type: none"> 1. In Group R-2, R-3 and R-4 occupancies that are required to have Accessible, Type A or Type B dwelling units or sleeping units, at least 2 percent, but not less than one, of each type of parking space provided shall be accessible. 2. In Group I-1 and R-1 occupancies, accessible parking shall be provided in accordance with Table 1106.1. 3. Where at least one parking space is provided for each dwelling unit or sleeping unit, at least one accessible parking space shall be provided for each Accessible and Type A unit. 4. Where parking is provided within or beneath a building, accessible parking spaces shall also be provided within or beneath the building. 		Edits made to clarify code, no major changes to code requirements.
	<p>1106.3 1106.4 Hospital outpatient facilities.</p>		Edits made to clarify code, no major changes to code requirements.

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	4106.4 1106.5 Rehabilitation facilities and outpatient physical therapy facilities.		Edits made to clarify code, no major changes to code requirements.
	4106.5 1106.6 Van spaces. For every six or fraction of six accessible parking spaces, at least one shall be a van-accessible parking space. Exception: In Group U private garages that serve Group R-2 and R-3 occupancies, van-accessible spaces located within private garages shall be permitted to have vehicular routes, entrances, parking spaces and access aisles with a minimum vertical clearance of 7 feet (2134 mm).		Edits made to clarify code, no major changes to code requirements.
	4106.6 1106.7 Location.		Edits made to clarify code, no major changes to code requirements.
	1106.8 Parking meters and pay stations. Where parking meters and pay stations serve accessible parking spaces, such parking meters and pay stations shall be accessible.		New requirement
	4106.7 1106.9 Passenger loading zones.		Edits made to clarify code, no major changes to code requirements.
	4106.7.1 1106.9.1 Continuous loading zones.		Edits made to clarify code, no major changes to code requirements.
	4106.7.2 1106.9.2 Medical facilities.		Edits made to clarify code, no major changes to code requirements.
	4106.7.3 1106.9.3 Valet parking.		Edits made to clarify code, no major changes to code requirements.
	4106.7.4 1106.9.4 Mechanical access parking garages. Mechanical access parking garages shall provide at least one passenger loading zone at vehicle drop-off and vehicle pick-up areas.		Edits made to clarify code, no major changes to code requirements.

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	<p align="center">SECTION 1107</p> <p align="center">MOTOR-VEHICLE-RELATED FACILITIES</p> <p>1107.1 General. Electrical vehicle charging stations shall comply with Section 1107.2. Fuel-dispensing systems shall comply with Section 1107.3.</p>		New electric vehicle and motor fueling requirements.
	<p>1107.2 Electrical vehicle charging stations. Electrical vehicle charging stations shall comply with Sections 1107.2.1 and 1107.2.2.</p> <p>Exception: Electrical vehicle charging stations provided to serve Group R-2, R-3 and R-4 occupancies are not required to comply with this section.</p>		New electric vehicle charging requirements
	<p>1107.2.1 Number of accessible vehicle spaces. Not less than 5 percent of vehicle spaces on the site served by electrical vehicle charging systems, but not fewer than one for each type of electric vehicle charge system, shall be accessible.</p>		New requirement
	<p>1107.2.2 Vehicle space size. Accessible vehicle spaces shall comply with the requirements for a van accessible parking space that is 132 inches (3350 mm) minimum in width with an adjoining access aisle that is 60 inches (1525 mm) minimum in width.</p>		New requirement
	<p>1107.3 Fuel-dispensing systems. Fuel-dispensing systems shall be accessible.</p>		New requirement
	<p align="center">SECTION 4407 1108</p> <p align="center">DWELLING UNITS AND SLEEPING UNITS</p> <p>4407.1 1108.1 General.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>4407.2 1108.2 Design.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>4407.3 1108.3 Accessible spaces.</p>		Edits made to clarify code, no major changes to code requirements.

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~~1107.4~~ 1108.4 **Accessible route.** At least Not fewer than one accessible route shall connect accessible building or facility entrances with the primary entrance of each Accessible unit, Type A unit and Type B unit within the building or facility and with those exterior and interior spaces and facilities that serve the units.

Exceptions:

1. If due to circumstances outside the control of the owner, either the slope of the finished ground level between accessible facilities and buildings exceeds one unit vertical in 12 units horizontal (1:12), or where physical barriers or legal restrictions prevent the installation of an accessible route, a vehicular route with parking that complies with Section 1106 at each public or common use facility or building is permitted in place of the accessible route.
2. In Group I-3 facilities, an accessible route is not required to connect stories or mezzanines where Accessible units, all common use areas serving Accessible units and all public use areas are on an accessible route.
3. In Group R-2 facilities with Type A units complying with Section 1107.6.2.2.1, an accessible route is not required to connect stories or mezzanines where Type A units, all common use areas serving Type A units and all public use areas are on an accessible route.
4. In other than Group R-2 dormitory housing provided by places of education, in Group R-2 facilities with Accessible units complying with Section 1107.6.2.3.1, an accessible route is not required to connect stories or mezzanines where Accessible units, all common use areas serving Accessible units and all public use areas are on an accessible route.
5. In Group R-1, an accessible route is not required to connect stories or mezzanines within individual units, provided the accessible level meets the provisions for Accessible units and sleeping accommodations for two persons minimum and a toilet facility are provided on that level.
6. In congregate residences in Groups R-3 and R-4, an accessible route is not required to connect stories or mezzanines where Accessible units or Type B units, all common use areas serving Accessible units and Type B units and all public use areas serving Accessible units and Type B units are on an accessible route.

Edits made to clarify code, no major changes to code requirements.

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	<p>7. An accessible route between stories is not required where Type B units are exempted by Section 1107.7.</p>		
	<p>4407.5 1108.5 Group I.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4407.5.1 1108.5.1 Group I-1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4407.5.1.4 1108.5.1.1 Accessible units. In Group I-1, Condition 1, at least 4 percent, but not less than one of the <i>dwelling units</i> and <i>sleeping units</i> shall be <i>Accessible units</i>. In Group I-1, Condition 2, at least 10 percent, but not less than one, of the dwelling units and sleeping units shall be Accessible units. Accessible dwelling units and sleeping units shall be dispersed among the various classes of units.</p> <p>Exceptions:</p> <p>1. Water closets shall not be required to comply with ICC A117.1 where such water closets comply with Section 1110.2.2, in not more than 50 percent of the <i>Accessible units</i>.</p> <p>2. Roll-in-type showers shall not be required to comply with ICC A117.1 where roll-in-type showers comply with Section 1110.2.3, in not more than 50 percent of the <i>Accessible units</i>.</p>		<p>New requirements</p>
	<p>1108.5.1.2 Accessible units in Group I-1, Condition 2. In Group I-1, Condition 2, at least 10 percent, but not less than one, of the dwelling units and sleeping units shall be <i>Accessible units</i>. Accessible dwelling units and sleeping units shall be dispersed among the various classes of units.</p> <p>Exceptions:</p> <p>1. Water closets shall not be required to comply with ICC A117.1 where such water closets comply with Section 1110.2.2, in not more than 50 percent of the <i>Accessible units</i>.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><u>2. Roll-in-type showers shall not be required to comply with ICC A117.1 where roll-in-type showers comply with Section 1110.2.3, in not more than 50 percent of the Accessible units.</u></p>		
	<p>4407.5.1.2 1108.5.1.3 Type B units.</p>		
	<p>4407.5.2 1108.5.2 Group I-2 nursing homes. Accessible units and Type B units shall be provided in nursing homes of Group I-2, Condition 1 occupancies in accordance with Sections 1108.5.2.1 and 1108.5.2.2.</p>		
	<p>4407.5.2.4 1108.5.2.1 Accessible units. At least 50 percent but not less than one of each type of the dwelling units and sleeping units shall be Accessible units.</p> <p>Exceptions:</p> <p><u>1. Water closets shall not be required to comply with ICC A117.1 where such water closets comply with Section 1110.2.2, in not more than 90 percent of the Accessible units.</u></p> <p><u>2. Roll-in-type showers shall not be required to comply with ICC A117.1 where roll-in-type showers comply with Section 1110.2.3, in not more than 90 percent of the Accessible units.</u></p>		
	<p>4407.5.2.2 1108.5.2.2 Type B units.</p>		
	<p>4407.5.3 1108.5.3 Group I-2 hospitals.</p>		
	<p>4407.5.3.1 1108.5.3.1 Accessible units.</p>		

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	<p>4407.5.3.2 1108.5.3.2 Type B units.</p>		
	<p>4407.5.4 1108.5.4 Group I-2 rehabilitation facilities. In hospitals and rehabilitation facilities of Group I-2 occupancies that specialize in treating conditions that affect mobility, or units within either that specialize in treating conditions that affect mobility, 100 percent of the <i>dwelling units</i> and <i>sleeping units</i> shall be <i>Accessible units</i>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Water closets shall not be required to comply with ICC A117.1 where such water closets comply with Section 1110.2.2, in not more than 50 percent of <i>Accessible units</i>. 2. Roll-in-type showers shall not be required to comply with ICC A117.1 where roll-in-type showers comply with Section 1110.2.3, in not more than 50 percent of <i>Accessible units</i>. 		<p>New requirements</p>
	<p>4407.5.5 1108.5.5 Group I-3.</p>		
	<p>4407.5.5.1 1108.5.5.1 Group I-3 sleeping units.</p>		
	<p>4407.5.5.2 1108.5.5.2 Special holding cells and special housing cells or rooms.</p>		
	<p>4407.5.5.3 1108.5.5.3 Medical care facilities.</p>		
	<p>4407.6 1108.6 Group R.</p>		

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	4107.6.1 1108.6.1 Group R-1.		
	<p>4107.6.1.1 1108.6.1.1 Accessible units. Accessible dwelling units and sleeping units shall be provided in accordance with Table 1107.6.1.1. Where On a multiple-building site, where structures contain more than 50 dwelling units or sleeping units, the number of Accessible units shall be determined per structure. On a multiple-building site, where buildings-structures contain 50 or fewer dwelling units or sleeping units, all dwelling units and sleeping units on a site shall be considered to determine the total number of Accessible units. Accessible units shall be dispersed among the various classes of units.</p>		
	4107.6.1.2 1108.6.1.2 Type B units.		
	4107.6.2 1108.6.2 Group R-2.		
	4107.6.2.1 1108.6.2.1 Live/work units.		
	<p>4107.6.2.2 1108.6.2.2 Apartment houses, monasteries and convents. Type A units and Type B units shall be provided in apartment houses, monasteries and convents in accordance with Sections 1107.6.2.2.1 and 1107.6.2.2.2. Bedrooms in monasteries and convents shall be counted as units for the purpose of determining the number of units. Where the bedrooms are grouped in sleeping units, only one bedroom in each sleeping unit shall count toward the number of required Type A units.</p>		

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	<p>TABLE 1107.6.1.4 TABLE 1108.6.1.1</p>		
	<p>1107.6.2.2.1 1108.6.2.2.1 Type A units. In Group R-2 occupancies containing more than 20 dwelling units or sleeping units, at least 2 percent but not less than one of the units shall be a Type A unit. All Group R-2 units on a site shall be considered to determine the total number of units and the required number of Type A units. Type A units shall be dispersed among the various classes of units. Bedrooms in monasteries and convents shall be counted as sleeping units for the purpose of determining the number of units. Where the sleeping units are grouped into suites, only one sleeping unit in each suite shall count towards the number of required Type A units.</p> <p style="text-align: center;">Exceptions:</p> <ol style="list-style-type: none"> 1. The number of Type A units is permitted to be reduced in accordance with Section 1107.7. 2. Existing structures on a site shall not contribute to the total number of units on a site. 		
	<p>1107.6.2.2.2 1108.6.2.2.2 Type B units.</p>		
	<p>1107.6.2.3 1108.6.2.3 Group R-2 other than live/work units, apartment houses, monasteries and convents. In Group R-2 occupancies, other than live/work units, apartment houses, monasteries and convents falling within the scope of Sections 1107.6.2.1 and 1107.6.2.2, Accessible units and Type B units shall be provided in accordance with Sections 1107.6.2.3.1 and 1107.6.2.3.2. Bedrooms within congregate living facilities, dormitories, sororities, fraternities and boarding houses shall be counted as sleeping units for the purpose of determining the number of units. Where the sleeping units bedrooms are grouped into dwelling or sleeping units, only one sleeping</p>		

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	<p>units bedrooms in each dwelling or sleeping units shall be permitted to count towards the number of required Accessible units.</p>		
	<p>1107.6.2.3.1 1108.6.2.3.1 Accessible units.</p>		
	<p>1107.6.2.3.2 1108.6.2.3.2 Type B units.</p>		
	<p>1107.6.3 1108.6.3 Group R-3. In Group R-3 occupancies where there are four or more dwelling units or sleeping units intended to be occupied as a residence in a single structure, every dwelling unit and sleeping unit intended to be occupied as a residence shall be a Type B unit. Bedrooms within congregate living facilities, dormitories, sororities, fraternities, and boarding houses shall be counted as sleeping units for the purpose of determining the number of units.</p> <p>Exception: The number of Type B units is permitted to be reduced in accordance with Section 1107.7.</p>		
	<p>1107.6.4 1108.6.4 Group R-4.</p>		
	<p>1107.6.4.1 1108.6.4.1 Accessible units. In Group R-4, Condition 1, at least one of the sleeping units shall be an Accessible unit. In Group R-4, Condition 2, at least two of the sleeping units shall be an Accessible unit.</p>		
	<p>1107.6.4.2 1108.6.4.2 Type B units.</p>		
	<p>1107.7 1108.7 General exceptions.</p>		

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	<p>4407.7.1 1108.7.1 Structures without elevator service. Where no elevator service is not provided in a structure, only the dwelling units and sleeping units that are located on stories indicated in Sections 1107.7.1.1 and 1107.7.1.2 are required to be Type A units and Type B units, respectively. The number of Type A units shall be determined in accordance with Section 1107.6.2.2.1.</p>		
	<p>4407.7.1.1 1108.7.1.1 One story with Type B units required.</p>		
	<p>4407.7.1.2 1108.7.1.2 Additional stories with Type B units. On all other stories that have a building entrance in proximity Where stories have entrances not included in determining compliance with Section 1107.7.1.1, and such entrances are proximate to arrival points intended to serve units on that story, as indicated in Items 1 and 2, all dwelling units and sleeping units intended to be occupied as a residence served by that entrance on that story shall be Type B units.</p> <ol style="list-style-type: none"> 1. Where the slopes of the undisturbed site measured between the planned entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance are 10 percent or less, and. 2. Where the slopes of the planned finished grade measured between the entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance are 10 percent or less. <p>Where no such arrival points are not within 50 feet (15 240 mm) of the entrance, the closest arrival point shall be used to determine access unless that arrival point serves the story required by Section 1107.7.1.1.</p>		
	<p>4407.7.2 1108.7.2 Multistory units.</p>		

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	<p>4107.7.3 1108.7.3 Elevator service to the lowest story with units.</p>		
	<p>4107.7.4 1108.7.4 Site impracticality. On a site with multiple nonelevator buildings, the number of units required by Section 1107.7.1 to be Type B units is permitted to be reduced to a percentage that is equal to the percentage of the entire site having grades, prior to development, that are less than 10 percent, provided that all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. Not less than 20 percent of the units required by Section 1107.7.1 on the site are Type B units. 2. Units required by Section 1107.7.1, where the slope between the building entrance serving the units on that story and a pedestrian or vehicular arrival point is not greater than 8.33 percent, are Type B units. 3. Units required by Section 1107.7.1, where an elevated walkway is planned between a building entrance serving the units on that story and a pedestrian or vehicular arrival point and the slope between them is 10 percent or less, are Type B units. 4. Units served by an elevator in accordance with Section 1107.7.3 are Type B units. 		
	<p>4107.7.5 1108.7.5 Design flood elevation. Flood hazard areas. The required number of Type A units and Type B units shall not apply to a site where the shall not be required for buildings without elevator service that are located in flood hazard areas as established in Section 1612.3, where the minimum required elevation of the lowest floor or the lowest horizontal structural building members of nonelevator buildings are at or above the design flood elevation resulting supporting horizontal structural member. as applicable, results in all of the following:</p> <ol style="list-style-type: none"> 1. A difference in elevation between the minimum required floor elevation at the primary entrances and vehicular and pedestrian arrival points within 50 feet (15 240 mm) exceeding 30 inches (762 mm). 2. A slope exceeding 10 percent between the minimum required floor elevation at the primary entrances and vehicular and pedestrian arrival points within 50 feet (15 240 mm). 		

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	Where no such arrival points are not within 50 feet (15 240 mm) of the primary entrances, the closest arrival points shall be used.		
	SECTION 4408 1109 SPECIAL OCCUPANCIES		
	4408.1 1109.1 General.		
	4408.2 1109.2 Assembly area seating.		
	4408.2.1 1109.2.1 Services.		
	4408.2.2 1109.2.2 Wheelchair spaces.		
	4408.2.2.1 1109.2.2.1 General seating.		
	TABLE 4408.2.2.1 TABLE 1109.2.2.1		
	4408.2.2.2 1109.2.2.2 Luxury boxes, club boxes and suites.		
	4408.2.2.3 1109.2.2.3 Other boxes.		

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	4108.2.3 1109.2.3 1109.2.3 Companion seats.		
	4108.2.4 1109.2.4 1109.2.4 Dispersion of wheelchair spaces in multilevel assembly seating areas.		
	4108.2.5 1109.2.5 1109.2.5 Designated aisle seats.		
	4108.2.6 1109.2.6 1109.2.6 Lawn seating.		
	4108.2.7 1109.2.7 1109.2.7 Assistive listening systems.		
	4108.2.7.1 1109.2.7.1 1109.2.7.1 Receivers.		
	4108.2.7.2 1109.2.7.2 1109.2.7.2 Ticket windows.		
	4108.2.7.3 1109.2.7.3 1109.2.7.3 Public address systems.		
	4108.2.8 1109.2.8 1109.2.8 Performance areas.		

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	4408.2.9 1109.2.9 Dining and drinking areas.		
	TABLE 1108.2.7.4 TABLE 1109.2.7.1		
	4408.2.9.1 1109.2.9.1 Dining surfaces.		
	4408.3 1109.3 Self-service storage facilities.		
	TABLE 1108.3 TABLE 1109.3		
	4408.3.1 1109.3.1 Dispersion. Accessible individual self-service storage spaces shall be dispersed throughout the various classes of spaces provided. Where more classes of spaces are provided than the number of required accessible spaces, the number of accessible spaces shall not be required to exceed that required by Table 1108.3. Accessible spaces are permitted to be dispersed in a single building of a multiple building facility.		
	4408.4 1109.4 Judicial facilities.		
	4408.4.1 1109.4.1 Courtrooms.		
	4408.4.1.1 1109.4.1.1 Jury box.		

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	<p>4408.4.1.2 1109.4.1.2 Gallery seating.</p>		
	<p>4408.4.1.3 1109.4.1.3 Assistive listening systems.</p>		
	<p>4408.4.1.4 1109.4.1.4 Employee work stations.</p>		
	<p>4408.4.1.5 1109.4.1.5 Other work stations.</p>		
	<p>4408.4.2 1109.4.2 Holding cells.</p>		
	<p>4408.4.2.1 1109.4.2.1 Central holding cells.</p>		
	<p>4408.4.2.2 1109.4.2.2 Court-floor holding cells.</p>		
	<p>SECTION 4409 1110 OTHER FEATURES AND FACILITIES 4409.4 1110.1 General.</p>		
	<p>4409.2 1110.2 Toilet and bathing facilities. Each toilet room and bathing room shall be <i>accessible</i>. Where a floor level is not required to be connected by an <i>accessible route</i>, the only toilet rooms or bathing rooms provided within the facility shall not be located on the inaccessible floor. Except as provided for in Sections 1110.2.4 and 1110.2.5, at least one of each type of fixture, element, control or</p>		

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dispenser in each accessible toilet room and bathing room shall be *accessible*.

Exceptions:

1. Toilet rooms or bathing rooms accessed only through a private office, not for *common* or *public use* and intended for use by a single occupant, shall be permitted to comply with the specific exceptions in ICC A117.1.
2. This section is not applicable to toilet and bathing rooms that serve *dwelling units* or *sleeping units* that are not required to be *accessible* by Section 1108.
3. Where multiple single-user toilet rooms or bathing rooms are clustered at a single location, at least 50 percent but not less than one room for each use at each cluster shall be *accessible*.
4. Where no more than one urinal is provided in a toilet room or bathing room, the urinal is not required to be *accessible*.
5. Toilet rooms or bathing rooms that are part of critical care or intensive care patient sleeping rooms serving *Accessible units* are not required to be *accessible*.
6. Toilet rooms or bathing rooms designed for bariatrics patients are not required to comply with the toilet room and bathing room requirement in ICC A117.1. The *sleeping units* served by bariatrics toilet or bathing rooms shall not count toward the required number of *Accessible sleeping units*.
7. Where permitted in Section 1108, in toilet rooms or bathrooms serving Accessible units, water closets designed for assisted toileting shall comply with Section 1110.2.2.
8. Where permitted in Section 1108, in bathrooms serving Accessible units, showers designed for assisted bathing shall comply with Section 1110.2.3.
- ~~79.~~ Where toilet facilities are primarily for children's use, required *accessible* water closets, toilet compartments and lavatories shall be permitted to comply with children's provision of ICC A117.1.

~~1109.2.1~~ 1110.2.1 Family or assisted-use toilet and bathing rooms.

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	<p>1109.2.1.1 1110.2.1.1 Standard.</p>		
	<p>1109.2.1.2 1110.2.1.2 Family or assisted-use toilet rooms. Family or assisted-use toilet rooms shall include only one water closet and only one lavatory. A family or assisted-use bathing room in accordance with Section 1109.2.1.3 shall be considered to be a family or assisted-use toilet room.</p> <p>Exception: A urinal is permitted to be provided in addition to the water closet in a family or assisted-use toilet room. The following additional fixtures shall be permitted in a family or assisted-use toilet room:</p> <ol style="list-style-type: none"> 1. A urinal. 2. A child-height water closet. 3. A child-height lavatory. 		
	<p>1109.2.1.3 1110.2.1.3 Family or assisted-use bathing rooms.</p>		
	<p>1109.2.1.4 1110.2.1.4 Location.</p>		
	<p>1109.2.1.5 1110.2.1.5 Prohibited location.</p>		
	<p>1109.2.1.7 1110.2.1.6 Privacy. Doors to family or assisted-use toilet and bathing rooms shall be securable from within the room and be provided with an "occupied" indicator.</p>		
	<p>1110.2.2 Water closets designed for assisted toileting. Water closets designed for assisted toileting shall comply with Sections 1110.2.2.1 through 1110.2.2.6.</p>		

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	1110.2.2.1 Location. The centerline of the water closet shall be not less than 24 inches (610 mm) and not greater than 26 inches (660 mm) from one side of the required clearance.		
	1110.2.2.2 Clearance. Clearance around the water closet shall comply with Sections 1110.2.2.2.1 through 1110.2.2.2.3.		
	1110.2.2.2.1 Clearance width. Clearance around a water closet shall be not less than 66 inches (1675 mm) in width, measured perpendicularly from the side of the clearance that is not less than 24 inches (610 mm) and not greater than 26 inches (660 mm) from the water closet centerline.		
	1110.2.2.2.2 Clearance depth. Clearance around the water closet shall be not less than 78 inches (1980 mm) in depth, measured perpendicularly from the rear wall.		
	1110.2.2.2.3 Clearance overlap. The required clearance around the water closet shall permit overlaps per ICC A117.1, Section 604.3.3.		
	1110.2.2.3 Height. The height of the water closet seats shall comply with ICC A117.1, Section 604.4.		
	1110.2.2.4 Swing-up grab bars. Swing-up grab bars shall comply with ICC A117.1, Sections 609.2 and 609.8. Swing-up grab bars shall be provided on both sides of the water closet and shall comply with all of the following: <ol style="list-style-type: none"> 1. The centerline of the grab bar shall be not less than 14 inches (356 mm) and not greater than 16 inches (405 mm) from the centerline of the water closet. 2. The length of the grab bar is not less than 36 inches (915 mm) in length, measured from the rear wall to the end of the grab bar. 3. The top of the grab bar in the down position is not less than 30 inches (760 		

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	<u>mm) and not greater than 34 inches (865 mm) above the floor.</u>		
	1110.2.2.5 Flush controls. Flush controls shall comply with ICC A117.1, Section 604.6.		
	1110.2.2.6 Dispensers. Toilet paper dispensers shall be mounted on at least one of the swing-up grab bars and the outlet of the dispenser shall be located not less than 24 inches (610 mm) and not greater than 36 inches (915 mm) from the rear wall.		
	1110.2.3 Standard roll-in-type shower compartment designed for assisted bathing. Standard roll-in-type shower compartments designed for assisted bathing shall comply with Sections 1110.2.3.1 through 1110.2.3.9.		
	1110.2.3.1 Size. Standard roll-in-type shower compartments shall have a clear inside dimension of not less than 60 inches (1525 mm) in width and 30 inches (760 mm) in depth, measured at the center point of opposing sides. An entry not less than 60 inches (1525 mm) in width shall be provided.		
	1110.2.3.2 Clearance. A clearance of not less than 60 inches (1525 mm) in length adjacent to the 60-inch (1525 mm) width of the open face of the shower compartment, and not less than 30 inches (760 mm) in depth, shall be provided. Exceptions: 1. A lavatory complying with ICC A117.1, Section 606 shall be permitted at one end of the clearance. 2. Where the shower compartment exceeds minimum sizes, the clear floor space shall be placed adjacent to the grab bars and not less than 30 inches (762 mm) from the back wall.		
	1110.2.3.3 Grab bars. Grab bars shall comply with ICC A117.1, Section 609 and shall be provided in accordance with Sections 1110.2.3.3.1 and 1110.2.3.3.2. In standard roll-in-type shower		

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	<p><u>compartments, grab bars shall be provided on three walls. Where multiple grab bars are used, required horizontal grab bars shall be installed at the same height above the floor. Grab bars can be separate bars or one continuous bar.</u></p>		
	<p>1110.2.3.3.1 Back-wall grab bar. <u>The back-wall grab bar shall extend the length of the back wall and extend within 6 inches (150 mm) maximum from the two adjacent sidewalls.</u></p> <p>Exception: <u>The back-wall grab bar shall not be required to exceed 48 inches (1220 mm) in length. The rear grab bar shall be located with one end within 6 inches maximum of a sidewall with a grab bar complying with Section 1110.2.3.3.2.</u></p>		
	<p>1110.2.3.3.2 Sidewall grab bars. <u>The sidewall grab bar shall extend the length of the wall and extend within 6 inches (150 mm) of the adjacent back wall.</u></p> <p>Exceptions:</p> <ol style="list-style-type: none"> <u>1. The sidewall grab bar shall not be required to exceed 30 inches (760 mm) in length. The side grab bar shall be located with one end within 6 inches (152 mm) of the back wall with a grab bar complying with Section 1110.2.3.3.1.</u> <u>2. Where the sidewalls are located 72 inches (1830 mm) or greater apart, a grab bar is not required on one of the sidewalls.</u> 		
	<p>1110.2.3.4 Seats. <u>Wall-mounted folding seats shall not be installed.</u></p>		

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	<u>1110.2.3.5 Controls and hand showers. In standard roll-in-type showers, the controls and hand shower shall be located not less than 38 inches (965 mm) and not greater than 48 inches (1220 mm) above the shower floor. Controls shall be located to facilitate caregiver access.</u>		
	<u>1110.2.3.6 Hand showers. Hand showers shall comply with ICC A117.1, Section 608.5.</u>		
	<u>1110.2.3.7 Thresholds. Thresholds shall comply with ICC A117.1, Section 608.6.</u>		
	<u>1110.2.3.8 Shower enclosures. Shower compartment enclosures for shower compartments shall comply with ICC A117.1, Section 608.7.</u>		
	<u>1110.2.3.9 Water temperature. Water temperature shall comply with ICC A117.1, Section 608.8.</u>		
	4409.2.2 1110.2.4 Water closet compartment.		
	4409.2.3 1110.2.5 Lavatories.		
	4409.3 1110.3 Sinks.		
	4409.4 1110.4 Kitchens and kitchenettes.		
	4409.5 1110.5 Drinking fountains.		

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	<p>4409.5 1110.5 Drinking fountains.</p>		
	<p>4409.5.1 1110.5.1 Minimum number. No fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A single drinking fountain with two separate spouts that complies with the requirements for people who use a wheelchair and standing persons shall be permitted to be substituted for two separate drinking fountains. 2. Where drinking fountains are primarily for children's use, drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor. 		
	<p>4409.5.2 1110.5.2 More than the minimum number.</p>		
	<p>1110.6 <u>Bottle-filling stations.</u> Where bottle-filling stations are provided, they shall be accessible.</p> <p><u>Exception:</u> Bottle-filling stations over drinking fountains for standing persons are not required to be accessible, provided that bottle-filling stations are also located over the drinking fountains for persons using wheelchairs.</p>		
	<p>4409.6 1110.7 Saunas and steam rooms.</p>		
	<p>4409.7 1110.8 Elevators.</p>		

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	4409.11.2.1 1110.12.2.1 Cubicles and counters.		

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	TABLE 4409.12.2 TABLE 1110.13.1		
	4409.12.3 1110.13.2 Point of sale Sales and service counters and windows . Where counters or windows are provided for sales sale or distribution of goods or services, at least one of each type of counter and window provided shall be accessible. Where such counters or windows are dispersed throughout the building or facility, accessible counters or windows shall also be dispersed.		
	4409.12.4 1110.13.3 Food service lines.		
	4409.12.5 1110.13.4 Queue and waiting lines.		
	4409.12.4 1110.14 Dressing, fitting and locker rooms.		
	4409.13 1110.15 Controls, operating mechanisms and hardware. Controls, operating mechanisms and hardware intended for operation by the occupant, including switches that control lighting and ventilation and electrical convenience outlets, in accessible spaces, along accessible routes or as parts of accessible elements shall be accessible.		

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	<p>Exceptions:</p> <ol style="list-style-type: none"> 1. Operable parts that are intended for use only by service or maintenance personnel shall not be required to be accessible. 2. Electrical or communication receptacles serving a dedicated use shall not be required to be accessible. 3. Where two or more outlets are provided in a kitchen above a length of counter top that is uninterrupted by a sink or appliance, one outlet shall not be required to be accessible. 4. Floor electrical receptacles shall not be required to be accessible. 5. HVAC diffusers shall not be required to be accessible. 6. Except for light switches, where redundant controls are provided for a single element, one control in each space shall not be required to be accessible. 7. 2. Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to comply with Section 1010.2.3. <p>3. Operable parts exempted in accordance with ICC A117.1 are not required to be accessible.</p>		
	<p>4409.15 1110.16 Gaming machines and gaming tables. Two percent, but not less than one, of each type of gaming table provided shall be accessible and provided with a front approach. Two percent of gaming machines provided shall be accessible and provided with a front approach. Accessible gaming machines shall be distributed throughout the different types of gaming machines provided. At least two percent of the total, but not fewer than one, of each gaming machine type and gaming table type shall be accessible. Where multiple gaming areas occur, accessible gaming machines and gaming tables shall be distributed throughout.</p>		
	<p style="text-align: center;">SECTION 4440 1111 RECREATIONAL FACILITIES</p> <p>4440.4 1111.1 General.</p>		
	<p>4440.2 1111.2 Facilities serving Group R-2, R-3 and R-4 occupancies.</p>		

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	4140.2.1 1111.2.1 Facilities serving Accessible units.		
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	4140.2.3 1111.2.3 Facilities serving Type A and Type B units in multiple buildings.		
	4140.3 1111.3 Other occupancies.		
	4140.4 1111.4 Recreational facilities.		
	4140.4.1 1111.4.1 Area of sport activity. Each area of sport activity shall be on an accessible route and shall not be required to be accessible except as provided for in Sections 1110.4.2 through 1140.4.14 1111.4.15 .		
	4140.4.2 1111.4.2 Team or player seating.		
	4140.4.3 1111.4.3 Bowling lanes.		
	4140.4.4 1111.4.4 Court sports.		
	4140.4.5 1111.4.5 Raised boxing or wrestling rings.		
	4140.4.6 1111.4.6 Raised refereeing, judging and scoring areas.		
	4140.4.7 1111.4.7 Animal containment areas.		

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	4140.4.8 1111.4.8 Amusement rides.		
	4140.4.8.1 1111.4.8.1 Load and unload areas.		
	4140.4.8.2 1111.4.8.2 Wheelchair spaces, ride seats designed for transfer and transfer devices.		
	4140.4.8.3 1111.4.8.3 Minimum number.		
	4140.4.9 1111.4.9 Recreational boating facilities.		
	4140.4.9.1 1111.4.9.1 Boat slips.		
	TABLE 1140.4.9.1 TABLE 1111.4.9.1		
	4140.4.9.2 1111.4.9.2 Dispersion. Accessible boat slips shall be dispersed throughout the various types of boat slips provided. Where the minimum number of accessible boat slips has been met, no further dispersion shall not be required.		
	4140.4.9.3 1111.4.9.3 Boarding piers at boat launch ramps.		
	4140.4.10 1111.4.10 Exercise machines and equipment.		
	4140.4.11 1111.4.11 Fishing piers and platforms.		

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	4140.4.12 1111.4.12 Miniature golf facilities.		
	4140.4.12.1 1111.4.12.1 Minimum number.		
	4140.4.12.2 1111.4.12.2 Miniature golf course configuration.		
	4140.4.12.3 1111.4.12.3 Accessible route.		
	4140.4.13 1111.4.13 Play areas. Play areas containing play components designed and constructed for children shall be located on an accessible route.		
	<p>4140.4.14 1111.4.14 Swimming pools, wading pools, cold baths, hot tubs and spas. Swimming pools, wading pools, cold baths, hot tubs and spas shall be accessible and be on an accessible route.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Catch pools or a designated section of a pool used as a terminus for a water slide flume shall not be required to provide an accessible means of entry, provided that a portion of the catch pool edge is on an accessible route. 2. Where spas, cold baths or hot tubs are provided in a cluster, at least 5 percent, but not less than one of each type of spa, cold bath or hot tub in each cluster, shall be accessible and be on an accessible route. 3. Swimming pools, wading pools, spas, cold baths and hot tubs that are required to be accessible by Sections 1111.2.2 and 1111.2.3 are not required to provide accessible means of entry into the water. 		
	4140.4.14.1 1111.4.14.1 Raised diving boards and diving platforms.		

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	<p style="text-align: center;">4410.4.14.2 1111.4.14.2 Water slides.</p>		
	<p>4410.4.15 1111.4.15 Shooting facilities with firing positions. Where shooting facilities with firing positions are designed and constructed at a site, at least 5 percent, but not less than one, of each type of firing position shall be accessible and be on an accessible route.</p> <p>Exception: Shooting facilities with firing positions on free-standing platforms that are elevated more than 12 feet (3660 mm) above grade, provided that the aggregate area of the elevated firing positions is not more than 500 square feet (46 m2), are not required to be accessible.</p>		
	<p style="text-align: center;">SECTION 4444 1112 SIGNAGE</p> <p>4444.1 1112.1 Signs. Required accessible elements shall be identified by the International Symbol of Accessibility at the following locations.</p> <ol style="list-style-type: none"> 1. Accessible parking spaces required by Section 1106.2. Exception: Where the total number of parking spaces provided is four or less, identification of accessible parking spaces is not required. 2. Accessible parking spaces required by Section 1106.3. Exception: In Group I-1, R-2, R-3 and R-4 facilities, where parking spaces are assigned to specific <i>dwelling units</i> or <i>sleeping units</i>, identification of <i>accessible</i> parking spaces is not required. 3. Accessible passenger loading zones. 4. Accessible toilet or bathing rooms where not all multiple single user-toilet or bathing rooms are accessible clustered at a single location. 5. Accessible entrances where not all entrances are <i>accessible</i>. 6. Accessible check-out aisles where not all aisles are <i>accessible</i>. The sign, where provided, shall be above the check-out aisle in the same location as the checkout aisle number or type of check-out identification. 7. Family or assisted use toilet and bathing rooms. 8. 7. Accessible dressing, fitting and locker rooms where not all such rooms are accessible. 9. 8. Accessible areas of refuge in accordance with Section 1009.9. 		

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	<p>40.9. Exterior areas for assisted rescue in accordance with Section 1009.9.</p> <p>44.10. In recreational facilities, lockers that are required to be accessible in accordance with Section 1110.10.</p>		
	<p>1112.2 Signs identifying toilet or bathing rooms. Signs required in Section 403.4 of the <i>International Plumbing Code</i> identifying toilet rooms and bathing rooms shall be visual characters, raised characters and braille complying with ICC A117.1. Where pictograms are provided as designations for toilet rooms and bathing rooms, the pictograms shall have visual characters, raised characters and braille complying with ICC A117.1.</p>		
	<p>4444.2 1112.3 Directional signage.</p>		
	<p>4444.3 1112.4 Other signs. Signage indicating special accessibility provisions shall be provided as shown.</p> <p>1. Each assembly area required to comply with Section 1108.2.7 shall provide a sign notifying patrons of the availability of assistive listening systems. The sign shall comply with ICC A117.1 requirements for visual characters and include the International Symbol of Access for Hearing Loss.</p> <p style="padding-left: 40px;">Exception: Where ticket offices or windows are provided, signs are not required at each assembly area provided that signs are displayed at each ticket office or window informing patrons of the availability of assistive listening systems.</p> <p>2. At each door to an area of refuge, an exterior area for assisted rescue, an egress stairway, exit passageway and exit discharge, signage shall be provided in accordance with Section 1013.4. providing direct access to a stairway, exterior area for assisted rescue, exit stairway, exit passageway or exit discharge, signage shall be provided in accordance with Section 1013.4.</p> <p>3. At areas of refuge, signage shall be provided in accordance with Section 1009.11.</p> <p>4. At exterior areas for assisted rescue, signage shall be provided in accordance with Section 1009.11.</p> <p>5. At two-way communication systems, signage shall be provided in accordance with Section 1009.8.2.</p> <p>6. In interior exit stairways and ramps, floor level signage shall be provided in accordance with Section 1023.9.</p>		

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	<p>7. Signs identifying the type of access provided on amusement rides required to be accessible by Section 1110.4.8 shall be provided at entries to queues and waiting lines. In addition, where accessible unload areas also serve as accessible load areas, signs indicating the location of the accessible load and unload areas shall be provided at entries to queues and waiting lines. These directional sign characters shall meet the visual character requirements in accordance with ICC A117.1.</p>		
	<p>4444.4 1112.5 Variable message signs.</p>		
	<p>4444.4.4 1112.5.1 Transportation facilities.</p>		
	<p>4444.4.2 1112.5.2 Emergency shelters.</p>		
<p>2015 Houston IBC – Chapter 12 Interior Environment</p>	<p>2021 IBC – Chapter 12 INTERIOR ENVIRONMENT</p>	<p>2021 Houston Amendments – Chapter 12</p>	<p>Code Analysis</p>
	<p style="text-align: center;">SECTION 1201 GENERAL</p>		
	<p style="text-align: center;">SECTION 1202 DEFINITIONS-VENTILATION</p> <p>1202.1 General. The following terms are defined in Chapter 2: Buildings shall be provided with natural ventilation in accordance with Section 1202.5, or mechanical ventilation in accordance with the International Mechanical Code.</p> <p>SUNROOM.</p> <p>THERMAL ISOLATION.</p> <p>Where the air infiltration rate in a dwelling unit is less than 5 air changes per hour where tested with a blower door at a pressure 0.2 inch w.c. (50 Pa) in accordance with Section R402.4.1.2 of the International Energy Conservation Code—Residential Provisions, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403 of the International Mechanical Code. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407 of the International Mechanical Code.</p>	<p style="text-align: center;">SECTION 1202 VENTILATION</p> <p>1202.1 General. Buildings shall be provided with natural ventilation in accordance with Section 1202.5, or mechanical ventilation in accordance with the International Mechanical Code.</p> <p>Where the air infiltration rate in a <i>dwelling unit</i> is less than 5 air changes per hour when tested with a blower door at a pressure 0.2 inch w.c. (50 Pa) in accordance with Section R402.4.1.2 of the International Energy Conservation Code—Residential Provisions, the <i>dwelling unit</i> shall be ventilated by mechanical means in accordance with Section 403 402.3 of the International Mechanical Code. <i>Ambulatory care facilities</i> and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407 of the International Mechanical Code and ASHRAE 170.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment moved from Section 1203.1, no changes.</p>

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	<p>1202.2 Roof ventilation. Roof assemblies shall be ventilated in accordance with this section or shall comply with Section 1202.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1203.2.1 1202.2.1 Ventilation required attics and rafter spaces.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1203.2.12 1202.2.12 Openings into attic.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1203.3 1202.3 Unvented attic and unvented enclosed rafter assemblies. Unvented <i>attics</i> and unvented enclosed roof framing assemblies created by ceilings applied directly to the underside of the roof framing members/rafters and the structural roof sheathing at the top of the roof framing members shall be permitted where all of the following conditions are met:</p> <ol style="list-style-type: none"> 1. The unvented <i>attic</i> space is completely within the <i>building thermal envelope</i>. 2. No interior Class I vapor retarders are installed on the ceiling side (<i>attic</i> floor) of the unvented <i>attic</i> assembly or on the ceiling side of the unvented enclosed roof framing assembly. 3. Where wood shingles or shakes are used, not less than a minimum 1/4-inch (6.4 mm) vented airspace separates the shingles or shakes and the roofing <i>underlayment</i> above the structural sheathing. 4. In Climate Zones 5, 6, 7 and 8, any <i>air-impermeable insulation</i> shall be a Class II vapor retarder or shall have a Class II vapor retarder coating or covering in direct contact with the underside of the insulation. 5. Insulation shall be located in accordance with the following comply with either Item 5.1 or 5.2, and additionally Item 5.3. <ol style="list-style-type: none"> 5.1. Item 5.1.1, 5.1.2, 5.1.3 or 5.1.4 shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing. <ol style="list-style-type: none"> 5.1.1. Where only <i>air-impermeable insulation</i> is provided, it shall be applied in direct contact with the underside of the structural roof sheathing. 5.1.2. Where air-permeable insulation is provided inside the building thermal envelope, it shall be 		<p>Edits made to clarify code, new requirement also added.</p>

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installed in accordance with Item 5.1.1. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing in accordance with the *R*-values in Table ~~4203.3-1202.3~~ for condensation control.

5.1.3. Where both air-impermeable and air-permeable insulation are provided, the *air-impermeable insulation* shall be applied in direct contact with the underside of the structural roof sheathing in accordance with Item 5.1.1 and shall be in accordance with the *R*-values in Table 1202.3 for condensation control. The *air-permeable insulation* shall be installed directly under the *air-impermeable insulation*.

5.1.4. Alternatively, sufficient rigid board or sheet insulation shall be installed directly above the structural roof sheathing to maintain the monthly average temperature of the underside of the structural roof sheathing above 45°F (7°C). For calculation purposes, an interior air temperature of 68°F (20°C) is assumed and the exterior air temperature is assumed to be the monthly average outside air temperature of the three coldest months.

5.2. In Climate Zones 1, 2 and 3, air-permeable insulation installed in unvented attics shall meet the following requirements:

5.2.1. A vapor diffusion port shall be installed not more than 12 inches (305 mm) from the highest point of the roof, measured vertically from the highest point of the roof to the lower edge of the port.

5.2.2. The port area shall be greater than or equal to 1/600 of the ceiling area. Where there are multiple ports in the attic, the sum of the port areas shall be greater than or equal to the area requirement.

5.2.3. The vapor-permeable membrane in the vapor diffusion port shall have a vapor permeance rating of greater than or equal to 20 perms when tested in accordance with Procedure A of ASTM E96.

5.2.4. The vapor diffusion port shall serve as an air barrier between the attic and the exterior of the building.

5.2.5. The vapor diffusion port shall protect the attic against the entrance of rain and snow.

5.2.6. Framing members and blocking shall not block the free flow of water vapor to the port. Not less than a 2-inch (50 mm) space shall be provided between any blocking and the roof sheathing. Air-permeable insulation shall be permitted within that space.

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	<p>5.2.7. The roof slope shall be greater than or equal to 3 units vertical in 12 units horizontal (3:12).</p> <p>5.2.8. Where only air-permeable insulation is used, it shall be installed directly below the structural roof sheathing, on top the attic floor, or on top of the ceiling.</p> <p>5.2.9. Where only air-permeable insulation is used and is installed directly below the structural roof sheathing, air shall be supplied at a flow rate greater than or equal to 50 cubic feet per minute (23.6 L/s) per 1,000 square feet (93 m²) of ceiling.</p> <p>5.3. The air shall be supplied from ductwork providing supply air to the occupiable space when the conditioning system is operating. Alternatively, the air shall be supplied by a supply fan when the conditioning system is operating. Where performed insulation board is used as the air-impermeable insulation layer, it shall be sealed at the perimeter of each individual sheet interior surface to form a continuous layer.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> Section 1203.3-1202.3 does not apply to special use structures or enclosures such as swimming pool enclosures, data processing centers, hospitals or art galleries. Section 1203.3-1202.3 does not apply to enclosures in Climate Zones 5 through 8 that are humidified beyond 35 percent during the three coldest months. 		
	<p>1202.4 Under-floor ventilation. The space between the bottom of the floor joists and the earth under any building except spaces occupied by basements or cellars shall be provided with ventilation openings through foundation walls or exterior walls. Such openings shall be placed so as to provide cross ventilation of the under-floor space in accordance with Section 1202.4.1, 1202.4.2 or 1202.4.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1203.4.1-1202.4.1 Openings for under-floor ventilation Ventilation openings. Ventilation openings through foundation walls shall be provided. The openings shall be placed so as to provide cross ventilation of the under-floor space. The net area of ventilation openings shall be not less than 1 square foot for each 150 square foot (0.67 m² for each 100 m²) of crawl-space area in accordance with Section 1202.4.1.1 or 1202.4.1.2. Ventilation openings shall be covered for their height and width with any of the following materials, provided that the least dimension of the covering shall be not greater than 1/4 inch (6.4 mm):</p> <ol style="list-style-type: none"> Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<ol style="list-style-type: none"> 2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick. 3. Cast-iron grilles or gratings. 4. Extruded load-bearing vents. 5. Hardware cloth of 0.035-inch (0.89 mm) wire or heavier. 6. Corrosion-resistant wire mesh, with the least dimension not greater than 1/8 inch (3.2 mm). 7. Operable louvres, where ventilation is provided in accordance with Section 1202.4.1.2. 		
	<p>1203.4.2 Exceptions. The following are exceptions to Sections 1203.4 and 1203.4.1:</p> <ol style="list-style-type: none"> 1. Where warranted by climatic conditions, ventilation openings to the outdoors are not required if ventilation openings to the interior are provided. 2. The total area of ventilation openings is permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with a Class I vapor retarder material and the required openings are placed so as to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited. 3. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m²) of crawlspace floor area and the ground surface is covered with a Class I vapor retarder. 4. Ventilation openings are not required where the ground surface is covered with a Class I vapor retarder, the perimeter walls are insulated and the space is conditioned in accordance with the International Energy Conservation Code. 5. For buildings in flood hazard areas as established in Section 1612.3, the openings for under floor ventilation shall be deemed as meeting the flood opening requirements of ASCE 24 provided that the ventilation openings are designed and installed in accordance with ASCE 24. 		

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	1202.4.1.1 Ventilation area for crawl spaces with open earth floors. The net area of ventilation openings for crawl spaces with uncovered earth floors shall be not less than 1 square foot for each 150 square feet (0.67 m ² for each 100 m ²) of crawl space area.		New requirement
	1202.4.1.2 Ventilation area for crawl spaces with covered floors. The net area of ventilation openings for crawl spaces with the ground surface covered with a Class I vapor retarder shall be not less than 1 square foot for each 1,500 square feet (0.67 m ² for each 1000 m ²) of crawl space area.		New requirement
	1202.4.2 Ventilation in cold climates. In extremely cold climates, where a ventilation opening will cause a detrimental loss of energy, ventilation openings to the interior of the structure shall be provided.		New requirement
	1202.4.3 Mechanical ventilation. Mechanical ventilation shall be provided to crawl spaces where the ground surface is covered with a Class I vapor retarder. Ventilation shall be in accordance with Section 1202.4.3.1 or 1202.4.3.2.		New requirement
	1202.4.3.1 Continuous mechanical ventilation. Continuously operated mechanical ventilation shall be provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m ²) of crawl space ground surface area and the ground surface shall be covered with a Class I vapor retarder.		New requirement
	1202.4.3.2 Conditioned space. The crawl space shall be conditioned in accordance with the International Mechanical Code and the walls of the crawl space shall be insulated in accordance with the International Energy Conservation Code.		New requirement
	1202.4.4 Flood hazard areas. For buildings in flood hazard areas as established in Section 1612.3 the openings for under-floor ventilation shall be deemed as meeting the flood opening requirements of ASCE 24 provided that the ventilation openings are designed and installed in accordance with ASCE 24.		New requirement

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	<p>1203.5-1202.5 Natural ventilation.</p>		
	<p>1203.5.1-1202.5.1 Ventilation area required.</p>		
	<p>1203.5.1.1-12032.5.1.1 Adjoining spaces. Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the opening to the adjoining room shall be unobstructed and shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.3 m²). The openable area of the openings to the outdoors shall be based on the total floor area being ventilated.</p> <p>Exception: Exterior openings required for ventilation shall be permit allowed to open into a sunroom with thermal isolation or a patio cover provided that the openable area between the sunroom addition or patio cover and the interior room shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 20 square feet (1.86 m²). The openable area of the openings to the outdoors shall be based on the total floor area being ventilated.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1203.5.1.2-1202.5.1.2 Openings below grade.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	1203.5.2-1202.5.2 Contaminants exhausted.		Edits made to clarify code, no major changes to code requirements.
	1203.5.2.1-1202.5.2.1 Bathrooms.		Edits made to clarify code, no major changes to code requirements.
	1203.5.3-1202.5.3 Openings on yards or courts. Where natural ventilation is to be provided by openings onto yards or courts, such yards or courts shall comply with Section 1206-1205 .		Edits made to clarify code, no major changes to code requirements.
	1203.6-1202.6 Other ventilation and exhaust systems.		
<p>1203.1 General. Buildings shall be provided with natural ventilation in accordance with Section 1203.4, or mechanical ventilation in accordance with the International Mechanical Code.</p> <p>Where the air infiltration rate in a <i>dwelling unit</i> is less than 5 air changes per hour when tested with a blower door at a pressure 0.2 inch w.c. (50 Pa) in accordance with Section 402.4.1.2 of the International Energy Conservation Code—Residential Provisions, the <i>dwelling unit</i> shall be ventilated by mechanical means in accordance with Section 403-402.3 of the International Mechanical Code. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407 of the International Mechanical Code and ASHRAE 170.</p> <p>Moved to 1202.1</p>	<p>SECTION 1204-1203</p> <p>TEMPERATURE CONTROL</p> <p>1204.1-1203.1 Equipment and systems. Interior spaces intended for human occupancy shall be provided with active or passive space heating systems capable of maintaining an indoor temperature of not less than 68°F (20°C) at a point 3 feet (914 mm) above the floor on the design heating day.</p> <p>Exceptions: Space heating systems are not required for:</p> <ol style="list-style-type: none"> 1. Interior spaces where the primary purpose of the space is not associated with human comfort. 2. Group F, H, S or U occupancies. 		Amendment moved to Section 1202.1, no changes.
	<p>SECTION 1205-1204</p> <p>LIGHTING</p> <p>1205.1-1204.1 General. Every space intended for human occupancy shall be provided with natural light by means of exterior glazed openings in accordance with Section 1205.2-1204.2 or shall be provided with artificial light in accordance with Section 1205.3</p>		Edits made to clarify code, no major changes to code requirements.

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	1204.3 . Exterior glazed openings shall open directly onto a public way or onto a yard or court in accordance with Section 1206-1205 .		
	1205.2-1204.2 Natural light.		
	1205.2.1-1204.2.1 Adjoining spaces.		
	<p>1205.2.2-1204.2.2 Exterior openings. Exterior openings required by Section 1205.2-1204.2 for natural light shall open directly onto a public way, yard or court, as set forth in Section 1206-1205.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Required exterior openings are permitted to open into a roofed porch where the porch meets all of the following criteria: <ol style="list-style-type: none"> 1.1. Abuts a public way, yard or court. 1.2. Has a ceiling height of not less than 7 feet (2134 mm). 1.3. Has a longer side at least 65 percent open and unobstructed. 2. Skylights are not required to open directly onto a public way, yard or court. 		Edits made to clarify code, no major changes to code requirements.
	1205.3-1204.3 Artificial light.		
	1205.4-1204.4 Stairway illumination.		

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	1205.4.1-1204.4.1 Controls.		
	1205.5-1204.5 Emergency egress lighting.		
	SECTION 1206-1205 YARDS OR COURTS		
	1206.1-1205.1 General.		
	1206.2-1205.2 Yards.		
	1206.3-1205.3 Courts.		
	1206.3.1-1205.3.1 Court access.		
	1206.3.2-1205.3.2 Air intake.		
	1206.3.3-1205.3.3 Court drainage.		

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	<p style="text-align: center;">SECTION 1207-1206 SOUND TRANSMISSION</p>	<p style="text-align: center;">SECTION 1206 SOUND TRANSMISSION</p>	
	<p>1207.1-1206.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units and sleeping units or between dwelling units and sleeping units and adjacent public areas. such as halls, corridors, stairways or service areas.</p>	<p>1206.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent <i>dwelling units</i> and <i>sleeping units</i> or between <i>dwelling units</i> and <i>sleeping units</i> and adjacent public areas. <u>When required by Chapter 9, Article VI, of the City Code, sound attenuation shall be provided as specified in Appendix N.</u></p>	<p>Amendment moved from Section 1207.1, no changes.</p>
	<p>1207.2-1206.2 Airborne sound. Walls, partitions and floor-ceiling assemblies separating <i>dwelling units</i> and <i>sleeping units</i> from each other or from public or service areas shall have a sound transmission class of not less than 50 <u>where tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of</u> not less than 45 if field tested, for airborne noise where tested in accordance with ASTM E90 <u>ASTM E336 for airborne noise</u>. Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies shall be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">1207.2.1-1206.2.1 Masonry.</p>		
	<p>1207.3-1206.3 Structure-borne sound. Floor-ceiling assemblies between <i>dwelling units</i> and <i>sleeping units</i> or between a <i>dwelling unit</i> or <i>sleeping unit</i> and a public or service area within the structure shall have an impact insulation class rating of not less than 50 <u>where tested in accordance with ASTM E492, or have a Normalized Impact Sound Rating (NISR) of</u> not less than 45 if field test, where tested in accordance with ASTM E492 <u>ASTM E1007</u>. Alternatively, the impact insulation class of floor-ceiling assemblies shall be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures in ASTM E492.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1207.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent <i>dwelling units</i> and <i>sleeping units</i> or between <i>dwelling units</i> and <i>sleeping units</i> and adjacent public areas such as halls, <i>corridors</i>, <i>stairways</i> or <i>service areas</i>. <u>When required by Chapter 9, Article VI, of the City</u></p>	<p style="text-align: center;">SECTION 1207 ENHANCED CLASSROOM ACOUSTICS</p>		<p>Amendment moved to 1206.1, no changes.</p>

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<p><u>Code</u>, sound attenuation shall be provided as specified in Appendix N. Moved to 1206.1</p>	<p>1207.1 General. Enhanced classroom acoustics, where required by this section, shall comply with Section 808 of ICC A117.1.</p>		
	<p>1207.2 Where required. In Group E occupancies, enhanced classroom acoustics shall be provided in all classrooms with a volume of 20,000 cubic feet (566 m³) or less.</p>		<p>New requirement</p>
	<p style="text-align: center;">SECTION 1207-1208 INTERIOR SPACE DIMENSIONS 1207.4 1208.1 Minimum room widths.</p>		
	<p>1208.2 Minimum ceiling heights. Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall have a ceiling height of not less than 7 feet (2134 mm).</p>		
	<p>1207.2 1208.2 Minimum ceiling heights. Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) above the finished floor. Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall have a ceiling height of not less than 7 feet (2134 mm) above the finished floor.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In one- and two-family dwellings, beams or girders spaced not less than 4 feet (1219 mm) on center shall be permitted to project not more than 6 inches (152 mm) below the required ceiling height. 2. If any room in a building has a sloped ceiling, the prescribed ceiling height for the room is required in one-half the area thereof. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof. 3. The height of mezzanines and spaces below mezzanines shall be in accordance with Section 505.1-505.2. 4. Corridors contained within a dwelling unit or sleeping unit in a Group R occupancy shall have a ceiling height of not less than 7 feet (2134 mm) above the finished floor. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1207.2.1 1208.2.1 Furred ceiling.</p>		

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	<p>4207.3 1208.3 Room area. Every dwelling unit shall have not fewer less than one room that shall have not less than 120 square feet (11.2 m²) of net floor area. Other habitable rooms shall have a net floor area of not less than 70 square feet (6.5 m²).</p> <p>Exception: Kitchens are not required to be of a minimum floor area.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4207.4 1208.4 Efficiency dwelling units. An efficiency living unit Efficiency dwelling units shall conform to the requirements of the code except as modified herein:</p> <ol style="list-style-type: none"> 1. The unit shall have a living room of not less than 190 square feet (17.7 m²) of floor area. An additional 100 square feet (9.3 m²) of floor area shall be provided for each occupant of such unit in excess of two. 2. The unit shall be provided with a separate closet. 3. The For other than Accessible, Type A and Type B dwelling units, the unit shall be provided with a kitchen sink, cooking appliance and refrigeration facilities refrigerator, each having a clear working space of not less than 30 inches (762 mm) in front. Light and <i>ventilation</i> conforming to this code shall be provided. 4. The unit shall be provided with a separate bathroom containing a water closet, lavatory and bathtub or shower. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 4208 1209</p> <p style="text-align: center;">ACCESS TO UNOCCUPIED SPACES</p> <p>4208.1 1209.1 Crawl spaces. Crawl spaces shall be provided with not fewer less than one access opening that shall be not less than 18 inches by 24 inches (457 mm by 610 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>4208.2 1209.2 Attic spaces.</p>		
	<p>4208.3 1209.3 Mechanical appliances.</p>		
	<p style="text-align: center;">SECTION 4209 1210</p> <p style="text-align: center;">TOILET AND BATHROOM REQUIREMENTS</p> <p>[P] 4209.1 1210.1 Required fixtures.</p>		

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	[P] 4209.2 1210.2 Finish materials.		
	[P] 4209.2.1 1210.2.1 Floors and wall bases.		
	[P] 4209.2.2 1210.2.2 Walls and partitions.		
	[P] 4209.2.3 1210.2.3 Showers.		
	[P] 4209.2.4 1210.2.4 Waterproof joints.		
	[P] 4209.3 1210.3 Privacy. Public restrooms shall be visually screened from outside entry or exit doorways to ensure user privacy within the restroom. This provision shall also apply where mirrors would compromise personal privacy. Privacy at water closets and urinals shall be provided in accordance with Section 1210.3.1 and 1210.3.2. Exception: Visual screening shall not be required for single-occupant toilet rooms with a lockable door.		New requirement
	[P] 4209.3.1 1210.3.1 Water closet compartment.		
	[P] 4209.3.2 1210.3.2 Urinal partitions.		

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2015 Houston IBC	2021 IBC – Chapter 14 Exterior Walls	2021 Houston Amendment – Chapter 14	Code Analysis
	<p style="text-align: center;">SECTION 1401 GENERAL</p> <p>1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for exterior walls; exterior wall coverings; exterior wall openings; exterior windows and doors; architectural trim; balconies and similar projections; and bay and oriel windows and architectural trim.</p>		
	<p style="text-align: center;">SECTION 1402 DEFINITIONS</p> <p>1402.1 Definitions. The following terms are defined in Chapter 2:</p> <p>ADHERED MASONRY VENEER.</p> <p>ANCHORED MASONRY VENEER.</p> <p>BACKING.</p> <p>EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS).</p> <p>EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE.</p> <p>EXTERIOR WALL.</p> <p>EXTERIOR WALL COVERING.</p> <p>EXTERIOR WALL ENVELOPE.</p> <p>FENESTRATION.</p> <p>FIBER CEMENT SIDING.</p> <p>HIGH PRESSURE DECORATIVE EXTERIOR GRADE COMPACT LAMINATE (HPL).</p> <p>HIGH PRESSURE DECORATIVE EXTERIOR GRADE COMPACT LAMINATE (HPL) SYSTEM.</p> <p>METAL COMPOSITE MATERIAL (MCM).</p> <p>METAL COMPOSITE MATERIAL (MCM) SYSTEM.</p> <p>POLYPROPYLENE SIDING.</p> <p>PORCELAIN TILE.</p> <p>VENEER.</p>		

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	<p>VINYL SIDING.</p> <p>WATER-RESISTIVE BARRIER.</p>		
	<p style="text-align: center;">SECTION 1403-1402</p> <p style="text-align: center;">PERFORMANCE REQUIREMENTS</p> <p>1403.1-1402.1 General.</p>		
	<p>1403.2-1402.2 Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.4-1404.4. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in Section 1404.2-1403.2, and a means for draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section 1405.3-1404.3.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively. 2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.4-1403.2 and 1404.4, shall not be required for an exterior wall envelope that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E331 under the following conditions: <ol style="list-style-type: none"> 2.1. Exterior wall envelope test assemblies shall include at least not fewer than one opening, one control joint, one wall/eave interface and one wall sill. Tested openings and penetrations shall be representative of the intended end-use configuration. 2.2. Exterior wall envelope test assemblies shall be at least not fewer than 4 feet by 8 feet (1219 mm by 2438 mm) in size. 2.3. Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m²). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.</p> <p>The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings or intersections of terminations with dissimilar materials.</p> <p>3. Exterior insulation and finish systems (EIFS) complying with Section 1408.4.1-1407.4.1.</p>		
	<p>[BS] 1403.3-1402.3 Structural.</p>		
	<p>1403.4-1402.4 Fire resistance.</p>		
	<p>1403.5-1402.5 Water-resistive barriers. Vertical and lateral flame propagation. Exterior walls on buildings of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible <i>water-resistive barrier</i> shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. Combustibility shall be determined in accordance with Section 703.3. For the purposes of this section, fenestration products and, flashing of fenestration products and water-resistive-barrier flashing and accessories at other locations, including through wall flashings, shall not be considered part of the <i>water-resistive barrier</i>.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Walls in which the <i>water-resistive barrier</i> is the only combustible component and the <i>exterior wall</i> has a wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1405.2-1404.2. 2. Walls in which the <i>water-resistive barrier</i> is the only combustible component and the <i>water-resistive barrier</i> complies with the following: <ol style="list-style-type: none"> 2.1. A peak heat release rate of less than 150 kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg when tested on specimens at the thickness intended for use, in accordance with ASTM E1354, in the horizontal 		<p>Edits made to clarify code, new requirements for exterior barriers.</p>

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	<p><u>orientation and at an incident radiant heat flux of 50 kW/m².</u></p> <p><u>2.2. A flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723, with test specimen preparation and mounting in accordance with ASTM E2404.</u></p>		
	<p>1403.4-1402.4 Fire resistance.</p>		
	<p>[BS] 1403.7-1402.7 Flood resistance for coastal high-hazard areas and coastal A zones.</p>		
	<p>SECTION 1404-1403 MATERIALS</p> <p>1404.1-1403.1 General.</p>		
	<p>1404.2-1403.2 Water-resistive barrier. Not fewer than one layer of <u>water-resistive barrier material</u> No.15 asphalt felt, complying with ASTM D226 for Type 1 felt or other approved materials with a water resistance complying with ASTM E2556, Type I, shall be attached to the studs or sheathing, with flashing as described in Section 1404.4, in such a manner as to provide a continuous <i>water-resistive barrier</i> behind the exterior wall veneer. <u>Water-resistive barriers shall comply with one of the following:</u></p> <ol style="list-style-type: none"> <u>1. No. 15 felt complying with ASTM D226, Type 1.</u> <u>2. ASTM E2556, Type I or II.</u> <u>3. ASTM E331 in accordance with Section 1402.2.</u> <u>4. Other approved materials installed in accordance with the manufacturer's installation instructions.</u> 		<p>New allowances for water resistive barriers</p>
	<p>1404.2-1403.2 Water-resistive barrier. Not fewer than one layer of No.15 asphalt felt, complying with ASTM D226 for Type 1 felt or other approved materials, shall be attached to the studs or sheathing, with flashing as described in Section 1405.4-1404.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer.</p>		
	<p>[BS] 1404.3-1403.3 Wood.</p>		

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	[BS] 1404.3.1 1403.3.1 Basic hardboard. Basic hardboard shall conform to the requirements of ANSI A135.4.		
	[BS] 1404.3.2 1403.3.2 Hardboard siding. Hardboard siding shall conform to the requirements of ANSI A135.6 and, where used structurally, shall be so identified by the label of an approved agency.		
	[BS] 1404.4 1403.4 Masonry.		
	[BS] 1404.5 1403.5 Metal.		
	[BS] 1404.5.1 1403.5.1 Aluminum siding.		
	[BS] 1404.5.2 1403.5.2 Cold-rolled copper.		
	[BS] 1404.5.3 1403.5.3 Lead-coated copper.		
	[BS] 1404.6 1403.6 Concrete.		
	[BS] 1404.7 1403.7 Glass-unit masonry.		

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	1404.8-1403.8 Plastics.		
	1404.9-1403.9 Vinyl siding.		
	1404.10-1403.10 Fiber-cement siding.		
	1404.11-1403.11 Exterior insulation and finish systems. Exterior insulation and finish systems (EIFS) and exterior insulation and finish systems (EIFS) with drainage shall comply with Section 1406 1407 .		
	1404.12-1403.12 Polypropylene siding. Polypropylene siding shall be certified and labeled as conforming to the requirements of ASTM D7254 and those of Section 1404.12.1 or 1404.12.2 1403.12.1 or 1403.12.2 by an approved quality control agency. Polypropylene siding shall be installed in accordance with the requirements of Section 14054.18 and in accordance with the manufacturer's instructions. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.		
	1404.12.1-1403.12.1 Flame spread index.		
	1404.12.2-1403.12.2 Fire separation distance.		
	1404.13-1403.13 Foam plastic insulation.		
	<u>1403.14 Attachments through insulation. Exterior wall coverings attached to the building structure through foam plastic insulating sheathing shall comply with the attachment requirements of Section 2603.11, 2603.12, or 2603.13.</u>		Edits made to clarify code, no major changes to code requirements.

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	<p>SECTION 1405-1404</p> <p>INSTALLATION OF WALL COVERINGS</p> <p>1405.1-1404.1 General.</p>		
	<p>1405.2-1404.2 Weather protection. Exterior walls shall provide weather protection for the building. The materials of the minimum nominal thickness specified in Table 1405.2-1404.2 shall be acceptable as approved weather coverings.</p>		
	<p>1405.3-1404.3 Vapor retarders. Vapor retarders as described in Section 1404.3.3 shall be provided in accordance with Sections 1404.3.1 and 1404.3.2, or an approved design using accepted engineering practice for hygrothermal analysis. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3), or an approved design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the International Energy Conservation Code.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 1404.3(1)</p> <p>VAPOR RETARDER MATERIALS AND CLASSES</p>		
	<p>TABLE 1404.2</p> <p>MINIMUM THICKNESS OF WEATHER COVERINGS</p>		
	<p>TABLE 1404.3(2)</p> <p>VAPOR RETARDER OPTIONS</p>		New table for vapor retarder materials and classes
	<p>TABLE 1404.3.2 TABLE 1404.3(3)</p> <p>CLASS III VAPOR RETARDERS</p>		
	<p>1405.3.1-1404.3.1 Class I and II vapor retarders. Class I and II vapor retarders shall not be provided on the interior side of frame walls in Zones 1 and 2. Class I vapor retarders shall not be provided on the interior side of frame walls in Zones 3 and 4 other than Marine 4. Class I or II vapor retarders shall be provided on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4. The appropriate zone shall be selected in accordance with Chapter 3 [CE] of the International Energy</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>Conservation Code Commercial Provisions. Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3.1 and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Basement walls. 2. Below-grade portion of any wall. 3. Construction where accumulation, condensation or freezing of moisture will not damage the materials. 4. Conditions where Class III vapor retarders are required in Section 1404.3.2. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones. 		
	<p style="text-align: center;">TABLE 1404.3.1 CONTINUOUS INSULATION WITH CLASS II VAPOR RETARDER</p>		
	<p>1405.3.2-1404.3.2 Class III vapor retarders. Class III vapor retarders shall be permitted where any one of the conditions in Table 1404.3.2 is met. Only Class III vapor retarders shall be used on the interior side of frame walls where foam plastic insulating sheathing with a perm rating of less than 1 is applied in accordance with Table 1405.3.2-1404.3(3) on the exterior side of the frame wall.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1404.3.2.1 Spray foam plastic insulation for moisture control with Class III vapor retarders. For purposes of compliance with Table 1404.3(3), spray foam with a maximum permeance of 1.5 perms at the installed thickness applied to the interior cavity side of wood structural panels, fiberboard, insulating sheathing or gypsum shall be deemed to meet the continuous insulation R-value requirement where the spray foam R-value meets or exceeds the specified continuous insulation R-value.</p>		<p>New allowances for spray foam</p>
	<p>1404.3.2.1.1 Hybrid insulation for moisture control with Class III vapor retarders. For the purposes of compliance with Table 1404.3(3), the combined R-values of spray foam plastic insulation and continuous</p>		<p>New allowances</p>

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	<p><u>insulation shall be permitted to be counted toward the continuous R-value requirement.</u></p>		
	<p>1404.3.3 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly. The following shall be deemed to meet the class specified:</p> <p>Class I: Sheet polyethylene, nonperforated aluminum foil with a perm rating of less than or equal to 0.1.</p> <p>Class II: Kraft faced fiberglass batts or paint with a perm rating greater than 0.1 and less than or equal to 1.0.</p> <p>Class III: Latex or enamel paint with a perm rating of greater than 1.0 and less than or equal to 10.0.</p>		
	<p>1404.3.4 Minimum clear airspaces and vented openings for vented cladding. For the purposes of this section, vented cladding shall include the following minimum clear airspaces:</p> <ol style="list-style-type: none"> 1. Vinyl, polypropylene or horizontal aluminum siding applied over a weather resistive barrier as specified in this chapter. 2. Brick veneer with a clear airspace as specified in this code. 3. Other approved vented claddings. 		
	<p>1405.3.4 1404.4 Flashing. Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect that moisture to the exterior surface of the exterior wall finish or to a water-resistive barrier complying with Section 1403.2 and that is part of a means of drainage complying with Section 1402.2. Flashing shall be installed at the perimeters of exterior door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim. Where self-adhered membranes are used as flashings of fenestration in wall assemblies, those self-adhered flashings shall comply with AAMA 711. Where fluid applied membranes are used as flashing for exterior wall openings, those fluid applied membrane flashings shall comply with AAMA 714.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	1405.4.1-1404.4.1 Exterior wall pockets.		
	1405.4.2-1404.4.2 Masonry. Flashing and weep holes in anchored veneer shall be located in the first course of masonry above finished ground level above the foundation wall or slab, and other points of support, including structural floors, shelf angles and lintels where anchored veneers are designed in accordance with Section 1405.6. Flashing and weep holes in anchored veneer designed in accordance with Section 1404.6 shall be located not more than 10 inches (245 mm) above finished ground level above the foundation wall or slab. At other points of support including structural floors, shelf angles and lintels, flashing and weep holes shall be located in the first course of masonry above the support.		Edits made to clarify code, no major changes to code requirements.
	1405.5-1404.5 Wood veneers.		
	[BS] 1405.6-1404.6 Anchored masonry veneer. Anchored masonry veneer shall comply with the provisions of Sections 1405.6-1404.6, 1405.7, through 1405.8 and 1405.9 1404.9 and Sections 12.1 and 12.2 of TMS 402/ACI 530/ASCE 5.		Edits made to clarify code, no major changes to code requirements.
	[BS] 1405.6.1-1404.6.1 Tolerances. Anchored masonry veneers in accordance with Chapter 14 are not required to meet the tolerances in Article 3.3 F1 of TMS 602/ACI 530.1/ASCE 6.		Edits made to clarify code, no major changes to code requirements.
	[BS] 1405.6.2-1404.6.2 Seismic requirements. Anchored masonry veneer located in Seismic Design Category C, D, E or F shall conform to the requirements of Section 12.2.2.10-12.2.2.11 of TMS 402/ACI 530/ASCE 5.		
	[BS] 1405.7-1404.7 Stone veneer. Anchored stone veneer units not exceeding 10 inches (254 mm) in thickness shall be anchored directly to masonry, concrete or to stud construction by one of the following methods: 1. With concrete or masonry backing, anchor ties shall be not less than 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal, formed beyond the base of the backing. The legs of the loops shall be not less than 6 inches (152 mm) in length bent at right angles and laid in the mortar joint, and spaced so that the eyes or loops are 12 inches (305 mm) maximum on center in both directions.		

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	<p>There shall be provided not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire tie, or approved equal, threaded through the exposed loops for every 2 square feet (0.2 m²) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length bent so that the tie will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.</p> <p>2. With wood stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) zinc-coated or nonmetallic coated wire mesh with two layers of water-resistive barrier in accordance with Section 4404.2-1403.2 shall be applied directly to wood studs spaced not more than 16 inches (406 mm) on center. On studs, the mesh shall be attached with 2-inch-long (51 mm) corrosion-resistant steel wire furring nails at 4 inches (102 mm) on center providing a minimum 1.125-inch (29 mm) penetration into each stud and with 8d annular threaded nails at 8 inches (203 mm) on center. into top and bottom plates or with equivalent wire ties. There shall be not less than a 0.1055-inch (2.68 mm) zinc-coated or nonmetallic coated wire, or approved equal, attached to the stud with not smaller than an 8d (0.120 in. diameter) annular threaded nail for every 2 square feet (0.2 m²) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that the tie will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.</p> <p>3. With cold-formed steel stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) zinc-coated or nonmetallic coated wire mesh with two layers of water-resistive barrier in accordance with Section 4404.2-1403.2 shall be applied directly to steel studs spaced a not more than 16 inches (406 mm) on center. The mesh shall be attached with corrosion-resistant #8 self-drilling, tapping screws at 4 inches (102 mm) on center, and at 8 inches (203 mm) on center into top and bottom tracks or with equivalent wire ties. Screws shall extend through the steel connection not fewer than three exposed threads. There shall be not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal, attached to the stud with not smaller than a #8 self-drilling, tapping screw extending through the steel framing not fewer than three exposed threads for every 2 square feet (0.2 m²) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that the tie will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer. The cold-</p>		
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	formed steel framing members shall have a minimum bare steel thickness of 0.0428 inches (1.087 mm).		
	[BS] 1405.8 1404.8 Slab-type veneer.		
	[BS] 1405.9 1404.9 Terra cotta.		
	[BS] 1405.10 1404.10 Adhered masonry veneer. Adhered masonry veneer shall comply with the applicable requirements in this section and Sections 12.1 and 12.3-12.2 of TMS 402 ACI 530 ASCE 5 .		
	[BS] 1405.10.4 1404.10.1 Exterior adhered masonry veneer. Exterior adhered masonry veneer shall be installed in accordance with Section 1405.10-1404.10 and the manufacturer's instructions.		
	[BS] 1405.10.1.1 1404.10.1.1 Water-resistive barriers.		
	[BS] 1405.10.1.2 1404.10.1.2 Flashing. Flashing shall comply with the applicable requirements of Section 1405.4-1404.4 and the following.		
	[BS] 1405.10.1.2.1 1404.10.1.2.1 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26 gage galvanized or plastic with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be installed to extend not less than 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section 1405.4-1404.4 . The water-resistive barrier shall lap over the exterior of the attachment flange of the screed or flashing.		

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	[BS] 1405.10.1.3 1404.10.1.3 Clearances.		
	[BS] 1405.10.1.4 1404.10.1.4 Adhered masonry veneer installed with lath and mortar.		
	[BS] 1405.10.1.4.1 1404.10.1.4.1 Lathing.		
	[BS] 1405.10.1.4.2 1404.10.1.4.2 Scratch coat.		
	[BS] 1405.10.1.4.3 1404.10.1.4.3 Adhering veneer.		
	[BS] 1405.10.1.5 1404.10.1.5 Adhered masonry veneer applied directly to masonry and concrete. Adhered masonry veneer applied directly to masonry or concrete shall comply with the applicable requirements of Section 1405.10.1404.10 1404.10 and with the requirements of Section 1405.10.1.4-1404.10.1.4 1404.10.1.4 or 2510.7.		
	[BS] 1405.10.1.6 1404.10.1.6 Cold weather construction.		
	[BS] 1405.10.1.7 1404.10.1.7 Hot weather construction.		
	[BS] 1405.10.2 1404.10.2 Exterior adhered masonry veneers—porcelain tile. Adhered units weighing more than 3.5 pounds per square foot (0.17 kN/m²) shall not exceed 5/8 inch (15.8 mm) thickness and 24 inches (610) (48 inches (1219 mm) in any face dimension nor more than 96 96 square feet (0.43 0.8 0.8 m ²) in total face area and shall not weight more than 6 pounds per square foot (0.29 kN/m²) .		Edits made to clarify code, no major changes to code requirements.

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	<p>Adhered units weighing less than or equal to 3.5 pounds per square foot (0.17 kN/m²) shall not exceed 72 inches (1829 mm) in any face dimension nor more than 17.5 square feet (1.6 m²) in total face area. Porcelain tile shall be adhered to an approved backing system.</p>		
	<p>[BS] 1405.10.3 1404.10.3 Interior adhered masonry veneers. Interior adhered masonry veneers shall have a maximum weight of 20 psf (0.958 kg/m²) and shall be installed in accordance with Section 1405.10 1404.10. Where the interior adhered masonry veneer is supported by wood construction, the supporting members shall be designed to limit deflection to 1/600 of the span of the supporting members.</p>		
	<p>[BS] 1405.11 1404.11 Metal veneers.</p>		
	<p>[BS] 1405.11 1404.11 Metal veneers.</p>		
	<p>1405.11.2 1404.11.2 Weather protection. Metal supports for exterior metal veneer shall be protected by painting, galvanizing or by other equivalent coating or treatment. Wood studs, furring strips or other wood supports for exterior metal veneer shall be approved pressure-treated wood or protected as required in Section 1403.2 1402.2. Joints and edges exposed to the weather shall be caulked with approved durable waterproofing material or by other approved means to prevent penetration of moisture.</p>		
	<p>1405.11.3 1404.11.3 Backup.</p>		
	<p>1405.11.4 1404.11.4 Grounding.</p>		
	<p>[BS] 1405.12 1404.12 Glass veneer.</p>		

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	[BS] 1405.12.1 1404.12.1 Length and height.		
	[BS] 1405.12.2 1404.12.2 Thickness.		
	[BS] 1405.12.3 1404.12.3 Application.		
	[BS] 1405.12.4 1404.12.4 Installation at sidewalk level. Where glass extends to a sidewalk surface, each section shall rest in an approved metal molding, and be set at least not less than 1/4 inch (6.4 mm) above the highest point of the sidewalk. The space between the molding and the sidewalk shall be thoroughly caulked and made water tight.		Edits made to clarify code, no major changes to code requirements.
	[BS] 1405.12.4.1 1404.12.4.1 Installation above sidewalk level.		
	[BS] 1405.12.5 1404.12.5 Joints.		
	[BS] 1405.12.5 1404.12.6 Mechanical fastenings.		
	[BS] 1405.12.7 1404.12.7 Flashing.		
	1405.13 1404.13 Exterior windows and doors.		

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	<p>14054.13.1 1404.13.1 Installation.</p>		
	<p>[BS] 1404.14-1404.14 Vinyl siding. Vinyl siding conforming to the requirements of this section and complying with ASTM D3679 shall be permitted on exterior walls where the design wind pressure determined in accordance with Section 1609 does not exceed 30 pounds per square foot (1.44 kN/m²). Where the design wind pressure exceeds 30 pounds per square foot (1.44 kN/m²), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building. of buildings located in areas where Vasd as determined in accordance with Section 1609.3.1 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where Vasd as determined in accordance with Section 1609.3.1 exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BS] 1404.14.1-1404.14.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform to the water-resistive barrier requirements in Section 1402. Siding and accessories shall be installed in accordance with the approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall have a minimum 0.313 inch (7.9 mm) head diameter and 1/8 inch (3.18 mm) shank diameter. The nails shall be corrosion resistant and shall be long enough to penetrate the studs or nailing strip not less than 3/4 inch (19 mm). For cold-formed steel light frame construction, corrosion resistant fasteners shall be used. Screw fasteners shall penetrate the cold formed steel framing not fewer than three exposed threads. Other fasteners shall be installed in accordance with the approved construction documents and manufacturer's instructions. Where the siding is installed horizontally, the fastener spacing shall not exceed 16 inches (406 mm) horizontally and 12 inches (305 mm) vertically. Where the siding is installed vertically, the fastener spacing shall not exceed 12 inches (305 mm) horizontally and 12 inches (305 mm) vertically.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1404.14.1.1 Fasteners and fastener penetration for wood construction. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall be corrosion resistant and have not less than a 0.313-inch (7.9 mm) head diameter and 1/8-inch (3.18 mm) shank diameter. The penetration into nailable substrate shall be not less than 1 1/4 inches (32 mm).</p>		<p>New requirement</p>
	<p>1404.14.1.2 Fasteners and fastener penetration for cold-formed steel light-frame construction. For cold-formed steel light-frame construction, corrosion-resistant fasteners shall be used. Screw fasteners shall penetrate through the steel with not fewer than three exposed threads. Other fasteners shall be installed in accordance with the approved construction documents and manufacturer's instructions.</p>		<p>New requirement</p>
	<p>1404.14.1.3 Fastener spacing. Unless specified otherwise by the approved manufacturer's instructions, fasteners shall be installed in the middle third of the slots of the nail hem and spacing between fasteners shall be not greater than 16 inches (406 mm) for horizontal siding and 12 inches (205 mm) for vertical siding.</p>		<p>New requirement</p>
	<p>[BS] 1405.15 1404.15 Cement plaster.</p>		
	<p>[BS] 1405.16 1404.16 Fiber-cement siding. Fiber-cement siding complying with Section 1404.10 1403.10 shall be permitted on exterior walls of Type I, II, III, IV and V construction for wind pressure resistance or wind speed exposures as indicated by the manufacturer's listing and label and approved installation instructions. Where specified, the siding shall be installed over sheathing or materials listed in Section 2304.6 and shall be installed to conform to the water-resistive barrier requirements in Section 1403 1402. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding to wood studs shall be corrosion-resistant round head smooth shank and shall be long enough to penetrate the studs at least not fewer than 1 inch (25 mm). For cold-formed steel light-frame construction, corrosion-resistant fasteners shall be used. Screw fasteners shall penetrate the cold-formed steel framing at least not fewer than three exposed full threads. Other fasteners shall be installed in accordance with the approved construction documents and manufacturer's instructions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[BS] 1405.16.2-1404.16.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches (305 mm) shall comply with the requirements of ASTM C1186, Type A, minimum Grade II (or ISO 8336, Category A, minimum Class 2). Lap siding shall be lapped a minimum of not less than 1 1/4 inches (32 mm) and lap siding not having tongue-and-groove end joints shall have the ends protected with caulking, covered with an H-section joint cover, located over a strip of flashing or shall be otherwise designed to comply with Section 1403.2-1402.2. Lap siding courses shall be installed with the fastener heads exposed or concealed in accordance with the approved manufacturer's instructions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BS] 1405.17-1404.17 Fastening. Weather boarding and wall coverings shall be securely fastened with aluminum, copper, zinc, zinc-coated or other approved corrosion-resistant fasteners in accordance with the nailing schedule in Table 2304.10.1 or the approved manufacturer's instructions. Shingles and other weather coverings shall be attached with appropriate standard-shingle nails to furring strips securely nailed to studs, or with approved mechanically bonding nails, except where sheathing is of wood not less than 1-inch (25 mm) nominal thickness or of wood structural panels as specified in Table 2308.9.3(3)-2308.6.3(3).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BS] 1405.18-1404.18 Polypropylene siding. Polypropylene siding conforming to the requirements of this section and complying with Section 14043.12 shall be limited to exterior walls of Type VB construction located in areas where the wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Polypropylene siding shall be installed in accordance with the manufacturer's instructions. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1406-1405 COMBUSTIBLE MATERIALS ON THE EXTERIOR SIDE OF EXTERIOR WALLS</p> <p>1406.1 General. Section 1406 shall apply to exterior wall coverings, balconies and similar projections, and bay and oriel windows constructed of combustible materials.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1406.2-1405.1 Combustible exterior wall coverings.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1406.2.1-1405.1.1 Types I, II, III and IV construction. On buildings of Types I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of combustible materials, complying with the following limitations:</p> <ol style="list-style-type: none"> 1. Combustible exterior wall coverings shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less. 2. Combustible exterior wall coverings shall be limited to 40 feet (12 192 mm) in height above grade plane. 3. Combustible exterior wall coverings constructed of fire-retardant-treated wood complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the fire separation distance is 5 feet (1524 mm) or less and shall be permitted up to 60 feet (18 288 mm) in height above grade plane regardless of the fire separation distance. 4. Wood veneers shall comply with Section 14054.5. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1406.2.1.1-1405.1.1.1 Ignition resistance. Where permitted by Section 14065.21.1, combustible exterior wall coverings shall be tested in accordance with NFPA 268.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Wood or wood-based products. 2. Other combustible materials covered with an exterior weather covering, other than vinyl sidings, included in and complying with the thickness requirements of Table 14054.2. 3. Aluminum having a minimum thickness of 0.019 inch (0.48 mm). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1406.2.1.1.1-1405.1.1.1.1 Fire separation 5 feet or less.</p>		
	<p>1406.2.1.1.2-1405.1.1.1.2 Fire separation greater than 5 feet. For fire separation distances greater than 5 feet (1524 mm), any exterior wall covering shall be</p>		

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	<p>permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the exterior wall covering shall be determined from Table 14065.21.1.1.2 based on the maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the exterior wall covering.</p>		
	<p>1406.2.2 1405.1.2 Location.</p>		
	<p>1406.2.3 1405.1.3 Fireblocking.</p>		
	<p>1406.3 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant-treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of Type IV construction in accordance with Section 602.4. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. On buildings of Type I and II construction, three stories or less above grade plane, fire-retardant-treated wood shall be permitted for balconies, porches, decks and exterior stairways not used as required exits. 2. Untreated wood is permitted for pickets and rails or similar guardrail devices that are limited to 42 inches (1067 mm) in height. 3. Balconies and similar projections on buildings of Type III, IV and V construction shall be permitted to be of Type V construction, and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas. 4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1406.4 Bay and oriel windows. Bay and oriel windows shall conform to the type of construction required for the building to which they are attached.</p> <p>Exception: Fire retardant treated wood shall be permitted on buildings three stories or less above grade plane of Type I, II, III or IV construction.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 1407-1406</p> <p>METAL COMPOSITE MATERIALS (MCM)</p> <p>1407.1-1406.1 General.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1407.2-1406.2 Exterior wall finish covering. MCM used as exterior wall finish covering or as elements of balconies and similar projections and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1407.4 through 1407.13-1406.4 through 1406.13.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1407.3-1406.3 Architectural trim and embellishments. MCM used as architectural trim or embellishments shall comply with Sections 1407.7 through 1407.14 1406.7 through 1406.14.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1407.4-1406.4 Structural design.</p>		
	<p>1407.5-1406.5 Approval.</p>		
	<p>1407.6-1406.6 Weather resistance. MCM systems shall comply with Section 1403-1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1407.7-1406.7 Durability. MCM systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1407-1406 for the duration of use.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1407.8-1406.8 Fire-resistance rating. Where MCM systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.</p> <p>Exception: MCM systems that are part of an exterior wall envelope not containing foam plastic insulation which and are</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>installed on the outer surface of a fire-resistance-rated <i>exterior wall</i> in a manner such that the attachments do not penetrate through the entire <i>exterior wall</i> assembly, shall not be required to comply with this section.</p>		
	<p>1407.9-1407.6.9 Surface-burning characteristics.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1406.10 Type I, II, III and IV construction. Where installed on buildings of Type I, II, III and IV construction, metal composite material (MCM) shall comply with Sections 1406.10.1 and through 1406.10.4, or Section 1406.11 1406.10.3 1406.10.2 for installations up to 40 feet (12 192 mm) above grade plane. Where installed on buildings of Type I, II, III and IV construction, MCMs and MCM systems shall comply with Sections 1406.10.1 through 1406.10.3 for installations greater than 40 feet (12 192 mm) above grade plane.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1407.10.1-1406.10.1 Surface-burning characteristics.</p>		
	<p>1407.10.2-1406.10.2 Thermal barriers. MCM shall be separated from the interior of a building by an approved thermal barrier consisting of ½-inch (12.7 mm) <i>gypsum wallboard</i> or material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.</p> <p>Exceptions:</p> <p>1. The MCM system is specifically approved based on tests conducted in accordance with NFPA 286 and with the acceptance criteria of Section 803.1.1.1, UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.</p> <p>2. The MCM is used as elements of balconies and similar projections, architectural trim or embellishments.</p>		<p>New exception.</p>

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	<p>1406.10.3 Thermal barrier not required. The thermal barrier specified for MCM in Section 1406.10.2 is not required where:</p> <ol style="list-style-type: none"> 1. The MCM system is specifically approved based on tests conducted in accordance with NFPA 286 and with the acceptance criteria of Section 803.1.1.1, UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use. 2. The MCM is used as elements of balconies and similar projections, architectural trim or embellishments. 		
	<p>1406.10.4 1406.10.3 Full-scale tests.</p>		
	<p>1406.11 Alternate conditions. MCM and MCM systems shall not be required to comply with Sections 1406.10.1 through 1406.10.3 provided that such systems comply with Section 1406.11.1, 1406.11.2, 1406.11.3 or 1406.11.4.</p>		
	<p>1406.11.1 Installations up to 40 feet in height. MCM shall not be installed more than 40 feet (12 190 mm) in height above grade where installed in accordance with Sections 1406.11.1.1 and 1406.11.1.2.</p>		
	<p>1406.11.1.1 Fire separation distance of 5 feet or less. Where the fire separation distance is 5 feet (1524 mm) or less, the area of MCM shall not exceed 10 percent of the exterior wall surface.</p>		
	<p>1406.11.1.2 Fire separation distance greater than 5 feet. Where the fire separation distance is greater than 5 feet (1524 mm), the area of exterior wall surface coverage using MCM shall not be limited.</p>		
	<p>1406.11.2 Installations up to 50 feet in height. MCM shall not be installed more than 50 feet (15 240 mm) in height above grade where installed in accordance with Sections 1406.11.2.1 and 1406.11.2.2.</p>		

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	<p>1406.11.2.1 Self ignition temperature. MCM shall have a self ignition temperature of 650°F (343°C) or greater when tested in accordance with D1970/D1970M-2017A.</p>		
	<p>1406.11.2.2 Limitations. Sections of MCM shall not exceed 300 square feet (27.9 m2) in area and shall be separated by not less than 4 feet (1219 mm) vertically.</p>		
	<p>1406.11.3 Installations up to 75 feet in height (Option 1).MCM shall not be installed more than 75 feet (22 860 mm) in height above grade plane where installed in accordance with Sections 1406.11.3.1 through 1406.11.3.5.</p> <p>Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be exempt from the height limitation.</p>		
	<p>1406.11.3.1 Prohibited occupancies. MCM shall not be permitted on buildings classified as Group A-1, A-2, H, I-2 or I-3 occupancies.</p>		
	<p>1406.11.3.2 Nonfire resistance rated exterior walls. MCM shall not be permitted on exterior walls required to have a fire resistance rating by other provisions of this code.</p>		
	<p>1406.11.3.3 Specifications. MCM shall be required to comply with all of the following:</p> <ol style="list-style-type: none"> 1. MCM shall have a self ignition temperature of 650°F (343°C) or greater when tested in accordance with D1970/D1970M-2017A. 2. MCM shall conform to one of the following combustibility classifications when tested in accordance with D1143/D1143M-2007(2013)E1: <ul style="list-style-type: none"> Class CC1: Materials that have a burning extent of 1 inch (25 mm) or less when tested at a nominal thickness of 0.060 inch (1.5 mm) or in the thickness intended for use. Class CC2: Materials that have a burning rate of 2 1/2 inches per 		

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	<p>minute (1.06 mm/s) or less when tested at a nominal thickness of 0.060 inch (1.5 mm) or in the thickness intended for use.</p>		
	<p>1406.11.3.4 Area limitation and separation. The maximum area of a single MCM panel and the minimum vertical and horizontal separation requirements for MCM panels shall be as provided for in Table 1406.11.3.4. The maximum percentage of exterior wall area of any story covered with MCM panels shall not exceed that indicated in Table 1406.11.3.4 or the percentage of unprotected openings permitted by Section 705.8, whichever is smaller.</p> <p>Exception: In buildings provided with flame barriers complying with Section 705.8.5 and extending 30 inches (760 mm) beyond the exterior wall in the plane of the floor, a vertical separation shall not be required at the floor other than that provided by the vertical thickness of the flame barrier.</p>		
	<p>Table 1406.11.3.4</p>		
	<p>1406.11.3.5 Automatic sprinkler system increases. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum percentage area of exterior wall of any story covered with MCM panels and the maximum square footage of a single area of MCM panels in Table 1406.11.3.4 shall be increased 100 percent. The area of MCM panels shall not exceed 50 percent of the exterior wall area of any story or the area permitted by Section 705.8 for unprotected openings, whichever is smaller.</p>		
	<p>1406.11.4 Installations up to 75 feet in height (Option 2).MCM shall not be installed more than 75 feet (22 860 mm) in height above grade plane where installed in accordance with Sections 1406.11.4.1 through 1406.11.4.4.</p> <p>Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be exempt from the height limitation.</p>		

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	<p>1406.11.4.1 Minimum fire separation distance. MCM shall not be installed on any wall with a fire separation distance less than 30 feet (9 144 mm).</p> <p>Exception: Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the fire separation distance shall be permitted to be reduced to not less than 20 feet (6096 mm).</p>		
	<p>1406.11.4.2 Specifications .MCM shall be required to comply with all of the following:</p> <p>1. MCM shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with D1970/D1970M-2017A.</p> <p>2. MCM shall conform to one of the following combustibility classifications when tested in accordance with D1143/D1143M-2007(2013)E1:</p> <p>Class CC1: Materials that have a burning extent of 1 inch (25 mm) or less when tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use.</p> <p>Class CC2: Materials that have a burning rate of 2 1/2 inches per minute (1.06 mm/s) or less when tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use.</p>		
	<p>1406.11.4.3 Area and size limitations. The aggregate area of MCM panels shall not exceed 25 percent of the area of any exterior wall face of the story on which those panels are installed. The area of a single MCM panel installed above the first story above grade plane shall not exceed 16 square feet (1.5 m²) and the vertical dimension of a single MCM panel shall not exceed 4 feet (1219 mm).</p> <p>Exception: Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum aggregate area of MCM panels shall be increased to 50 percent of the exterior wall face of the story on which those panels are installed and</p>		

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	<p>there shall not be a limit on the maximum dimension or area of a single MCM panel.</p>		
	<p>1406.11.4.4 Vertical separations. Flame barriers complying with Section 705.8 and extending 30 inches (762 mm) beyond the exterior wall or a vertical separation of not less than 4 feet (1219 mm) in height shall be provided to separate MCM panels located on the exterior walls at one-story intervals.</p> <p>Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.</p>		
	<p>1406.12 1406.11 Type V construction.</p>		
	<p>1406.13 1406.12 Foam plastic insulation. Where MCM systems are included in an exterior wall envelope containing foam plastic insulation, the exterior wall envelope shall also comply with the requirements of Section 2603.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1406.14 1406.13 Labeling. MCM shall be labeled in accordance with Section 1703.5.</p>		
	<p>SECTION 1408-1407</p> <p>EXTERIOR INSULATION AND FINISH SYSTEMS</p> <p>(EIFS)</p> <p>1408.1 1407.1 General.</p>		
	<p>1408.2 1407.2 Performance characteristics.</p>		
	<p>[BS] 1408.3 1407.3 Structural design.</p>		

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	1408.4.1 1407.4 Weather resistance. EIFS shall comply with Section 1403-1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's application instructions.		
	1408.4.1 1407.4.1 EIFS with drainage.		
	1408.4.1.1 1407.4.1.1 Water-resistive barrier. For EIFS with drainage, the water-resistive barrier shall comply with Section 1404.2-1403.2 or ASTM E2570.		
	1408.5 1407.5 Installation.		
	1408.6 1407.6 Special inspections.		
	SECTION 1409-1408 HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATES (HPL) 1409.1-1408.1 General.		
	1409.2-1408.2 Exterior wall finish covering. HPL used as exterior wall covering or as elements of balconies and similar projections and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1409.4 and 1409.14 1408.4 through 1408.14 .		Edits made to clarify code, no major changes to code requirements.
	1409.3-1408.3 Architectural trim and embellishments. HPL used as architectural trim or embellishments shall comply with Sections 1409.7 through 1409.14 1408.7 through 1408.14 .		Edits made to clarify code, no major changes to code requirements.
	[BS] 1409.4 1408.4 Structural design.		

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	1409.5 1408.5 Approval.		
	1409.6 1408.6 Weather resistance. HPL systems shall comply with Section 1403-1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's instructions.		
	1409.7 1408.7 Durability. HPL systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1409-1408 for the duration of use.		
	1409.9 1408.8 Fire-resistance rating.		
	1409.9 1408.9 Surface-burning characteristics.		
	1409.10 1408.10 Type I, II, III and IV construction. Where installed on buildings of Type I, II, III and IV construction, HPL systems shall comply with Sections 1409.10.1 through 1409.10.4 1408.10.1 through 1408.10.4 , or Section 1409.11-1408.11 .		
	1409.10.1 1408.10.1 Surface-burning characteristics.		
	1409.10.2 1408.10.2 Thermal barriers.		
	1408.10.3 Thermal barrier not required. The thermal barrier specified for HPL in Section 1409.10.2-1408.10.2 is not required where: <ol style="list-style-type: none"> The HPL system is specifically approved based on tests conducted in accordance with NFPA 286 and with the acceptance criteria of Section 803.1.1.1, or with UL 1040 or UL 1715. Such testing shall be performed with the HPL in the minimum and maximum thicknesses intended for use. The HPL system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use. 		Edits made to clarify code, no major changes to code requirements.

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	2. The HPL is used as elements of balconies and similar projections, architectural trim or embellishments.		
	1409.11-1408.11 Alternate conditions. HPL and HPL systems shall not be required to comply with Sections 1409.10.1 through 1409.10.4 1408.10.1 through 1408.10.4 provided that such systems comply with Section 1409.11.1 or 1409.11.2 1408.11.1 or 1408.11.2 .		Edits made to clarify code, no major changes to code requirements.
	1409.11.1-1408.11.1 Installations up to 40 feet in height. HPL shall not be installed more than permitted to be installed up to 40 feet (12 190 mm) in height above <i>grade plane</i> where installed in accordance with Section 1408.11.1.1 or 1408.11.1.2 .		Edits made to clarify code, no major changes to code requirements.
	1408.11.2 Installations up to 50 feet in height. HPL shall not be installed more than 50 feet (15 240 mm) in height above <i>grade plane</i> where installed in accordance with Sections 1408.11.2.1 and 1408.11.2.2 .		
	1408.11.2.1 Self ignition temperature. HPL shall have a self ignition temperature of 650°F (343°C) or greater when tested in accordance with D1970/D1970M-2017A .		
	1408.11.2.2 Limitations. Sections of HPL shall not exceed 300 square feet (27.9 m ²) in area and shall be separated by a minimum 4 feet (1219 mm) vertically.		
	1409.12-1408.12 Type V construction.		
	1409.13-1408.13 Foam plastic insulation. HPL systems containing foam plastic insulation shall also also comply with the requirements of Section 2603.		Edits made to clarify code, no major changes to code requirements.
	1409.14-1408.14 Labeling.		
	SECTION 1409 PLASTIC COMPOSITE DECKING 1410.1-1409.1 Plastic composite decking. Exterior deck boards, stair treads, handrails and guards systems systems constructed of plastic		Edits made to clarify code, no major changes to code requirements.

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composites, including plastic lumber, shall comply with Section 2612.

2015 Houston IBC – Chapter 15
Roof Assemblies and Rooftop Structures

2021 IBC – Chapter 15

2021 Houston Amendments – Chapter 15

Code Analysis

SECTION 1501
GENERAL

~~[P] 1502.1 Definitions-General. The following terms are defined in Chapter 2:~~
~~AGGREGATE.~~
~~BALLAST.~~
~~BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) PRODUCT.~~
~~BUILT UP ROOF COVERING.~~
~~INTERLAYMENT.~~
~~MECHANICAL EQUIPMENT SCREEN.~~
~~METAL ROOF PANEL.~~
~~METAL ROOF SHINGLE.~~
~~MODIFIED BITUMEN ROOF COVERING.~~
~~PENTHOUSE.~~
~~PHOTOVOLTAIC MODULE.~~
~~PHOTOVOLTAIC PANEL.~~
~~PHOTOVOLTAIC PANEL SYSTEM.~~
~~PHOTOVOLTAIC SHINGLES.~~
~~POSITIVE ROOF DRAINAGE.~~
~~RADIANT BARRIER.~~
~~REROOFING.~~
~~ROOF ASSEMBLY.~~
~~ROOF COVERING.~~
~~ROOF COVERING SYSTEM.~~
~~ROOF DECK.~~
~~ROOF RECOVER.~~
~~ROOF REPAIR.~~

SECTION 1502
ROOF DRAINAGE

~~[P] 1502.1 General.~~ Design and installation of roof drainage systems shall comply with this section, Section 1611 of this code and Chapter 11 of the ~~International~~ Plumbing Code.

Edits made to clarify code, no major changes to code requirements.
 Removed specific references in previous Houston amendment, no major change as provisions are correlated to Ch. 11 of the UPC.

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	<p>ROOF REPLACEMENT. ROOF VENTILATION. ROOFTOP STRUCTURE. SCUPPER. SINGLE-PLY MEMBRANE. UNDERLAYMENT. VEGETATIVE ROOF.</p> <p>Design and installation of roof drainage system shall comply with this section, Section 1502 of this code and Sections 1106 and 1108, as applicable, and Chapter 11 of the <i>International Plumbing Code</i>.</p>		
	<p>[P] 1502.2 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The installation and sizing of secondary emergency overflow drains, leaders and conductors shall comply with Sections 1106 and 1108, as applicable, Section 1611 of this code and Chapter 11 of the <i>International Plumbing Code</i>.</p>	<p>[P] 1502.2 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The installation and sizing of secondary emergency overflow drains, leaders and conductors shall comply with Section 1611 of this code and Chapter 11 of the <i>International Plumbing Code</i>.</p>	<p>New requirements. Removed specific references in previous Houston amendment, no major change as provisions are correlated to Ch. 11 of the UPC.</p>
	<p>[P] 1502.3 Scuppers. Where scuppers are used for secondary (emergency overflow) roof drainage, the quantity, size, location and inlet elevation of the scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1611.1. Scuppers shall not have an opening dimension of less than 4 inches (102 mm). The flow through the primary system shall not be considered when locating and sizing scuppers.</p>		<p>New requirements</p>
	<p>[P] 1502.4 Gutters. Gutters and leaders placed on the outside of buildings, other than Group R-3, private garages and buildings of Type V construction, shall be of noncombustible material or not less than Schedule 40 plastic pipe.</p>		<p>New requirements</p>
	<p style="text-align: center;">SECTION 1503 WEATHER PROTECTION</p> <p>1503.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof coverings shall be designed in accordance with this code, and installed in accordance with this code and the approved manufacturer's instructions such that the roof covering shall serve to protect the building or structure manufacturer's approved instructions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1503.2 Flashing. Flashing shall be installed in such a manner so as to prevent moisture water from entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1503.3 Parapet walls. Coping. Parapet walls shall be properly coped with noncombustible, weatherproof materials of a width not less than the thickness of the parapet wall coped or covered in accordance with Sections 1503.3.1 and 1503.3.2. The top surface of the parapet wall shall provide positive drainage.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1503.3.1 Fire-resistance-rated parapet walls. <i>Parapet walls</i> required by Section 705.11 shall be coped or covered with weatherproof materials of a width not less than the thickness of the <i>parapet wall</i> such that the <i>fire-resistance</i> rating of the wall is not decreased.</p>		<p>New requirement</p>
	<p>1503.3.2 Other parapet walls. <i>Parapet walls</i> meeting one of the exceptions in Section 705.11 shall be coped or covered with weatherproof materials of a width not less than the thickness of the <i>parapet wall</i>.</p>		<p>New requirement</p>
	<p>[P] 1503.4 Roof drainage. Design and installation of roof drainage systems shall comply with Section 1503 of this code and Sections 1106 and 1108, as applicable, of the International Plumbing Code.</p>		
	<p>[P] 1503.4.1 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The installation and sizing of secondary emergency overflow drains, leaders and conductors shall comply with Sections 1106 and 1108, as applicable, of the International Plumbing Code.</p>		
	<p>1503.4.2 Scuppers. When scuppers are used for secondary (emergency overflow) roof drainage, the quantity, size, location and inlet elevation of the scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1611.1. Scuppers shall not have an opening dimension of less than 4 inches (102 mm). The flow through the primary system shall not be considered when locating and sizing scuppers.</p>		

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	1503.4.3 Gutters. Gutters and leaders placed on the outside of buildings, other than Group R-3, private garages and buildings of Type V construction, shall be of noncombustible material or a minimum of Schedule 40 plastic pipe.		
[P] 1503.4 Roof drainage. Design and installation of roof drainage systems shall comply with Section 1503 of this code and Sections 4406 1101.12 and 4408 1103 , as applicable, of the <i>International Plumbing Code</i> . Moved to 1502.1	1503.5-1503.4 Attic and rafter ventilation. Intake and exhaust vents shall be provided in accordance with Section 1202.2 and the vent product manufacturer's installation instructions.		Edits made to clarify code, no major changes to code requirements. Amendment moved to 1502.1, no changes.
[P] 1503.4.1 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The installation and sizing of secondary emergency overflow drains, leaders and conductors shall comply with Sections 4406 1101.12.2 and 4408 1102 , as applicable, of the <i>International Plumbing Code</i> . Moved to 1502.2	N/a		Amendment moved to 1502.2, no changes.
	1503.6 1503.5 Crickets and saddles.		
	SECTION 1504 PERFORMANCE REQUIREMENTS 1504.1 Wind resistance of roofs. <i>Roof decks and roof coverings</i> shall be designed for wind <i>loads</i> in accordance with Chapter 16 and Sections 1504.2, 1504.3, 1504.4 and 1504.5.	SECTION 1504 PERFORMANCE REQUIREMENTS	
	1504.1.1 Wind resistance of asphalt shingles. Asphalt shingles shall be tested in accordance with ASTM D7158. Asphalt shingles shall meet the classification requirements of Table 1504.1.1 for the appropriate maximum basic wind speed. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D7158 and the required classification in Table 1504.1.1. Exception: Asphalt shingles that are not included in the scope of ASTM D7158 shall be tested and labeled in accordance with ASTM D3161. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D3161 and the required classification in Table 1504.1.1.		Edits made to clarify code, no major changes to code requirements.

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	1504.1.4 1504.2 Wind resistance of asphalt shingles.		
	1504.2 1504.3 Wind resistance of clay and concrete tile.		
	1504.2.4 1504.3.1 Testing.		
	1504.2.1.4 1504.3.1.1 Overturning resistance. Concrete and clay roof tiles shall be tested to determine their resistance to overturning due to wind in accordance with Chapter 15 and either SBCCI SSTD 11 and Chapter or ASTM C1568 .		Edits made to clarify code, no major changes to code requirements.
	1504.2.1.2 1504.3.1.2 Wind tunnel testing. Where concrete and clay roof tiles do not satisfy the limitations in Chapter 16 for rigid tile, a wind tunnel test shall be used to determine the wind characteristics of the concrete or clay tile roof covering in accordance with Chapter 15 and either SBCCI SSTD 11 and Chapter 15 or ASTM C1569 .		Edits made to clarify code, no major changes to code requirements.
	1504.3.1.3 Air permeability testing. The lift coefficient for concrete and clay tile shall be 0.2 or shall be determined in accordance with SBCCI SSTD 11 or ASTM C1570 .		Edits made to clarify code, no major changes to code requirements.
	1504.3 1504.4 Wind resistance of nonballasted roofs. Roof coverings installed on roofs in accordance with Section 1507 that are mechanically attached or adhered to the roof deck shall be designed to resist the design wind load pressures for components and cladding in accordance with Section 1609.5.2. The wind load on the roof covering shall be permitted to be determined using allowable stress design.		Edits made to clarify code, no major changes to code requirements.
	1504.3.1 1504.4.1 Other roof systems.		

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	<p>1504.3.2 1504.4.2 Structural metal panel roof systems. Where the metal roof panel functions as the roof deck and roof covering and it provides both weather protection and support for loads, the structural metal panel roof system shall comply with this section. Structural standing-seam metal panel roof systems shall be tested in accordance with ASTM E1592 or FM 4474. Structural through-fastened metal panel roof systems shall be tested in accordance with ASTM E1592, FM 4474, UL 580 or ASTMUL E159280.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Metal roofs constructed of cold-formed steel shall be permitted to be designed and tested in accordance with the applicable referenced structural design standard in Section 2210.1. 2. Metal roofs constructed of aluminum shall be permitted to be designed and tested in accordance with the applicable referenced structural design standard in Section 2002.1. 		
	<p>1504.336 1504.4.3 Metal roof shingles. Metal roof shingles applied to a solid or closely fitted deck shall be tested in accordance with ASTM D3161, FM 4474, UL 580 or UL 1897. Metal roof shingles tested in accordance with ASTM D3161 shall meet the classification requirements of Table 1504.1.1 for the appropriate maximum basic wind speed and the metal shingle packaging shall bear a label to indicate compliance with ASTM D3161 and the required classification in Table 1504.1.1.</p>		<p>New requirement</p>
	<p>TABLE 1504.2</p> <p>CLASSIFICATION OF STEEP SLOPE ROOF SHINGLES TESTED IN ACCORDANCE WITH ASTM D3161 OR D7158</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1504.4 1504.5 Ballasted low-slope <u>single-ply</u> roof systems. Ballasted low-slope (roof slope < 2:12) single-ply roof system coverings installed in accordance with <u>Section 1507.42</u> and 1507.43 shall be designed in accordance with ANSI/SPRI RP-4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1504.5 1504.6 Edge <u>securement systems</u> for low-slope roofs. Low slope Metal edge systems, except gutters and counterflashing, installed on built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, systems having a slope less than 2 units vertical in 12 units horizontal (2:12) shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except basic design wind</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>speed, V, shall be determined from Figures 1609.3(1) through 1604.3(8) 1609.3(12) as applicable.</p>		
	<p>1504.6.1 Gutter securement for low-slope roofs. Gutters that are used to secure the perimeter edge of the roof membrane on low-slope (less than 2:12 slope) built-up, modified bitumen, and single-ply roofs, shall be designed, constructed and installed to resist wind loads in accordance with Section 1609 and shall be tested in accordance with Test Methods G-1 and G-2 of SPRI GT-1.</p>		<p>New requirement</p>
	<p>1504.6 1504.7 Physical properties. Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall demonstrate physical integrity over the working life of the roof based upon 2,000 hours of exposure to accelerated weathering tests conducted in accordance with ASTM G152, ASTM G155 G154 or ASTM G154 G155. Those roof coverings that are subject to cyclical flexural response due to wind loads shall not demonstrate any significant loss of tensile strength for unreinforced membranes or breaking strength for reinforced membranes when tested as herein required.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1504.8 Aggregate. Aggregate used as surfacing for roof coverings and aggregate, gravel or stone used as ballast shall not be used on the roof of a building located in a hurricane-prone region as defined in Section 202, or on any other building with a mean roof height exceeding that permitted Table 1504.8 based on the exposure category and basic wind speed at the site. {EDITORIAL NOTE: DELETE TABLE 1504.8 IN ITS ENTIRETY.} Removed</p>	<p>1504.7 1504.8 Impact resistance. Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D3746, ASTM D4272, CCSB 37-CP-52M or the "Resistance to Foot Traffic Test" in Section 5.5 of FM 4470.</p>		<p>Edits made to clarify code, no major changes to code requirements. Houston amendment removed to go with base code.</p>
	<p>1504.8 1504.9 Aggregate Wind resistance of aggregate-surfaced roofs Surfacing and ballast materials in hurricane-prone regions. Aggregate used as surfacing for roof coverings and aggregate, gravel or stone used as ballast shall not be used on the roof of Parapets shall be provided for aggregate surfaced roofs and shall comply with Table 1504.9. For a building located in a hurricane-prone region as defined in Section 202, or on any other building with a mean roof height exceeding that permitted by Table 1504.8 based on the exposure category and basic wind speed at the site, the following materials shall not be used on the roof:</p> <ol style="list-style-type: none"> 1. Aggregate used as surfacing for roof coverings. 2. Aggregate, gravel or stone used as ballast. 	<p>1504.9 Wind resistance of aggregate-surfaced roofs. Parapets shall be provided for aggregate surfaced roofs and shall comply with Table 1504.9.</p>	<p>Edits made to clarify code, no major changes to code requirements. New amendment prohibiting parapets when the roof is an aggregate surfaced roof.</p>

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	<p align="center">SECTION 1505 FIRE CLASSIFICATION</p> <p>[BF] 1505.1 General. Roof assemblies shall be divided into the classes defined below in this section. Class A, B and C roof assemblies and roof coverings required to be listed by this section shall be tested in accordance with ASTM E108 or UL 790. In addition, fire-retardant-treated wood roof coverings shall be tested in accordance with ASTM D2898. The minimum roof coverings installed on buildings shall comply with Table 1505.1 based on the type of construction of the building.</p> <p>Exception: Skylights and sloped glazing that comply with Chapter 24 or Section 2610.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>																																				
	<p align="center">TABLE 1504.8 MAXIMUM ALLOWABLE MEAN ROOF HEIGHT PERMITTED FOR BUILDINGS WITH AGGREGATE ON THE ROOF IN AREAS OUTSIDE A HURRICANE-PRONE REGION BCD</p>																																						
	<p align="center">TABLE 1504.9 MINIMUM REQUIRED PARAPET HEIGHT (INCHES) FOR AGGREGATE SURFACED ROOFS^{a, b, c}</p>		<p>New table</p>																																				
<p align="center">TABLE 1505.1^{a, b, c} MINIMUM ROOF COVERING CLASSIFICATION FOR TYPES OF CONSTRUCTION</p> <table border="1"> <tr> <td>IA</td> <td>IB</td> <td>IIA</td> <td>IIB</td> <td>IIIA</td> <td>IIIB</td> <td>IV</td> <td>VA</td> <td>VB</td> </tr> <tr> <td>B</td> <td>B</td> <td>B</td> <td>C^c</td> <td>B</td> <td>C^c</td> <td>B</td> <td>B</td> <td>C^c</td> </tr> </table> <p>For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².</p> <p>a. Unless otherwise required in accordance with the <i>International Wildland-Urban Interface Code</i> or due to the location of the building within a fire district in accordance with Appendix D.</p> <p>b. Nonclassified roof coverings shall be permitted on buildings of Group R-3 and Group U occupancies, where there is a minimum fire-separation distance of 6 feet measured from the leading edge of the roof.</p> <p>c. Buildings that are not more than two stories above grade plane and having not more than 6,000 square feet of projected roof area and where there is a minimum 10-foot fire separation distance from the leading edge of the roof to a lot line on all sides of the building, except for street fronts or public ways, shall be permitted to have roofs of No. 1 cedar or redwood shakes and No. 1 shingles constructed in accordance with Section 1505.7.</p>	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB	B	B	B	C ^c	B	C ^c	B	B	C ^c		<p align="center">TABLE 1505.1 CLASSIFICATION FOR TYPES OF CONSTRUCTION^{a, b}</p> <table border="1"> <tr> <td>IA</td> <td>IB</td> <td>IIA</td> <td>IIB</td> <td>IIIA</td> <td>IIIB</td> <td>IV</td> <td>VA</td> <td>VB</td> </tr> <tr> <td>B</td> <td>B</td> <td>B</td> <td>C^c</td> <td>B</td> <td>C^c</td> <td>B</td> <td>B</td> <td>C^c</td> </tr> </table> <p>For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².</p> <p>a. Unless otherwise required in accordance with the <i>International Wildland-Urban Interface Code</i> or due to the location of the building within a fire district in accordance with Appendix D.</p> <p>b. Nonclassified roof coverings shall be permitted on buildings of Group R-3 and Group U occupancies, where there is a minimum fire-separation distance of 6 feet measured from the leading edge of the roof.</p> <p>c. Buildings that are not more than two stories above grade plane and having not more than 6,000 square feet of projected roof area and where there is a minimum 10-foot fire separation distance from the leading edge of the roof to a lot line on all sides of the building, except for street fronts or public ways, shall be permitted to have roofs of No. 1 cedar or redwood shakes and No. 1 shingles constructed in accordance with Section 1505.7.</p>	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB	B	B	B	C ^c	B	C ^c	B	B	C ^c	<p>No change to Houston amendment.</p>
IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB																															
B	B	B	C ^c	B	C ^c	B	B	C ^c																															
IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB																															
B	B	B	C ^c	B	C ^c	B	B	C ^c																															

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	<p>[BF] 1505.6 Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shakes and shingles shall be treated by impregnation with chemicals by the full-cell vacuum-pressure process, in accordance with AWPA C1. Each bundle shall be marked to identify the manufactured unit and the manufacturer, and shall also be labeled to identify the classification of the material in accordance with the testing required in Section 1505.1, the treating company and the quality control agency.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1505.8 Building-integrated photovoltaic (BIPV) products. Building-integrated photovoltaic BIPV products installed as the roof covering shall be tested, <i>listed</i> and <i>labeled</i> for fire classification in accordance with Section 1505.1.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1505.9 Photovoltaic panels and modules Rooftop mounted photovoltaic (PV) panel systems. Rooftop rack mounted photovoltaic (PV) panel systems shall be tested, <i>listed</i> and identified with a fire classification in accordance with UL 1703 and UL 2703. Listed systems shall be installed in accordance with the manufacturer's installation instructions and their listing. The fire classification shall comply with Table 1505.1 based on the type of construction of the building.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1505.10 Roof gardens and landscaped Landscaped roofs. Roof gardens and landscaped Landscaped roofs shall comply with Sections 1505.1 and 1507.15 and shall be installed in accordance with ANSI/SPRI VF-1.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 1506 MATERIALS</p> <p>1506.1 Scope. The requirements set forth in this section shall apply to the application of roof-covering materials specified herein. <i>Roof coverings</i> shall be applied in accordance with this chapter and the manufacturer's installation instructions roof covering listing as required by Section 1505. Installation of <i>roof coverings</i> shall comply with the applicable provisions of Section 1507.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 1507 REQUIREMENTS FOR ROOF COVERINGS</p>	<p style="text-align: center;">SECTION 1507 REQUIREMENTS FOR ROOF COVERINGS</p>	
	<p>1507.1.1 Underlayment. Underlayment for asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes, metal roof panels and photovoltaic shingles shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D4869 and D6757 shall bear a label indicating compliance with the</p>	<p>1507.1.1 Underlayment. Underlayment for asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes, metal roof panels and <i>photovoltaic shingles</i> shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D4869 and D6757 shall bear a label indicating compliance with the standard designation and, if applicable,</p>	<p>New requirements. New Houston amendment clarify basic wind speed criteria.</p>

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	<p>standard designation and, if applicable, type classification indicated in Table 1507.1.1(1). Underlayment shall be applied in accordance with Table 1507.1.1(2). Underlayment shall be attached in accordance with Table 1507.1.1(3).</p> <p>Exceptions:</p> <p>1. As an alternative, self-adhering polymer modified bitumen underlayment complying with ASTM D1970 and installed in accordance with the manufacturer's installation instructions for the deck material, roof ventilation configuration and climate exposure for the roof covering to be installed shall be permitted.</p> <p>2. 1. As an alternative, a minimum 4-inch-wide (102 mm) strip of self-adhering polymer modified bitumen membrane complying with ASTM D1970 and installed in accordance with the manufacturer's installation instructions for the deck material shall be applied over all joints in the roof decking. An approved underlayment for the applicable roof covering for design wind speeds less than 120 mph (54 m/s) shall be applied over the 4-inch-wide (102 mm) membrane strips.</p> <p>3. 2. As an alternative, two layers of underlayment complying with ASTM D226 Type II or ASTM D4869 Type IV shall be permitted to be installed as follows: Apply a 19-inch (483 mm) strip of underlayment parallel with the eave. Starting at the eave, apply 36-inch-wide (914 mm) strips of underlayment felt, overlapping successive sheets 19 inches (483 mm). The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at side and end laps. End laps shall be 4 inches (102 mm) and shall be offset by 6 feet (1829 mm). Underlayment shall be attached using metal or plastic cap nails with a nominal cap diameter of not less than 1 inch (25.4 mm). Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a thickness of not less than 0.010 inch (0.254 mm). Thickness of the outside edge of plastic caps shall be not less than 0.035 inch (0.89 mm). The cap nail shank</p>	<p>type classification indicated in Table 1507.1.1(1). Underlayment shall be applied in accordance with Table 1507.1.1(2). Underlayment shall be attached in accordance with Table 1507.1.1(3).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. As an alternative, a minimum 4-inch-wide (102 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970 and installed in accordance with the manufacturer's instructions for the deck material shall be applied over all joints in the roof decking. An approved underlayment for the applicable roof covering for design basic wind speeds less than 120 mph (54 m/s) shall be applied over the 4-inch-wide (102 mm) membrane strips. 2. As an alternative, two layers of underlayment complying with ASTM D226 Type II or ASTM D4869 Type IV shall be permitted to be installed as follows: Apply a 19-inch (483 mm) strip of underlayment parallel with the eave. Starting at the eave, apply 36-inch-wide (914 mm) strips of underlayment felt, overlapping successive sheets 19 inches (483 mm). The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at side and end laps. End laps shall be 4 inches (102 mm) and shall be offset by 6 feet (1829 mm). Underlayment shall be attached using metal or plastic cap nails with a nominal cap diameter of not less than 1 inch (25.4 mm). Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a thickness of not less than 0.010 inch (0.254 mm). Thickness of the outside edge of plastic caps shall be not less than 0.035 inch (0.89 mm). The cap nail shank shall be not less than 0.083 inch (2.1 mm) for ring shank cap nails and 0.091 inch (2.3 mm) for smooth shank cap nails. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch (19.1 mm) into the roof sheathing. 3. Structural metal panels that do not require a substrate or underlayment. 	
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shall be not less than 0.083 inch (2.1 mm) for ring shank cap nails and 0.091 inch (2.3 mm) for smooth shank cap nails. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than ¾ inch (19.1 mm) into the roof sheathing.

4. **3.** Structural metal panels that do not require a substrate or underlayment.

TABLE 1507.1.1(1)
UNDERLAYMENT TYPES

ROOF COVERING	SECTION	MAXIMUM BASIC DESIGN WIND SPEED, V < 140 MPH	MAXIMUM BASIC DESIGN WIND SPEED, V = 140 MPH
<u>Asphalt shingles</u>	<u>1507.2</u>	<u>ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV ASTM D6757</u>	<u>ASTM D226 Type II ASTM D4869 Type IV ASTM D6757</u>
<u>Clay and concrete tiles</u>	<u>1507.3</u>	<u>ASTM D226 Type II ASTM D2626 Type I ASTM D6380 Class M mineral surfaced roll roofing</u>	<u>ASTM D226 Type II ASTM D2626 Type I ASTM D6380 Class M mineral surfaced roll roofing</u>
<u>Metal panels</u>	<u>1507.4</u>	<u>Manufacturer's instructions</u>	<u>ASTM D226 Type II ASTM D4869 Type IV</u>
<u>Metal roof shingles</u>	<u>1507.5</u>	<u>ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV</u>	<u>ASTM D226 Type II ASTM D4869 Type IV</u>
<u>Mineral-surfaced roll roofing</u>	<u>1507.6</u>	<u>ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV</u>	<u>ASTM D226 Type II ASTM D4869 Type IV</u>
<u>Slate shingles</u>	<u>1507.7</u>	<u>ASTM D226 Type II ASTM D4869 Type III or IV</u>	<u>ASTM D226 Type II ASTM D4869 Type IV</u>
<u>Wood shingles</u>	<u>1507.8</u>	<u>ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV</u>	<u>ASTM D226 Type II ASTM D4869 Type IV</u>
<u>Wood shakes</u>	<u>1507.9</u>	<u>ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV</u>	<u>ASTM D226 Type II ASTM D4869 Type IV</u>
<u>Photovoltaic shingles</u>	<u>1507.17</u>	<u>ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV ASTM D6757</u>	<u>ASTM D226 Type II ASTM D4869 Type IV ASTM D6757</u>

New requirements

TABLE 1507.1.1(2)
UNDERLAYMENT APPLICATION

New table

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ROOF COVERING	SECTION	MAXIMUM BASIC DESIGN WIND SPEED, V < 140 MPH	MAXIMUM BASIC DESIGN WIND SPEED, V > 140 MPH
<u>Asphalt shingles</u>	<u>1507.2</u>	For roof slopes from two units vertical in 12 units horizontal (2:12) to four units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied as follows: Apply a 18-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eaves, apply 36-inch-wide sheets of underlayment overlapping successive sheets 18 inches. End laps shall be 4 inches and shall be offset by 6 feet. Distinctions in the underlayment shall not interfere with the ability of the shingles to seal.	Same as Maximum Basic Design Wind Speed, V < 140 mph except all laps shall be not less than 4 inches.
<u>Clay and concrete tile</u>	<u>1507.3</u>	For roof slopes from two and one-half units vertical in 12 units horizontal (2.5:12) to four units vertical in 12 units horizontal (4:12), underlayment shall be not fewer than two layers applied as follows: Starting at the eaves, a 18-inch strip of underlayment shall be applied parallel with the eaves. Starting at the eaves, a 36-inch-wide strip of underlayment felt shall be applied overlapping successive sheets 18 inches. End laps shall be 4 inches and shall be offset by 6 feet. For roof slopes of four units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eaves and lapped 2 inches. Distinctions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet.	Same as Maximum Basic Design Wind Speed, V < 140 mph except all laps shall be not less than 4 inches.
<u>Metal roof panels</u>	<u>1507.4</u>	<u>Apply in accordance with the manufacturer's installation instructions.</u>	For roof slopes from two units vertical in 12 units horizontal (2:12) to four units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied as follows: Apply a 18-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eaves, apply 36-inch-wide sheets of underlayment overlapping successive sheets 18 inches. End laps shall be 4 inches and shall be offset by 6 feet.
<u>Metal roof shingles</u>	<u>1507.5</u>		
<u>Mineral surfaced roll roofing</u>	<u>1507.6</u>		
<u>Slate shingles</u>	<u>1507.7</u>		
<u>Wood shakes</u>	<u>1507.8</u>		
<u>Wood shingles</u>	<u>1507.9</u>		

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			<p>For roof slopes of four units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches. End laps shall be 4 inches and shall be offset by 6 feet.</p>
Photovoltaic shingles	1507.17	<p>For roof slopes from three units vertical in 12 units horizontal (3:12) up to four units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied as follows: Apply a 16-inch strip of underlayment felt parallel to and starting at the eaves. Starting at the eave, apply 16-inch-wide sheets of underlayment overlapping successive sheets 19 inches. End laps shall be 4 inches and shall be offset by 6 feet. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.</p> <p>For roof slopes of four units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet.</p>	<p>Same as Maximum Basic Design Wind Speed, V ≤ 140 mph except all laps shall be not less than 4 inches</p>

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 mile per hour = 0.447 m/s.

TABLE 1507.1.1(3)
UNDERLAYMENT ATTACHMENT

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ROOF COVERING	SECTION	MAXIMUM BASIC DESIGN WIND SPEED, V < 140 MPH	MAXIMUM BASIC DESIGN WIND SPEED, V > 140 MPH
Asphalt shingles	1507.2	Fastened sufficiently to hold in place.	The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches between side laps with a 6-inch spacing at side and end laps. Underlayment shall be attached using metal or plastic cap nails or cap staples with a nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness of not less than 32-gauge (0.0134 inch) sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Staples shall be not less than 21 gauge (0.032 inch). The cap nail shank and cap staple legs shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.
Clay and concrete tile	1507.3		
Photovoltaic shingles	1507.17		
Metal roof panels	1507.4	Manufacturer's installation instruction	The underlayment shall be attached with corrosion-resistant fasteners in a grid pattern of 12 inches between side laps with a 6-inch spacing at side and end laps. Underlayment shall be attached using metal or plastic cap nails or cap staples with a nominal cap diameter of not less than 1 inch. Metal caps shall have a thickness of not less than 32-gauge sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. Staples shall be not less than 21 gauge. The cap nail shank and cap staple legs shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.
Metal roof shingles	1507.5		
Mineral-surfaced roll roofing	1507.6		
Slate shingles	1507.7		
Wood shingles	1507.8		
Wood shakes	1507.9		

For SI: 1 inch = 25.4 mm; 1 mile per hour = 0.447 m/s.

1507.1.2 Ice barriers.

In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, and wood shakes. The ice barrier shall consist of not less than two layers of underlayment cemented together, or a self-adhering polymer modified bitumen sheet shall be used in place of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that do not contain conditioned floor area.

1507.1.2 Ice barriers. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, and wood shakes. The ice barrier shall consist of not less than two layers of underlayment cemented together, or a self-adhering polymer modified bitumen sheet shall be used in place of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that do not contain conditioned floor area.

New requirement

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	<p>1507.2.3 Underlayment. Unless otherwise noted, required Underlayment shall conform to ASTM D226, Type I, ASTM D4869, Type I, or ASTM D6757.</p> <p>1507.2.4 Self-adhering polymer modified bitumen sheet. Self-adhering polymer modified bitumen sheet shall comply with ASTM D1970Section 1507.1.1</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.2.54 Asphalt shingles. Asphalt shingles shall comply with ASTM D225 or ASTM D3462.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.2.6 1507.2.5 Fasteners. Fasteners for asphalt shingles shall be galvanized, stainless steel, aluminum or copper roofing nails, minimum 12-gage [0.105 inch (2.67 mm)] shank with a minimum 3/8-inch-diameter(9.5 mm) head, of a length to penetrate through the roofing materials and a minimum of not less than 3/4 inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than 3/4 inch (19.1 mm) thick, the nails shall penetrate through the sheathing. Fasteners shall comply with ASTM F1667.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.2.7 1507.2.6 Attachment.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.2.8 Underlayment application. For roof slopes from two units vertical in 12 units horizontal (17 percent slope) and up to four units vertical in 12 units horizontal (33 percent slope), underlayment shall be two layers applied in the following manner. Apply a minimum 19-inch wide (483 mm) strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch wide (914 mm) sheets of underlayment overlapping successive sheets 19 inches (483 mm) and fasten sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units vertical in 12 units horizontal (33 percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.</p>		

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	<p>1507.2.8.1 High wind attachment. Underlayment applied in areas subject to high winds [V_{asd} greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p> <p>Underlayment installed where V_{asd}, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226 Type II, ASTM D4869 Type IV, or ASTM D6757. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Section 1507.2.8 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32 gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.2.8.2 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building.</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.2.9 1507.2.8 Flashings.</p>		
	<p>1507.2.9.1 1507.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with the manufacturer's instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019- inch (0.483 mm) thickness or mineral-surfaced roll roofing weighing a minimum of not less than 77 pounds per 100 square feet (3.76 kg/m²). Cap flashing shall be</p>		

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	<p>corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness.</p>		
	<p>1507.2.9.2 1507.2.8.2 Valleys. Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:</p> <ol style="list-style-type: none"> 1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least not less than 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table 1507.2.9.2 1507.2.8.2. 2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing complying with ASTM D3909 or ASTM D6380 shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer minimum of not less than 36 inches (914 mm) wide. 3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D6380, and at least not less than 36 inches (914 mm) wide or types as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment bearing a label indicating complying compliance with ASTM D1970 shall be permitted in lieu of the lining material. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 1507.2.9.2 1507.2.8.2 VALLEY LINING MATERIAL</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.2.9.3 1507.2.8.3 Drip edge. A drip edge shall be provided at eaves and rake edges of shingle roofs. Adjacent segments of the drip edge shall be lapped minimum of not less than 2 inches (51 mm). The vertical leg of drip edges shall be minimum of not less than 1 1/2 inches (38 mm) in width and shall extend minimum of not less than 1/4 inch (6.4 mm) below sheathing. The drip edge shall extend back on the roof minimum of not less than 2 inches (51 mm). Underlayment shall be installed over drip edges along eaves. Drip edges shall be installed over underlayment along rake edges. Drip edges</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>shall be mechanically fastened a maximum of intervals not greater than 12 inches (305 mm) on center.</p>		
	<p>1507.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing. or spaced structural sheathing boards.</p> <p>Exception: Spaced lumber sheathing shall be permitted in seismic design categories A, B and C.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.3.3.1 Low-slope roofs. For roof slopes from 2 1/2 units vertical in 12 units horizontal (21-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be a minimum of two layers applied as follows:</p> <ol style="list-style-type: none"> 1. Starting at the eave, a 19-inch (483 mm) strip of underlayment shall be applied parallel with the eave and fastened sufficiently in place. 2. Starting at the eave, 36-inch wide (914 mm) strips of underlayment felt shall be applied overlapping successive sheets 19 inches (483 mm) and fastened sufficiently in place. 		
	<p>1507.3.3.2 High-slope roofs. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be a minimum of one layer of underlayment felt applied shingle fashion, parallel to, and starting from the eaves and lapped 2 inches (51 mm), fastened only as necessary to hold in place.</p>		
	<p>1507.3.3.3 High-wind attachment. Underlayment applied in areas subject to high wind [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p> <p>Underlayment installed where Vasd, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Sections 1507.3.3.1 and 1507.3.3.2 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12-gage</p>		

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	<p>[0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.3.6 Fasteners. Tile fasteners shall be corrosion resistant and not less than 11-gage, [0.120 inch (3 mm)], 5/16-inch (8.0 mm) head, and of sufficient length to penetrate the deck minimum of not less than 3/4 inch (19.1 mm) or through the thickness of the deck, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm). Perimeter fastening areas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves and <i>gable</i> rakes.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.3.9 Flashing. At the juncture of the roof vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall not be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley, or a self-adhering polymer-modified bitumen sheet bearing a label indicating complying compliance with ASTM D1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.4.5 Underlayment and high wind. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Underlayment installed where Vasd, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226 Type II, ASTM D4869 Type IV, or ASTM D1970. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12-gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing shall comply with Section 1507.1.1.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.5.3 Underlayment. Underlayment shall comply with ASTM D226, Type I or ASTM D4869 Section 1507.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.5.3.1 Underlayment and high wind. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.</p> <p>Underlayment installed where Vasd, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226 Type II or ASTM D4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12-gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		

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	<p>1507.5.4 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Where required, ice barriers shall comply with Section 1507.1.2.</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.5.7 Flashing. Roof valley flashing shall be of corrosion-resistant metal of the same material as the roof covering or shall comply with the standards in Table 1507.4.3(1). The valley flashing shall extend at least not less than 8 inches (203 mm) from the centerline each way and shall have a splash diverter rib not less than 3/4 inch (19.1 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing shall have a 36-inch-wide (914 mm) underlayment directly under it consisting of either one layer of underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet bearing a label indicating complying compliance with ASTM D1970, in addition to underlayment required for metal roof shingles. The metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for roof slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.6.3 Underlayment. Underlayment shall comply with ASTM D226, Type I or ASTM D4869 Section 1507.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.6.3.1 Underlayment and high wind. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p> <p>Underlayment installed where Vasd, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226 Type II. The underlayment shall be attached in a grid pattern of 12 inches (305 mm)</p>		

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	<p>between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32 gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.6.4 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Where required, ice barriers shall comply with Section 1507.1.2.</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.7.3 Underlayment. Underlayment shall comply with ASTM D226, Type II or ASTM D4869, Type III or IV Section 1507.1.1.</p>		
	<p>1507.7.3.1 Underlayment and high wind. Underlayment applied in areas subject to high winds [V_{asd} greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1]] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p> <p>Underlayment installed where V_{asd}, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226, Type II or ASTM D4869, Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail</p>		

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	<p>shank shall be a minimum of 12-gage [0.105-inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.7.4 Ice barrier. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Where required, ice barriers shall comply with Section 1507.1.2.</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.7.7 Flashing. Flashing and counterflashing shall be made with sheet metal. Valley flashing shall be a minimum of not less than 15 inches (381 mm) wide. Valley and flashing metal shall be a minimum uncoated thickness of 0.0179-inch (0.455 mm) zinc-coated G90. Chimneys, stucco or brick walls shall have minimum of not lower than two plies of felt for a cap flashing consisting of a 4-inch-wide (102 mm) strip of felt set in plastic cement and extending 1 inch (25 mm) above the first felt and a top coating of plastic cement. The felt shall extend over the base flashing 2 inches (51 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.8.3 Underlayment. Underlayment shall comply with ASTM D226, Type I or ASTM D4869 Section 1507.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.8.3.1 Underlayment and high wind. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p> <p>Underlayment installed where Vasd, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226, Type II or ASTM D4869, Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's</p>		

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	<p>installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12-gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.8.4 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Where required, ice barriers shall comply with Section 1507.1.2.</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.8.6 Attachment. Fasteners for wood shingles shall be corrosion resistant with a minimum penetration of 3/4 inch (19.1 mm) into the sheathing. For sheathing less than 1/2 inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shingle shall be attached with a minimum of not fewer than two fasteners.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.8.8 Flashing. At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet bearing a label indicating complying compliance with ASTM D1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>causing a backup of water, the metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.</p>		
	<p>1507.8.9 Label required. Each bundle of shingles shall be identified by a label of an approved grading or inspection bureau or agency.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.9.3 Underlayment. Underlayment shall comply with ASTM D226, Type I or ASTM D4869 Section 1507.1.1.</p>		
	<p>1507.9.3.1 Underlayment and high wind. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not more than 36 inches (914 mm) on center.</p> <p>Underlayment installed where Vasd, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D226, Type II or ASTM D4869, Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.9.4 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm)</p>		

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	<p>inside the exterior wall line of the building. Where required, ice barriers shall comply with Section 1507.1.2.</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.9.7 Attachment. Fasteners for wood shakes shall be corrosion resistant with a minimum penetration of 3/4 inch (19.1 mm) into the sheathing. For sheathing less than 1/2 inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shake shall be attached with a minimum not fewer than two fasteners.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.9.9 Flashing. At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet bearing a label indicating complying compliance with ASTM D1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.9.10 Label required. Each bundle of shakes shall be identified by a label of an approved grading or inspection bureau or agency.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.11.1 Slope. Modified bitumen membrane roofs roofing shall have a design slope of not less than one-fourth unit vertical in 12 units horizontal (2-percent slope) for drainage.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>1507.11.2 Material standards. Modified bitumen roof coverings roofing materials shall comply with CGSB 37-GP-56M, ASTM D6162, ASTM D6163, ASTM D6164, ASTM D6222, ASTM D6223, ASTM D6298 or ASTM D6509.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.11.2.1 Base sheet. A base sheet that complies with the requirements of Section 1507.11.2, ASTM D1970 or ASTM D4601 shall be permitted to be used with a modified bitumen cap sheet.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.12 Thermoset—single-ply <u>Single-ply</u> roofing. The installation of thermoset single-ply roofing shall comply with the provisions of this section.</p>		
	<p>1507.12.1 Thermoset—single-ply—Slope. <u>Single-ply</u> Thermoset single-ply membrane roofs shall have a design slope of not less than ¼ unit vertical in 12 units horizontal (2-percent slope) for drainage.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.12.2 Material standards. Thermoset—single-ply <u>Single-ply</u> roof coverings shall comply with ASTM D4637, ASTM D5019 or CGSB CAN/CGSB 37-54 or ASTM D5019 <u>the material standards in Table 1507.12.2.</u></p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">TABLE 1507.12.2 SINGLE-PLY ROOFING MATERIAL STANDARDS</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1507.12.3 Ballasted thermoset low-slope roofs. Ballasted thermoset low-slope roofs (roof slope < 2:12) shall be installed in accordance with this section and Section 1504.5. Stone used as ballast shall comply with ASTM D448 or ASTM D7655.</p>		
	<p>1507.13 Thermoplastic single-ply roofing. The installation of thermoplastic single-ply roofing shall comply with the provisions of this section.</p>		
	<p>1507.13.1 Slope. Thermoplastic single-ply membrane roofs shall have a design slope of not less than one-fourth unit vertical in 12 units horizontal (2-percent slope).</p>		

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	1507.13.2 Material standards. Thermoplastic single-ply roof coverings shall comply with ASTM D4434, ASTM D6754 or ASTM D6878.		
	1507.13.3 Ballasted thermoplastic low-slope roofs. Ballasted thermoplastic low-slope roofs (roof slope < 2:12) shall be installed in accordance with this section and Section 1504.5. Stone used as ballast shall comply with ASTM D448 or ASTM D7655.		
	1507.14.1 1507.13.1 Slope.		Edits made to clarify code, no major changes to code requirements.
	1507.14.2 1507.13.2 Material standards. Spray-applied polyurethane foam insulation shall comply with ASTM C1029 Type III or IV as defined in ASTM C1029 or ASTM D7425		Edits made to clarify code, no major changes to code requirements.
	1507.14.3 1507.13.3 Application. Foamed-in-place roof insulation shall be installed in accordance with the manufacturer's instructions. A liquid-applied protective coating that complies with Table 1507.14.3 shall be applied not less than 2 hours nor more than 72 hours following the application of the foam.		Edits made to clarify code, no major changes to code requirements.
	TABLE 1507.14.3 TABLE 1507.13.3		
	1507.14.4 1507.13.4 Foam plastics.		
	1507.15 1507.14 Liquid-applied roofing.		
	1507.15.1 1507.14.1 Slope.		

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	1507.15.2 1507.14.2 Material standards. Liquid-applied roofing shall comply with ASTM C836, ASTM C957 or ASTM D3468, ASTM D1227 or ASTM D3468 D3468, ASTM D6083, ASTM D6694 or ASTM D6947.		Edits made to clarify code, no major changes to code requirements.
	1507.16 1507.15 Vegetative roofs, roof gardens and landscaped roofs. Vegetative roofs, roof gardens and landscaped roofs shall comply with the requirements of this chapter, Sections 1607.12.3 and 1607.12.3.4 1607.14.2.2 and the International Fire Code.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1507.16.1 1507.15.1 Structural fire resistance. The structural frame and roof construction supporting the load imposed up upon the roof by the vegetative roof, roof gardens or landscaped roofs shall comply with the requirements of Table 601.		Edits made to clarify code, no major changes to code requirements.
	1507.17 1507.16 Photovoltaic shingles.		Edits made to clarify code, no major changes to code requirements.
	1507.17.1 1507.16.1 Deck requirements.		
	1507.17.2 1507.16.2 Deck slope. Photovoltaic shingles shall not be installed on roof slopes of not less than three two units vertical in 12 units horizontal (25 percent slope:12).		Updated requirements
	1507.17.3 1507.16.3 Underlayment. Unless otherwise noted, required underlayment shall conform to ASTM D226, ASTM D4869 or ASTM D6757 Underlayment shall comply with Section 1507.1.1.		Edits made to clarify code, no major changes to code requirements.
	1507.17.4 1507.16.4 Underlayment application Ice barrier. Underlayment shall be applied shingle fashion, parallel to and starting from the eave, lapped 2 inches (51 mm) and fastened sufficiently to hold in place Where required, ice barriers shall comply with Section 1507.1.2.		Edits made to clarify code, no major changes to code requirements.
	1507.17.4.1 High wind attachment. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's instructions. Fasteners shall be applied along the overlap at not more than 36 inches (914 mm) on center.		

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	<p>Underlayment installed where Vasd is not less than 120 mph (54 m/s) shall comply with ASTM D226, Type II, ASTM D4869, Type IV or ASTM D6757. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Section 1507.2.8 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of not less than 32-gage [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12-gage [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.17.4.2 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet shall be used instead of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building</p> <p>Exception: Detached accessory structures that contain no conditioned floor area.</p>		
	<p>1507.17.5 1507.16.5 Fasteners. Fasteners for photovoltaic shingles shall be galvanized, stainless steel, aluminum or copper roofing nails, minimum 12-gage [0.105 inch (2.67 mm)] shank with a minimum 3/8-inch-diameter(9.5 mm) head, of a length to penetrate through the roofing materials and a minimum of not less than 3/4 inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than 3/4 inch (19.1 mm) thick, the nails shall penetrate through the sheathing. Fasteners shall comply with ASTM F1667.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.17.6 1507.16.6 Material standards. Photovoltaic shingles shall be listed and labeled in accordance with UL 7103 or with both UL 61730-1 and UL 61730-2</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.17.7 1507.16.7 Attachment.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1507.17.8 1507.16.8 Wind resistance. Photovoltaic shingles shall be tested in accordance with procedures and acceptance criteria in ASTM D3161. Photovoltaic shingles shall comply with the classification requirements of Table 1504.2 for the appropriate maximum nominal design wind speed. Photovoltaic shingle packaging shall bear a label to indicate compliance with the procedures in ASTM D3161 and the required classification from Table 1504.1.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1507.18 1507.17 Building-integrated photovoltaic roof panels. The installation of building-integrated photovoltaic (BIPV) roof panels shall comply with the provisions of this section.</p>		<p>New requirements for solar roof panels</p>
	<p>1507.18.1 1507.17.1 Deck requirements. BIPV roof panels shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied over spaced sheathing.</p>		<p>New requirements</p>
	<p>1507.18.2 1507.17.2 Deck slope. BIPV roof panels shall be used only on roof slopes of two units vertical in 12 units (2:12) or greater.</p>		<p>New requirements</p>
	<p>1507.18.3 1507.17.3 Underlayment. Underlayment shall comply with ASTM D226, ASTM D4869 or ASTM D6757.</p>		<p>New requirements</p>
	<p>1507.18.4 1507.17.4 Underlayment application. Underlayment shall be applied shingle fashion, parallel to and starting from the eave, lapped 2 inches (51 mm) and fastened sufficiently to hold in place.</p>		<p>New requirements</p>
	<p>1507.18.4.1 1507.17.4.1 High-wind attachment. Underlayment applied in areas subject to high winds [Vasd greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied in accordance with the manufacturer's instructions. Fasteners shall be applied along the overlap at not more than 36 inches (914 mm) on center. Underlayment installed where Vasd is not less than 120 mph (54 m/s) shall comply with ASTM D226, Type III, ASTM D4869, Type IV or ASTM D6757. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. The underlayment shall be applied in accordance with Section 1507.2.8 except all laps shall be not less than 4 inches (102 mm).</p>		<p>New requirements</p>

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	<p>Underlayment shall be attached using cap nails or cap staples. Caps shall be metal or plastic with a nominal head diameter of not less than 1 inch (25.4 mm). Metal caps shall have a thickness of not less than 0.010 inch (0.25 mm). Power-driven metal caps shall have a thickness of not less than 0.010 inch (0.25 mm). Thickness of the outside edge of plastic caps shall be not less than 0.035 inch (0.89 mm). The cap nail shank shall be not less than 0.083 inch (2.11 mm) for ring shank cap nails and 0.091 inch (2.31 mm) for smooth shank cap nails. Staple gage shall be not less than 21 gage [0.02 inch (0.81 mm)]. Cap nail shank and cap staple legs shall have a length sufficient to penetrate through-the-roof sheathing or not less than 3/4 inch (19.1 mm) into the roof sheathing.</p> <p>Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.</p>		
	<p>1507.18.4.2 1507.17.4.2 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a back-up of water, an ice barrier consisting of not fewer than two layers of underlayment cemented together or of a self-adhering polymer/modified bitumen sheet shall be used instead of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building.</p> <p>Exception: Detached accessory structures that do not contain conditioned floor area.</p>		<p>New requirements</p>
	<p>1507.18.5 1507.17.5 Material standards. BIPV roof panels shall be listed and labeled in accordance with UL 7103 4703 or with both UL 61730-1 and UL 61730-2.</p>		<p>Requires UL listings</p>
	<p>1507.18.6 1507.17.6 Attachment. BIPV roof panels shall be attached in accordance with the manufacturer's installation instructions.</p>		<p>New requirements</p>
	<p>1507.18.7 Wind resistance. BIPV roof panels shall be tested in accordance with UL 1897. BIPV roof panel packaging shall bear a label to indicate compliance with UL 1897.</p>		<p>New requirements</p>

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	<p>SECTION 1508 ROOF INSULATION</p> <p>[BF] 1508.1 General. The use of above-deck thermal insulation shall be permitted provided that such insulation is covered with an approved <i>roof covering</i> and passes the tests of NFPA 276 or UL 1256 when tested as an assembly.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Foam plastic roof insulation shall conform to the material and installation requirements of Chapter 26. 2. Where a concrete or composite metal and concrete roof deck is used and the above-deck thermal insulation is covered with an approved <i>roof covering</i>. 		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1508.1.1 Cellulosic fiberboard. Cellulosic fiberboard roof insulation shall conform to the material and installation requirements of Chapter 23.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 1509 ROOF COATINGS</p> <p>1509.1 General. The installation of a roof coating on a roof covering shall comply with the requirements of Section 1505 and this section.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1509.2 Material standards. Roof coating materials shall comply with the standards in Table 1509.2.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 1509.2 ROOF COATING MATERIAL STANDARDS</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 1509 1510 RADIANT BARRIERS INSTALLED ABOVE DECK</p> <p>[BF] 1509.1-1510.1 General.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1509.2-1510.2 Fire testing. Radiant barriers shall be permitted for use above decks where the radiant barrier is covered with an approved roof covering and the system consisting of the radiant barrier and the roof covering complies with the requirements of either FM 4550-4450 or UL 1256.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>[BF] 1509.3 1510.3 Installation.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BF] 1509.4 1510.4 Material standards.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1511.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.</p> <p>Exceptions:</p> <p>1. Roof replacement or roof recover of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 for roofs that provide positive roof drainage.</p> <p>2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1503.4 for roofs that provide for positive roof drainage. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with this code shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1503.4.</p> <p>Moved to 1512.1</p>	<p style="text-align: center;">SECTION 1540 1511 ROOFTOP STRUCTURES</p> <p>[BG] 1540.1 1511.1 General. The provisions of this section shall govern the construction of rooftop structures.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1540.1.1 1511.1.1 Area limitation. The aggregate area of penthouses and other enclosed rooftop structures shall not exceed one-third the area of the supporting roof deck. Such penthouses and other enclosed rooftop structures shall not be required to be included in determining the building area or number of stories as regulated by Section 503.1. The area of such penthouses shall not be included in determining the fire area specified in Section 901.7.</p>		<p>Area limitation for penthouse.</p>
	<p>[BG] 1540.2 1511.2 Penthouses. Penthouses in compliance with Sections 1510.2.1 through 1510.2.5 shall be considered as a portion of the story directly below the roof deck on which such penthouses are located. All Other penthouses shall be considered as an additional story of the building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>[BG] 4510.2.1 1511.2.1 Height above roof deck. Penthouses constructed on buildings of other than Type I construction shall not exceed 18 feet (5486 mm) in height above the roof deck as measured to the average height of the roof of the penthouse.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where used to enclose tanks or elevators that travel to the roof level, penthouses shall be permitted to have a maximum height of 28 feet (8534 mm) above the roof deck. 2. Penthouses located on the roof of buildings of Type I construction shall not be limited in height. <p>Exception: Where used to enclose tanks or elevators that travel to the roof level, penthouses shall be permitted to have a maximum height of 28 feet (8534 mm) above the roof deck.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 1510.2.2 Area limitation. The aggregate area of penthouses and other enclosed rooftop structures shall not exceed one-third the area of the supporting roof deck. Such penthouses and other enclosed rooftop structures shall not be required to be included in determining the building area or number of stories as regulated by Section 503.1. The area of such penthouses shall not be included in determining the fire area specified in Section 901.7.</p>		
	<p>[BG] 4510.2.4 1511.2.2 Use limitations. <i>Penthouses</i> shall not be used for purposes other than the shelter of mechanical or electrical equipment, tanks, elevators and related machinery, stairways or vertical <i>shaft</i> openings in the roof assembly, including ancillary spaces used to access elevators and stairways.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 4510.2.3 1511.2.3 Weather protection.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 4510.2.4 1511.2.4 Type of construction. Penthouses shall be constructed with walls, floors and roofs of building elements as required for the type of construction of the building on which such penthouses are built.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. On buildings of Type I construction, the <i>exterior walls</i> and roofs of <i>penthouses</i> with a <i>fire separation distance</i> greater than 5 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour *fire-resistance rating*. The *exterior walls* and roofs of *penthouses* with a *fire separation distance* of 20 feet (6096 mm) or greater shall not be required to have a *fire-resistance rating*.

2. On buildings of Type I construction two stories or less in height above *grade plane* or of Type II construction, the *exterior walls* and roofs of *penthouses* with a *fire separation distance* greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour *fire-resistance rating* or a lesser *fire-resistance rating* as required by Table 705.5 and be constructed of *fire-retardant-treated wood*. The *exterior walls* and roofs of *penthouses* with a *fire separation distance* of 20 feet (6096 mm) or greater shall be permitted to be constructed of *fire-retardant-treated wood* and shall not be required to have a *fire-resistance rating*. Interior framing and walls shall be permitted to be constructed of *fire-retardant-treated wood*.

3. On buildings of Type III, IV or V construction, the *exterior walls* of *penthouses* with a *fire separation distance* greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour *fire-resistance rating* or a lesser *fire-resistance rating* as required by Table 705.5. On buildings of Type III, IV and VA construction, the *exterior walls* of *penthouses* with a *fire separation distance* of 20 feet (6096 mm) or greater shall be permitted to be of Type IV heavy timber construction complying with Sections 602.4 and 2304.11 or noncombustible construction or *fire-retardant-treated wood* and shall not be required to have a *fire-resistance rating*.

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	<p>[BG] 4540.3 1511.3 Tanks. Tanks having a capacity of more than 500 gallons (1893 L) located on the roof deck of a building shall be supported on masonry, reinforced concrete, steel or Type IV heavy timber construction complying with Section 2304.11 provided that, where such supports are located in the building above the lowest story, the support shall be fire-resistance rated as required for Type IA construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 4540.3.1 1511.3.1 Valve and drain.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 4540.3.2 1511.3.2 Location.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 4540.3.3 1511.3.3 Tank cover.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BG] 4540.4 1511.4 Cooling towers. Cooling towers located on the roof deck of a building and greater than 250 square feet (23.2 m²) in base area or greater than 15 feet(4572 mm) in height above the roof deck, as measured to the highest point on the cooling tower, where the roof is greater than 50 feet (15 240 mm) in height above grade plane shall be constructed of noncombustible materials. The base area of cooling towers shall not exceed one-third the area of the supporting roof deck.</p> <p>Exception: Drip boards and the enclosing construction shall be permitted to be of wood not less than 1 inch (25 mm) nominal thickness, provided that the wood is covered on the exterior of the tower with noncombustible material.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	[BG] 4540.5 1511.5 Towers, spires, domes and cupolas.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.5.4 1511.5.1 Noncombustible construction required.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.5.2 1511.5.2 Towers and spires.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.6 1511.6 Mechanical equipment screens.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.6.1 1511.6.1 Height limitations.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.6.2 1511.6.2 Type I, II, III and or IV construction.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.6.3 1511.6.3 Type V construction. The height of mechanical equipment screens located on the roof decks of buildings of Type V construction, as measured from grade plane to the highest point on the mechanical equipment screen, shall be permitted to exceed the maximum building height allowed for the building by other provisions of this code where complying with any one of the following limitations, provided that the fire separation distance is greater than 5 feet (1524 mm): <ol style="list-style-type: none"> 1. Where the fire separation distance is not less than 20 feet (6096 mm), the height above grade plane of the mechanical equipment screen shall not exceed 4 feet (1219 mm) more than the maximum building height allowed. 2. The mechanical equipment screen shall be constructed of noncombustible materials. 3. The mechanical equipment screen shall be constructed of fire-retardant-treated wood complying with Section 2303.2 for exterior installation. 		Edits made to clarify code, no major changes to code requirements.

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	4. Where the fire separation distance is not less than 20 feet (6096 mm), the mechanical equipment screen shall be constructed of materials having a flame spread index of 25 or less when tested in the minimum and maximum thicknesses intended for use with each face tested independently in accordance with ASTM E84 or UL 723.		
	[BG] 1510.7 Photovoltaic panels and modules. Rooftop-mounted photovoltaic panels and modules shall be designed in accordance with this section.		
	[BG] 1510.7.1 Wind resistance. Rooftop-mounted photovoltaic panels and modules shall be designed for component and cladding wind loads in accordance with Chapter 16 using an effective wind area based on the dimensions of a single unit frame.		
	[BG] 1510.7.2 Fire classification. Rooftop-mounted photovoltaic panels and modules shall have the fire classification in accordance with Section 1505.9.		
	[BG] 1510.7.3 Installation. Rooftop-mounted photovoltaic panels and modules shall be installed in accordance with the manufacturer's instructions.		
	[BG] 1510.7.42 Photovoltaic panels and modules. Rooftop-mounted photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703 and shall be installed in accordance with the manufacturer's instructions.		
<u>1511.7 Wood shakes and shingles. Wood shakes and shingles shall not be permitted to be replaced unless they meet the requirements of Section 1505.6.</u> Recommend moving to 1512.6	[BG] 4540.8 1511.7 Other rooftop structures. Rooftop structures not regulated by Sections 1511.2 through 1511.6 shall comply with Sections 1511.7.1 through 1511.7.5, as applicable.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.8.1 1511.7.1 Aerial supports.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.8.2 1511.7.2 Bulkheads.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.8.3 1511.7.3 Dormers.		Edits made to clarify code, no major changes to code requirements.

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	[BG] 4540.8.4 1511.7.4 Fences.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.8.5 1511.7.5 Flagpoles.		Edits made to clarify code, no major changes to code requirements.
	[BG] 4540.9 1511.8 Structural fire resistance.		Edits made to clarify code, no major changes to code requirements.
	SECTION 1512 PHOTOVOLTAIC PANELS AND MODULES		
	1512.1 Photovoltaic panels and modules. Photovoltaic panels and modules installed on a roof or as an integral part of a roof assembly shall comply with the requirements of this code and the International Fire Code.		
	SECTION 1544 1512 REROOFING	SECTION 1512 REROOFING	
	1544.1 1512.1 General.	<p>1512.1 General. Materials and methods of application used for recovering or replacing an existing <i>roof covering</i> shall comply with the requirements of Chapter 15.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> <i>Roof replacement or roof recover</i> of existing low-slope <i>roof coverings</i> shall not be required to meet the minimum design slope requirement of ¼ unit vertical in 12 units horizontal (2-percent slope) in Section 1507 for roofs that provide positive roof drainage and meet the requirements of Section 1608.3 and Section 1611.2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1502.2 for roofs that provide for positive roof drainage and meet the requirements of Section 1608.3 and Section 1611.2. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with this code shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1502.2. 	New amendment providing clarifying language on the requirements for recovering/replacing existing roofs.

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	<p>1511.3 1512.2 Roof replacement. <i>Roof replacement</i> shall include the removal of all existing layers of roof coverings roof assembly materials down to the <i>roof deck</i>.</p> <p>Exception: Where the existing <i>roof assembly</i> includes an ice barrier membrane that is adhered to the <i>roof deck</i>, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1511.3.1 1512.2.1 Roof recover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:</p> <ol style="list-style-type: none"> 1. Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions. 2. Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings. 3. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1511.4. 4. The application of a new protective roof coating over an existing protective roof coating, metal roof panel, built-up roof, spray polyurethane foam roofing system, metal roof shingles, mineral-surfaced roll roofing, modified bitumen roofing or thermoset and thermoplastic single-ply roofing shall be permitted without tear off of existing roof coverings. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1511.3.1.1 1512.2.1.1 Exceptions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1511.4 1512.3 Roof recovering.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1511.5 1512.4 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted,</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	damaged or deteriorated. Aggregate Existing ballast that is damaged, cracked or broken shall not be reinstalled. Existing aggregate surfacing materials from built-up roofs shall not be reinstalled.		
	1511.6 1512.5 Flashings.		Edits made to clarify code, no major changes to code requirements.
	N/a	1512.6 Wood shakes and shingles. Wood shakes and shingles shall not be permitted to be replaced unless they meet the requirements of Section 1505.6.	No changes to Houston amendment.

2015 Houston IBC – Chapter 16 Structural Design	2021 IBC – Chapter 16	2021 Houston Amendments – Chapter 16	Code Analysis
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	SECTION 1601 GENERAL		
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	<p style="text-align: center;">SECTION 1602 DEFINITIONS AND NOTATIONS</p> <p>1602.1 Definitions. The following terms are defined in Chapter 2:</p> <p>ALLOWABLE STRESS DESIGN.</p> <p>DEAD LOADS.</p> <p>DESIGN STRENGTH.</p> <p>DIAPHRAGM.</p> <p>Diaphragm, blocked.</p> <p>Diaphragm boundary.</p> <p>Diaphragm chord.</p> <p>ESSENTIAL FACILITIES.</p> <p>FABRIC PARTITION.</p> <p>FACTORED LOAD.</p> <p>HELIPAD.</p> <p>ICE SENSITIVE STRUCTURE.</p> <p>IMPACT LOAD.</p> <p>LIMIT STATE.</p>		Edits made to clarify code, no major changes to code requirements.
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~~LIVE LOAD.~~
~~LIVE LOAD (ROOF).~~
~~LOAD AND RESISTANCE FACTOR DESIGN (LRFD).~~
~~LOAD EFFECTS.~~
~~LOAD FACTOR.~~
~~LOADS.~~
~~NOMINAL LOADS.~~
~~OTHER STRUCTURES.~~
~~PANEL (PART OF A STRUCTURE).~~
~~RESISTANCE FACTOR.~~
~~RISK CATEGORY.~~
~~STRENGTH, NOMINAL.~~
~~STRENGTH, REQUIRED.~~
~~STRENGTH DESIGN.~~
~~SUSCEPTIBLE BAY.~~
~~VEHICLE BARRIER.~~
~~NOTATIONS.~~

1602.1 Notations. The following notations are used in this chapter:

D = Dead load.

D_i = Weight of ice in accordance with Chapter 10 of ASCE 7.

E = Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4 of ASCE 7.

F = Load due to fluids with well-defined pressures and maximum heights.

F_a = Flood load in accordance with Chapter 5 of ASCE 7.

H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.

L = Live load.

L_r = Roof live load.

R = Rain load.

S = Snow load.

T = Cumulative effects of self-straining load forces and effects.

V_{asd} = Normal Allowable stress design wind speed, miles per hour (mph) (km/hr) determined from Figures 1609.3(1) through 1609.3(12) or ASCE 7.

W = Load due to wind pressure.

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	<p>W_i = Wind-on-ice in accordance with Chapter 10 of ASCE 7.</p>		
	<p style="text-align: center;">SECTION 1603</p> <p style="text-align: center;">CONSTRUCTION DOCUMENTS</p> <p>1603.1 General. Construction documents shall show the size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.89 shall be indicated on the construction documents.</p> <p>Exception: Construction documents for buildings constructed in accordance with the conventional light-frame construction provisions of Section 2308 shall indicate the following structural design information:</p> <ol style="list-style-type: none"> 1. Floor and roof dead and live loads. 2. Ground snow load, P_g. 3. Ultimate Basic design wind speed, V_{ult} (3-second gust), miles per hour (mph) (km/hr) and nominal allowable stress design wind speed, V_{asd}, as determined in accordance with Section 1609.3.1 and wind exposure. 4. Seismic design category and site class. 5. Flood design data, if located in flood hazard areas established in Section 1612.3. 6. Design load-bearing values of soils. 7. Rain load data. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1603.1.3 Roof snow load data. The ground snow load, p_g, shall be indicated. In areas where the ground snow load, p_g, exceeds 10 pounds per square foot (psf) (0.479 kN/m²), the following additional information shall also be provided, regardless of whether snow loads govern the design of the roof:</p> <ol style="list-style-type: none"> 1. Flat-roof snow load, p_f. 2. Snow exposure factor, C_e. 3. Snow load importance factor, I_s. 4. Thermal factor, C_t. 5. Slope factor(s), C_s. 6. Drift surcharge load(s), p_d, where the sum of p_d exceeds 20 psf (0.96 kN/m²). Slope factor(s), C_s 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>7. Width of snow drift(s), <i>w</i>.</p>		
	<p>1603.1.4 Wind design data. The following information related to wind <i>loads</i> shall be shown, regardless of whether wind <i>loads</i> govern the design of the lateral force-resisting system of the structure:</p> <ol style="list-style-type: none"> 1. Ultimate Basic design wind speed, V_{ult} (3-second gust), miles per hour (km/hr) and normal allowable stress design wind speed, V_{asd}, as determined in accordance with Section 1609.3.1. 2. Risk category. 3. Wind exposure. Applicable wind direction if more than one wind exposure is utilized. 4. Applicable internal pressure coefficient. 5. Design wind pressures and their applicable zones with dimensions to be used for exterior component and cladding materials not specifically designed by the <i>registered design professional</i> responsible for the design of the structure, pounds per square foot (kN/m²). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p><u>{EDITORIAL NOTE: DELETE SECTION 1603.1.7 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</u></p> <p>1603.1.7 Flood design data. See Chapter 19 of the <i>City Code</i> and the <i>Infrastructure Design Manual</i>.</p>	<p>1603.1.7 Flood design data. For buildings located in whole or in part in flood hazard areas as established in Section 1612.3, the documentation pertaining to design, if required in Section 1612.5–1612.4, shall be included and the following information, referenced to the datum on the community’s Flood Insurance Rate Map (FIRM), shall be shown, regardless of whether flood loads govern the design of the building:</p> <ol style="list-style-type: none"> 1. Flood design class assigned according to ASCE 24. 2. In flood hazard areas other than coastal high hazard areas or coastal A zones, the elevation of the proposed lowest floor, including the basement. 3. In flood hazard areas other than coastal high hazard areas or coastal A zones, the elevation to which any nonresidential building will be dry floodproofed. 4. In coastal high hazard areas and coastal A zones, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor, including the basement. 	<p><u>{EDITORIAL NOTE: DELETE SECTION 1603.1.7 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</u></p> <p>1603.1.7 Flood design data. See Chapter 19 of the <i>City Code</i> and the <i>Infrastructure Design Manual</i>.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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	<p>1603.1.8 Special loads. Special loads that are applicable to the design of the building, structure or portions thereof shall be indicated along with the specified section of this code that addresses the special loading condition including but not limited to the loads of machinery or equipment, and that are greater than specified floor and roof loads shall be specified by their descriptions and locations.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1603.1.9 Roof rain load data. Rain intensity, <i>i</i> (in/hr) (cm/hr), shall be shown regardless of whether rain loads govern the design.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 1604</p> <p style="text-align: center;">GENERAL DESIGN REQUIREMENTS</p> <p>1604.1 General. Building, structures and parts thereof shall be designed and constructed in accordance with strength design, load and resistance factor design, allowable stress design, empirical design or conventional construction methods, as permitted by the applicable material chapters and referenced standards.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1604.3 Serviceability. Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections and lateral drift. See Section 12.12.1 of ASCE 7 for drift limits applicable to earthquake loading, as indicated in Table 1604.3. Drift limits applicable to earthquake loading shall be in accordance with ASCE 7 Chapter 12, 13, 15 or 16, as applicable.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1604.3.3 Steel. The deflection of steel structural members shall not exceed that permitted by AISC 360, AISI S100, ASCE 8, SJI CJ, SJI JG, SJI K or SJI LH/DLH100, as applicable.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1604.3.4 Masonry. The deflection of masonry structural members shall not exceed that permitted by TMS 402 /ACI 530/ASCE 5.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1604.3.7 Framing supporting glass. The deflection of framing members supporting glass subjected to 0.6 times the "component and cladding" wind loads shall not exceed either of the following:</p> <ol style="list-style-type: none"> 1. 1/175 of the length of span of the framing member, for framing members having a length not more than 13 feet 6 inches (4115 mm). 2. 1/240 of the length of span of the framing member + 1/4 inch (6.4 mm), for framing members 		New requirements

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	<p style="text-align: center;">having a length greater than 13 feet 6 inches (4115 mm).</p>		
	<p>1604.4 Analysis. Load effects on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short- and long-term material properties.</p> <p>Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis added eccentricities effects of added deformations expected to occur during their service life.</p> <p>Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete load path capable of transferring loads from their point of origin to the load-resisting elements.</p> <p>The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into buildings provided that their effect on the action of the system is considered and provided for in the design. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift. Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system.</p> <p>Every structure shall be designed to resist the overturning effects caused by the lateral forces specified in this chapter. See Section 1609 for wind loads, Section 1610 for lateral soil loads and Section 1613 for earthquake loads effects caused by the forces specified in this chapter, including overturning, uplift and sliding. Where sliding is used to isolate the elements, the effects of friction between sliding elements shall be included as a force</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1604.5 Risk category. Each building and structure shall be assigned a risk category in accordance with Table 1604.5. Where a referenced standard specifies an occupancy category, the risk category shall not be taken as lower than the occupancy category specified therein. Where a referenced standard specifies that the assignment of a risk category be in accordance with ASCE 7, Table 1.5-1, Table 1604.5 shall be used in lieu of ASCE 7, Table 1.5-1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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Exception: The assignment of buildings and structures to Tsunami Risk Categories III and IV is permitted to be in accordance with Section 6.4 of ASCE 7.

**TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES**

**TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES**

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: <ul style="list-style-type: none"> • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV.
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to:

- Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300.
- Buildings and other structures containing one or more public assembly spaces, each having an occupant load greater than 300 and a cumulative occupant load of the public assembly spaces of greater than 2,500.
- Buildings and other structures containing Group E or Group I-4 occupancies or combination thereof, with an occupant load greater than 250.
- Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500.
- ~~Group I-2, Condition 1 occupancies with 50 or more care recipients.~~
- ~~Group I-2, Condition 2 occupancies not having emergency surgery or emergency treatment facilities.~~
- Group I-3 occupancies.
- Any other occupancy with an occupant load greater than 5,000.^a
- Power-generating stations, water treatment facilities for potable water, wastewater treatment facilities and other public-utility facilities not included in Risk Category IV.
- Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that:
 - Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the International Fire Code; and
 - Are sufficient to pose a threat to the public if released.^b

- Buildings and other structures designated as essential facilities and buildings where loss of function represents a substantial hazard to occupants, including but not limited to:
- ~~Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities.~~
 - Ambulatory care facilities having emergency surgery or emergency treatment facilities.
 - ~~Group I-3 occupancies other than condition 1.~~
 - Fire, rescue, ambulance and police stations and emergency vehicle garages
 - Designated earthquake, hurricane or other emergency shelters.
 - Designated emergency preparedness, communications and operations centers and other facilities required for emergency response.
 - Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures.
 - Buildings and other structures containing quantities of highly toxic materials that:
 - Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the International Fire Code; and
 - Are sufficient to pose a threat to the public if released.^b
 - Aviation control towers, air traffic control centers and emergency aircraft hangars.
 - Buildings and other structures having critical national defense functions.
 - Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.5 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.
 b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided that it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

New amendment approved in Public Comment to incorporate 2024 IBC changes.

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	<p>1604.5.1 Multiple occupancies. Where a building or structure is occupied by two or more occupancies not included in the same risk category, it shall be assigned the classification of the highest risk category corresponding to the various occupancies. Where buildings or structures have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a building or structure provides required access to, required egress from or shares life safety components with another portion having a higher risk category, both portions shall be assigned to the higher risk category.</p> <p style="background-color: magenta;">Exception: Where a storm shelter designed and constructed in accordance with ICC 500 is provided in a building, structure or portion thereof normally occupied for other purposes, the risk category for the normal occupancy of the building shall apply unless the storm shelter is a designated emergency shelter in accordance with Table 1604.5.</p>	<p>1604.5.1 Multiple occupancies. Where a building or structure is occupied by two or more occupancies not included in the same <i>risk category</i>, it shall be assigned the classification of the highest risk category corresponding to the various occupancies. Where buildings or structures have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a building or structure provides required access to, required egress from or shares life safety components with another portion having a higher <i>risk category</i>, or provides required electrical, communications, mechanical, plumbing, or conveying support to another portion assigned to Risk Category IV, both portions shall be assigned to the higher risk category.</p> <p>Exception: Where a storm shelter designed and constructed in accordance with ICC 500 is provided in a building, structure or portion thereof normally occupied for other purposes, the <i>risk category</i> for the normal occupancy of the building shall apply unless the storm shelter is a designated emergency shelter in accordance with Table 1604.5.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>New amendment approved in Public Comment to incorporate 2024 IBC changes.</p>
	<p>1604.7 Preconstruction load tests. Materials and methods of construction that are not capable of being designed by approved engineering analysis or that do not comply with the applicable referenced standards, or alternative test procedures in accordance with Section 1707, shall be load tested in accordance with Section 1710-1709.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1604.8.2 Structural walls. Walls that provide vertical load-bearing resistance or lateral shear resistance for a portion of the structure shall be anchored to the roof and to all floors and members that provide lateral support for the wall or that are supported by the wall. The connections shall be capable of resisting the horizontal forces specified in Section 1.4.5-1.4.4 of ASCE 7 for walls of structures assigned to Seismic Design Category A and to Section 12.11 of ASCE 7 for walls of structures assigned to all other seismic design categories. Required anchors in masonry walls of hollow units or cavity walls shall be embedded in a reinforced grouted structural element of the wall. See Sections 1609 for wind design requirements and 1613 for earthquake design requirements.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1604.9 Counteracting structural actions Wind and seismic detailing. Structural members, systems, components and cladding shall be designed to resist forces due to earthquakes and wind, with consideration of overturning, sliding and uplift. Continuous load paths shall be provided for transmitting these forces to the foundation. Where sliding is used to isolate the elements, the effects</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>of friction between sliding elements shall be included as a force. Lateral force-resisting systems shall meet seismic detailing requirements and limitations prescribed in this code and ASCE 7 Chapters 11, 12, 13, 15, 17 and 18 as applicable, even where wind load effects are greater than seismic load effects.</p> <p>Exception: References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.</p>		
	<p>1604.10 Loads on storm shelters. Loads and load combinations on storm shelters shall be determined in accordance with ICC 500.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1604.10 Wind and seismic detailing. Lateral force-resisting systems shall meet seismic detailing requirements and limitations prescribed in this code and ASCE 7, excluding Chapter 14 and Appendix 11A, even when wind load effects are greater than seismic load effects.</p>		
	<p style="text-align: center;">SECTION 1605 LOAD COMBINATIONS</p> <p>1605.1 General. Buildings and other structures and portions thereof shall be designed to resist the strength load combinations specified in ASCE 7, Section 2.3, the allowable stress design load combinations specified in ASCE 7, Section 2.4, or the alternative allowable stress design load combinations of Section 1605.2</p> <p>Buildings and other structures and portions thereof shall be designed to resist all of the following:</p> <ol style="list-style-type: none"> 1. The load combinations specified in Section 1605.2, 1605.3.1 or 1605.3.2. 2. The load combinations specified in Chapters 18 through 23. 3. The seismic load effects including overstrength factor in accordance with Sections 2.3.6 and 2.4.5 of ASCE 7 where required by Chapters 12, 13, and 15 of ASCE 7. With the simplified procedure of ASCE 7, Section 12.14, the seismic load effects including overstrength factor in accordance with Section 12.14.3.2 and Chapter 2 of ASCE 7 shall be used. Applicable loads shall be considered, including both earthquake and wind, in accordance with the specified load combinations. Each load combination shall also be investigated with one or more of the variable loads set to zero. Where the load combinations with overstrength factor in Sections 2.3.6 and 2.4.5 of ASCE 7 apply, they shall be used as follows: <ol style="list-style-type: none"> 1. The basic combinations for strength design with overstrength factor in lieu of Equations 16-5 and 16-7 in Section 1605.2. 2. The basic combinations for allowable stress design with overstrength factor in lieu of Equations 16-12, 16-14 and 16-16 in Section 1605.3.1. 		<p>New requirements</p>

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	<p>3. The basic combinations for allowable stress design with overstrength factor in lieu of Equations 16-21 and 16-22 in Section 1605.3.2.</p> <p>Exceptions:</p> <p>1. The modifications to load combinations of ASCE 7 Section 2.3, ASCE 7 Section 2.4, and Section 1605.2 specified in ASCE 7 Chapters 18 and 19 shall apply.</p> <p>2. Where the allowable stress design load combinations of ASCE 7 Section 2.4 are used, flat roof snow loads of 30 pounds per square foot (1.44 kN/m²) and roof live loads of 30 pounds per square foot (1.44 kN/m²) or less need not be combined with seismic load. Where flat roof snow loads exceed 30 pounds per square foot (1.44 kN/m²), 20 percent shall be combined with seismic loads.</p> <p>3. Where the allowable stress design load combinations of ASCE 7 Section 2.4 are used, crane hook loads need not be combined with roof live loads or with more than three-fourths of the snow load or one-half of the wind loads.</p>		
	<p>1605.1.1 Stability. Regardless of which load combinations are used to design for strength, where overall structure stability (such as stability against overturning, sliding, or buoyancy) is being verified, use of the load combinations specified in Section 2.3 or 2.4 of ASCE 7, and in Section 1605.2 shall be permitted. Where the load combinations specified in ASCE 7, Section 2.3 are used, strength reduction factors applicable to soil resistance shall be provided by a registered design professional. The stability of retaining walls shall be verified in accordance with Section 1807.2.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1605.2 Load combinations using strength design or load and resistance factor design. Where strength design or load and resistance factor design is used, buildings and other structures, and portions thereof, shall be designed to resist the most critical effects resulting from the following combinations of factored loads:</p> <p>where:</p> <p>= 1 for places of public assembly live loads in excess of 100 pounds per square foot (4.79 kN/m²), and parking garages; and 0.5 for other live loads.</p> <p>= 0.7 for roof configurations (such as saw tooth) that do not shed snow off the structure, and 0.2 for other roof configurations.</p> <p>Exceptions:</p> <p>1. Where other factored load combinations are specifically required by other provisions of this code, such combinations shall take precedence.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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~~2. Where the effect of H resists the primary variable load effect, a load factor of 0.9 shall be included with H where H is permanent and H shall be set to zero for all other conditions.~~

~~1605.2.1 Other loads. Where flood loads, Fa, are to be considered in the design, the load combinations of Section 2.3.2 of ASCE 7 shall be used. Where self-straining loads, T, are considered in design, their structural effects in combination with other loads shall be determined in accordance with Section 2.3.4 of ASCE 7. Where an ice sensitive structure is subjected to loads due to atmospheric icing, the load combinations of Section 2.3.3 of ASCE 7 shall be considered.~~

1605.2 Alternative allowable stress design load combinations. In lieu of the ~~basic load combinations specified in Section 1605.3.1 load combinations in ASCE 7, Section 2.4,~~ structures and portions thereof shall be permitted to be designed for the most critical effects resulting from the following combinations. Where using these alternative allowable stress load combinations that include wind or seismic loads, allowable stresses are permitted to be increased or load combinations reduced where permitted by the material chapter of this code or the referenced standards. For load combinations that include the counteracting effects of dead and wind loads, only two-thirds of the minimum dead load likely to be in place during a design wind event shall be used. ~~Where using allowable stresses that have been increased or load combinations that have been reduced as permitted by the material chapter of this code or the referenced standards, where wind loads are calculated in accordance with Chapters 26 through 31 of ASCE 7, the coefficient (w) in the following equations shall be taken as 1.3. For other wind loads, (w) shall be taken as 1. Where allowable stresses have not been increased or load combinations have not been reduced as permitted by the material chapter of this code or the referenced standards, (w) shall be taken as 1.~~ Where using these alternative load combinations to evaluate sliding, overturning and soil bearing at the soil-structure interface, the reduction of foundation overturning from Section 12.13.4 in ASCE 7 shall not be used. Where using these alternative basic load combinations for proportioning foundations for loadings, which include seismic loads, the vertical seismic load effect, E_v , in Equation 12.4-4 of ASCE 7 is permitted to be taken equal to zero. Where required by ASCE 7, Chapters 12, 13 and 15, the load combinations including overstrength of ASCE 7, Section 2.3.6 shall be used.

$D + L + (L_r, \text{ or } S \text{ or } R)$ (Equation 16-~~1~~)

$D + L + 0.6W$ (Equation 16-~~2~~)

$D + L + 0.6W + S/2$ (Equation 16-~~3~~)

$D + L + S + 0.6(W/2)$ (Equation 16-~~4~~)

$D + L + S + E/1.4$ (Equation 16-~~5~~)

$0.9D + E/1.4$ (Equation 16-~~6~~)

Edits made to clarify code, no major changes to code requirements.

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	<p>Exceptions:</p> <ol style="list-style-type: none"> 1. Crane hook <i>loads</i> need not be combined with <i>roof live loads</i> or with more than three-fourths of the snow load or one-half of the wind load. 2. Flat roof snow <i>loads</i> of 30 pounds per square foot (1.44 kN/m²) or less and <i>roof live loads</i> of 30 pounds per square foot (1.44 kN/m²) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 pounds per square foot (1.44 kN/m²), 20 percent shall be combined with seismic loads. 		
	<p>1606.2 Weights of materials of construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1605.3 Load combinations using allowable stress design. Load combinations for allowable stress design shall be in accordance with Section 1605.3.1 or 1605.2.</p>		
	<p>1605.3.1 Basic load combinations. Where allowable stress design (working stress design), as permitted by this code, is used, structures and portions thereof shall resist the most critical effects resulting from the following combinations of loads:</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Crane hook loads need not be combined with roof live load or with more than three fourths of the snow load or one-half of the wind load. 2. Flat roof snow loads of 30 psf (1.44 kN/m²) or less and roof live loads of 30 psf (1.44 kN/m²) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 psf (1.44 kN/m²), 20 percent shall be combined with seismic loads. 3. Where the effect of H resists the primary variable load effect, a load factor of 0.6 shall be included with H where H is permanent and H shall be set to zero for all other conditions. 4. In Equation 16-15, the wind load, W, is permitted to be reduced in accordance with Exception 2 of Section 2.4.1 of ASCE 7. 5. In Equation 16-16, 0.6 D is permitted to be increased to 0.9 D for the design of special reinforced masonry shear walls complying with Chapter 21. 		

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	<p>1605.3.1.1 Stress increases. Increases in allowable stresses specified in the appropriate material chapter or the referenced standards shall not be used with the load combinations of Section 1605.3.1, except that increases shall be permitted in accordance with Chapter 23.</p>		
	<p>1605.3.1.2 Other loads. Where flood loads, F_a, are to be considered in design, the load combinations of Section 2.4.2 of ASCE 7 shall be used. Where self-straining loads, T, are considered in design, their structural effects in combination with other loads shall be determined in accordance with Section 2.4.4 of ASCE 7. Where an ice-sensitive structure is subjected to loads due to atmospheric icing, the load combinations of Section 2.4.3 of ASCE 7 shall be considered.</p>		
	<p>1605.3.2 Alternative basic load combinations. In lieu of the basic load combinations specified in Section 1605.3.1, structures and portions thereof shall be permitted to be designed for the most critical effects resulting from the following combinations. When Where using these alternative basic allowable stress load combinations that include wind or seismic loads, allowable stresses are permitted to be increased or load combinations reduced where permitted by the material chapter of this code or the referenced standards. For load combinations that include the counteracting effects of dead and wind loads, only two-thirds of the minimum dead load likely to be in place during a design wind event shall be used. When Where using allowable stresses that have been increased or load combinations that have been reduced as permitted by the material chapter of this code or the referenced standards, where wind loads are calculated in accordance with Chapters 26 through 31 of ASCE 7, the coefficient (ϕ) in the following equations shall be taken as 1.3. For other wind loads, (ϕ) shall be taken as 1. When Where allowable stresses have not been increased or load combinations have not been reduced as permitted by the material chapter of this code or the referenced standards, (ϕ) shall be taken as 1. When Where using these alternative load combinations to evaluate sliding, overturning and soil bearing at the soil-structure interface, the reduction of foundation overturning from Section 12.13.4 in ASCE 7 shall not be used. When Where using these alternative basic load combinations for proportioning foundations for loadings, which include seismic loads, the vertical seismic load effect, E_v, in Equation 12.4-4 of ASCE 7 is permitted to be taken equal to zero.</p> <p>$D + L + (L_r \text{ or } S \text{ or } R)$ (Equation 16-17)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>D + L + 0.6 wW (Equation 16-18) D + L + 0.6 wW + S/2 (Equation 16-19) D + L + S + 0.6 wW/2 (Equation 16-20) D + L + S + E/1.4 (Equation 16-21) 0.9D + E/1.4 (Equation 16-22) Exceptions: 1. Crane hook loads need not be combined with roof live loads or with more than three-fourths of the snow load or one-half of the wind load. 2. Flat roof snow loads of 30 psf (1.44 kN/m²) or less and roof live loads of 30 psf (1.44 kN/m²) or less need not be combined with seismic loads. Where flat roof snow loads exceed 30 psf (1.44 kN/m²), 20 percent shall be combined with seismic loads.</p>		
	<p>1605.3.2.1 Other loads. Where F, H or T are to be considered in the design, each applicable load shall be added to the combinations specified in Section 1605.3.2. Where self-straining loads, T, are considered in the design, their structural effects in combination with other loads shall be determined in accordance with Section 2.4.4 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1606 DEAD LOADS</p> <p>1606.1 General. Dead loads are those loads defined in Chapter 2 of this code. Dead loads shall be considered to be permanent loads.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1606.2 Design dead load Weights of materials of construction. For purposes of design, the actual weights of materials of construction and fixed service equipment shall be used. In the absence of definite information, values used shall be subject to the approval of the building official.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1606.3 Weight of fixed service equipment. In determining dead loads for purposes of design, the weight of fixed service equipment, including the maximum weight of the contents of fixed service equipment, shall be included. The components of fixed service equipment that are variable, such as liquid content and movable trays, shall not be used to counteract forces causing overturning, sliding, and uplift conditions in accordance with Section 1.3.6 of ASCE 7.</p> <p>Exceptions:</p> <p>1. Where force effects are the result of the presence of the variable components, the components are permitted to be used to counter those load effects. In such cases, the</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p><u>structure shall be designed for force effects with the variable components present with them absent.</u></p> <p><u>2. For the calculation of seismic force effects, the components of fixed service equipment that are variable, such as liquid contents and movable trays, need not exceed those expected during normal operation.</u></p>		
	<p>1606.4 Photovoltaic panel systems. <u>The weight of photovoltaic panel systems, their support system, and ballast shall be considered as dead load.</u></p>		Edits made to clarify code, no major changes to code requirements.
	<p>1606.5 Vegetative and landscaped roofs. <u>The weight of all landscaping and hardscaping materials for vegetative and landscaped roofs shall be considered as dead load. The weight shall be computer considering both fully saturated soil and drainage layer materials and fully dry soil and drainage layer materials to determine the most severe load effects on the structure.</u></p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 1607 LIVE LOADS</p>		
	<p>1607.2 Loads not specified. For occupancies or uses not designated in Table 1607.4 <u>Section 1607</u>, the live load shall be determined in accordance with a method approved by the building official.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.4 Concentrated live loads. Floors, roofs and other similar surfaces shall be designed to support the uniformly distributed live loads prescribed in Section 1607.3 or the concentrated live loads, given in Table 1607.1, whichever produces the greater load effects. Unless otherwise specified, the indicated concentration shall be assumed to be uniformly distributed over an area of 2 1/2 feet by 2 1/2 feet (762 mm by 762 mm) and shall be located so as to produce the maximum load effects in the structural members.</p>		
	<p>1607.6 Helipads. Helipads shall be designed for the following live loads:</p> <ol style="list-style-type: none"> 1. A uniform live load, L, as specified below in Items 1.1 and 1.2. This load shall not be reduced. <ol style="list-style-type: none"> 1.1. 40 psf (1.92 kN/m²) where the design basis helicopter has a maximum take-off weight of 3,000 pounds (13.35 kN) or less. 1.2. 60 psf (2.87 kN/m²) where the design basis helicopter has a maximum take-off weight greater than 3,000 pounds (13.35 kN). 		Edits made to clarify code, no major changes to code requirements.

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	<p>2. A single concentrated live load, L, of 3,000 pounds (13.35 kN) applied over an area of 4.5 inches by 4.5 inches (114 mm by 114 mm) and located so as to produce the maximum load effects on the structural elements under consideration. The concentrated load is not required to act concurrently with other uniform or concentrated live loads.</p> <p>3. Two single concentrated live loads, L, 8 feet (2438 mm) apart applied on the landing pad (representing the helicopter's two main landing gear, whether skid type or wheeled type), each having a magnitude of 0.75 times the maximum take-off weight of the helicopter, and located so as to produce the maximum load effects on the structural elements under consideration. The concentrated loads shall be applied over an area of 8 inches by 8 inches (203 mm by 203 mm) and are not required to act concurrently with other uniform or concentrated live loads.</p> <p>Landing areas designed for a design basis helicopter with maximum take-off weight of 3,000-pounds(13.35 kN) shall be identified with a 3,000 pound (13.34 kN) weight limitation. The landing area weight limitation shall be indicated by the numeral "3" (kips) located in the bottom right corner of the landing area as viewed from the primary approach path. The indication for the landing area weight limitation shall be a minimum 5 feet (1524 mm) in height.</p>		
	<p>1607.7 Passenger vehicle garages. Floors in garages or portions of a building used for the storage of motor vehicles shall be designed for the uniformly distributed <i>live loads</i> indicated in Table 1607.1 or the following concentrated load:</p> <p>1. For garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds (13.35 kN) acting on an area of 4.5 inches by 4.5 inches (114 mm by 114 mm).</p> <p>2. For mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds (10 kN) per wheel.</p>		<p>New requirement</p>
	<p>1607.7 1607.8 Heavy vehicle loads.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.7.1 1607.8.1 Loads.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.7.2 1607.8.2 Fire truck and emergency vehicles. Where a structure or portions of a structure are accessed and loaded by fire department access vehicles and other</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>similar emergency vehicles, the structure shall be designed for the greater of the following loads:</p> <ol style="list-style-type: none"> 1. The actual operational loads, including outrigger reactions and contact areas of the vehicles as stipulated and approved by the building official or. 2. The live loading specified in Section 1607.7.1. 		
	<p>TABLE 1607.1</p> <p>MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_0, AND MINIMUM CONCENTRATED LIVE LOADS_r</p>		Changes in table to provide additional requirements
	<p>1607.7.3 1607.8.3 Heavy vehicle garages. Garages designed to accommodate vehicles that exceed a 10,000-pound (4536 kg) gross vehicle weight rating, shall be designed using the live loading specified by Section 1607.7.1. For garages the design for impact and fatigue is not required.</p> <p>Exception: The vehicular live loads and load placement are allowed to be determined using the actual vehicle weights for the vehicles allowed onto the garage floors, provided that such loads and placement are based on rational engineering principles and are approved by the building official, but shall not be not less than 50 psf (2.9 kN/m²). This live load shall not be reduced.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.7.4 1607.8.4 Forklifts and movable equipment.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.7.4.1 1607.8.4.1 Impact and fatigue.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.7.5 1607.8.5 Posting.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.8 1607.9 Loads on handrails, guards, grab bars seats and vehicle barriers and seats. Handrails, guards, grab bars, accessible seats, accessible benches and vehicle barriers shall be designed and constructed for the structural loading conditions set forth in this section. Handrails and guards shall be designed and constructed for the structural loading conditions set forth in Section</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>1607.8.1 Grab bars, shower seats and accessible benches shall be designed and constructed for the structural loading conditions set forth in Section 1607.8.2.</p>		
	<p>1607.8.4 1607.9.1 Handrails and guards. Handrails and guards shall be designed to resist a linear load of 50 pounds per linear foot (plf) (0.73 kN/m) in accordance with Section 4.5.1.1 of ASCE 7. Glass handrail assemblies and guards shall also comply with Section 2407.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. For one- and two-family dwellings, only the single concentrated load required by Section 1607.8.1.1 shall be applied. 2. In Group I-3, F, H and S occupancies, for areas that are not accessible to the general public and that have an occupant load less than 50, the minimum load shall be 20 pounds per foot (0.29 kN/ m). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.8.4.4 1607.9.1.1 Concentrated load. <i>Handrails</i> and <i>guards</i> shall be designed to resist a concentrated <i>load</i> of 200 pounds (0.89 kN) in accordance with Section 4.5.1.1 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.8.4.2 1607.9.1.2 Guard component loads. Intermediate rails. Intermediate rails (all those except the handrail), balusters and panel fillers shall Balusters, panel fillers and guard infill components, including all rails except the handrail and the top rail, shall be designed to resist a concentrated load of 50 pounds (0.22 kN) in accordance with Section 4.5.1.1 4.5.1.2 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.8.2 1607.9.2 Grab bars, shower seats and dressing room accessible benches. Grab bars, shower seats and dressing room accessible benches bench seats shall be designed to resist a single concentrated load of 250 pounds (1.11 kN) applied in any direction at any point on the grab bar, shower seat, or seat of the accessible bench so as to produce the maximum load effects.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.8.3 1607.9 1607.10 Vehicle barriers.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	1607.9 1607.10 1607.11 Impact loads.		Edits made to clarify code, no major changes to code requirements.
	1607.10.1 1607.10.4 1607.11.1 Elevators.		Edits made to clarify code, no major changes to code requirements.
	1607.10.2 1607.10.2 1607.11.2 Machinery. For the purpose of design, the weight of machinery and moving loads shall be increased as follows to allow for impact: (1) light machinery, shaft or motor driven, 20 percent; and (2) reciprocating machinery or power driven units, 50 percent. Percentages shall be increased where specified by the manufacturer.		Edits made to clarify code, no major changes to code requirements.
	1607.9.3 1607.10.3 1607.11.3 Elements supporting hoists for façade access and building maintenance equipment. In addition to any other applicable live loads, structural elements that support hoists for façade access equipment shall be designed for a live load consisting of the larger of the rated load of the hoist times 2.5 and the stall load of the hoist In addition to any other applicable live loads, structural elements that support hoists for façade access and building maintenance equipment shall be designed for a live load of 2.5 times the rated load of the hoist or the stall load of the hoist, whichever is larger.		Edits made to clarify code, no major changes to code requirements.
	1607.10.4 1607.11.4 1607.11.4 Fall arrest, and lifeline, and rope descent system anchorages. In addition to any other applicable live loads, fall arrest, and lifeline, lifeline, and rope descent system anchorages and structural elements that support these anchorages shall be designed for a live load of not less than 3,100 pounds (13.8 kN) for each attached lifeline line , in every any direction that a fall arrest the load can be applied. Anchorage of horizontal lifelines and the structural elements that support these anchorages shall be designed for the maximum tension that develops in the horizontal lifeline from these live loads.		Edits made to clarify code, no major changes to code requirements.
	1607.11 1607.12 1607.12 Reduction in uniform live loads. Except for uniform live loads at roofs, all other minimum uniformly distributed live loads, Lo, in Table 1607.1 are permitted to be reduced in accordance with Section 1607.11.1 or 1607.11.2. Uniform live loads at roofs are permitted to be reduceu in accordance with Section 1607.12.2.		New requirements

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	<p>1607.11.1 1607.12.1 Basic uniform live load reduction. Subject to the limitations of Sections 1607.11.1.1 through 1607.11.1.3 and Table 1607.1, members for which a value of $K_{LL}A_T$ is 400 square feet (37.16 3²) or more are permitted to be designed for a reduced uniformly distributed live load, L, in accordance with the following equation:</p>		<p>New requirements</p>
	<p>TABLE 1607.11.4 TABLE 1607.12.1</p>		<p>Numbering change</p>
	<p>1607.11.1.2 1607.12.1.2 Heavy live loads. Live loads that exceed 100 psf (4.79 kN/m²) shall not be reduced.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The live loads for members supporting two or more floors are permitted to be reduced by a maximum of not greater than maximum of not greater than 20 percent, but the live load shall be not less than L as calculated in Section 1607.10.1-1607.11.1. 2. For uses other than storage, where approved, additional live load reductions shall be permitted where shown by the registered design professional that a rational approach has been used and that such reductions are warranted. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.11.1.3 1607.12.1.3 Passenger vehicle garages. The live loads shall not be reduced in passenger vehicle garages.</p> <p>Exception: The live loads for members supporting two or more floors are permitted to be reduced by a maximum of not greater than maximum of not greater than 20 percent, but the live load be shall not be not less than L as calculated in Section 1607.101.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.11.2 1607.12.2 Alternative uniform live load reduction. As an alternative to Section 1607.10.1 1607.11.1 and subject to the limitations of Table 1607.1, uniformly distributed live loads are permitted to be reduced in accordance with the following provisions. Such</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>reductions shall apply to slab systems, beams, girders, columns, piers, walls and foundations.</p> <p>1. A reduction shall not be permitted where the live load exceeds 100 psf (4.79 kN/m²) except that the design live load for members supporting two or more floors is permitted to be reduced by a maximum of not greater than 20 percent.</p> <p>Exception: For uses other than storage, where approved, additional live load reductions shall be permitted where shown by the registered design professional that a rational approach has been used and that such reductions are warranted.</p> <p>2. A reduction shall not be permitted in passenger vehicle parking garages except that the live loads for members supporting two or more floors are permitted to be reduced by a maximum of not greater than 20 percent.</p> <p>3. For live loads not exceeding 100 psf (4.79 kN/m²), the design live load for any structural member supporting 150 square feet (13.94 m²) or more is permitted to be reduced in accordance with Equation 16-24.</p> <p>4. For one-way slabs, the area, A, for use in Equation 16-24 shall not exceed the product of the slab span and a width normal to the span of 0.5 times the slab span.</p> <p>$R = 0.08(A - 150)$ (Equation 16-24) For SI: $R = 0.861(A - 13.94)$</p> <p>Such reduction shall not exceed the smallest of:</p> <ol style="list-style-type: none"> 1. 40 percent for members supporting one floor. 2. 60 percent for members supporting two or more floors. 3. R as determined by the following equation: $R = 23.1(1 + D/Lo)$ (Equation 16-25) where: A = Area of floor supported by the member, square feet (m²). D = Dead load per square foot (m²) of area supported. Lo = Unreduced live load per square foot (m²) of area supported. R = Reduction in percent. 		
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	<p>1607.12 1607.13 Distribution of floor loads. Where uniform floor live loads are involved in the design of structural members arranged so as to create continuity, the minimum applied loads shall be the full dead loads on all spans in combination with the floor live loads on spans selected to produce the greatest load effect at each location under consideration. Floor live loads are permitted to be reduced in accordance with Section 1607.10-1607.11.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13 1607.14 Roof loads.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13.1 1607.14.1 Distribution of roof loads. Where uniform roof live loads are reduced to less than 20 psf (0.96 kN/m²) in accordance with Section 1607.12.2.4-1607.13.2.1 and are applied to the design of structural members arranged so as to create continuity, the reduced roof live load shall be applied to adjacent spans or to alternate spans, whichever produces the most unfavorable load effect. See Section 1607.12.2-1607.13.2 for reductions in minimum roof live loads and Section 7.5 of ASCE 7 for partial snow loading.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13.2 1607.14.2 General. Reduction in uniform roof live loads. The minimum uniformly distributed live loads of roofs and marquees, Lo, in Table 1607.1 are permitted to be reduced in accordance with Section 1607.12.2.4-1607.123.2.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13.2.1 1607.14.2.1 Ordinary roofs, awnings and canopies.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13.3 1607.14.2.2 Occupiable roofs. Areas of roofs that are occupiable, such as vegetative roofs, roof gardens landscaped roofs or for assembly or other similar purposes, and marquees are permitted to have their uniformly distributed live loads reduced in accordance with Section 1607.12.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.12.3.1-1607.13.3.1 Vegetative and landscaped roofs. The weight of all landscaping materials shall be considered as dead load and shall be computed on the basis of saturation of the soil as determined in accordance with ASTM E2397 Section 3.1.4 of ASCE 7. The uniform design live load in unoccupied</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>landscaped areas on roofs shall be 20 psf (0.958 kN/m²). The uniform design live load for occupied landscaped areas on roofs shall be determined in accordance with Table 1607.1.</p>		
	<p>1607.13.4 1607.14.3 Awnings and canopies.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.13.5 1607.14.4 Photovoltaic panel systems.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1607.13.5.1 1607.14.4.1 Roof live load. Roof surfaces to be covered by solar photovoltaic panels or modules shall be designed for the roof live load, L_r, assuming that the photovoltaic panels or modules are not present. The roof photovoltaic live load in areas covered by solar photovoltaic panels or modules shall be in addition to the panel loading unless the area covered by each solar photovoltaic panel or module is inaccessible. Areas where the clear space between the panels and the rooftop is not more than 24 inches (610 mm) shall be considered inaccessible. Roof surfaces not covered by photovoltaic panels shall be designed for the roof live load. Roof structures that support photovoltaic panel systems shall be designed to resist each of the following conditions:</p> <ol style="list-style-type: none"> 1. Applicable uniform and concentrated roof loads with the photovoltaic panel system dead loads. <ul style="list-style-type: none"> Exception: Roof live loads need not be applied to the area covered by photovoltaic panels where the clear space between the panels and the roof surface is 24 inches (610 mm) or less. 2. Applicable uniform and concentrated roof loads without the photovoltaic panel system present. 		Edits made to clarify code, no major changes to code requirements.
	<p>1607.12.5.2 Photovoltaic panels or modules. The structure of a roof that supports solar photovoltaic panels or modules shall be designed to accommodate the full solar photovoltaic panels or modules and ballast dead load, including</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>concentrated loads from support frames in combination with the loads from Section 1607.123.5.1 and other applicable loads. Where applicable, snow drift loads created by the photovoltaic panels or modules shall be included.</p>		
	<p>1607.13.5.2.1 Photovoltaic panels installed on open grid roof structures. Structures with open grid framing and without a roof deck or sheathing supporting photovoltaic panel systems shall be designed to support the uniform and concentrated roof live loads specified in Section 1607.13.5.1, except that the uniform roof live load shall be permitted to be reduced to 12 psf (0.57 kN/m²).</p>		
	<p>1607.13.5.2 1607.14.4.2 Photovoltaic panels or modules.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13.5.2.1 1607.14.4.3 Photovoltaic panels installed on open grid roof structures.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.13.5.3 1607.14.4.4 Ground-mounted photovoltaic (PV) panel systems. Photovoltaic panels or modules installed as an independent structure. Solar photovoltaic panels or modules Ground-mounted photovoltaic (PV) panel systems that are independent structures and do not have accessible/occupied space underneath are not required to accommodate a roof photovoltaic live load, provided that the area under the structure is restricted to keep the public away. Other loads and combinations in accordance with Section 1605 shall be accommodated. Solar photovoltaic panels or modules that are designed to be the roof, span to structural supports and have accessible/occupied space underneath shall have the panels or modules and all supporting structures designed to support a roof photovoltaic live load, as defined in Section 1607.14.4.1 in combination with other applicable loads. Solar photovoltaic panels or modules in this application are not permitted to be classified as "not accessible" in accordance with Section 1607.14.4.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	1607.13.5.4 1607.14.4.5 Ballasted photovoltaic panel systems.		Edits made to clarify code, no major changes to code requirements.
	1607.14 1607.15 Crane loads.		Edits made to clarify code, no major changes to code requirements.
	1607.14.1 1607.15.1 Maximum wheel load.		Edits made to clarify code, no major changes to code requirements.
	1607.14.2 1607.15.2 Vertical impact force. The maximum wheel loads of the crane shall be increased by the following percentages shown below to determine account for the induced effects of vertical impact or vibration force : Monorail cranes (powered) 25 percent Cab-operated or remotely operated bridge cranes (powered) 25 percent Pendant-operated bridge cranes (powered) 10 percent Bridge cranes or monorail cranes with hand-gearred bridge, trolley and hoist 0 percent		Edits made to clarify code, no major changes to code requirements.
	1607.14.3 1607.15.3 Lateral force.		
	1607.14.4 1607.15.4 Longitudinal force.		
	1607.15 1607.16 Interior walls and partitions.		
	1607.15.1 1607.16.1 Fabric partitions.		

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	<p>1607.15.2 1607.16.2 Fire walls. In order to meet the structural stability requirements of Section 706.2 where the structure on either side of the wall has collapsed, fire walls and their supports shall be designed to withstand a minimum horizontal allowable stress load of 5 psf (0.240 kN/m²).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1607.17 Fixed ladders. Fixed ladders with rungs shall be designed to resist a single concentrated load of 300 pounds (1.33 kN) in accordance with Section 4.5.4 of ASCE 7. Where rails of fixed ladders extend above a floor or platform at the top of the ladder, each side rail extension shall be designed to resist a single concentrated load of 100 (0.445 kN) in accordance with Section 4.5.4 of ASCE 7. Ship's ladders shall be designed to resist the stair loads given in Table 1607.1.</p>		<p>New requirement</p>
	<p>1607.18 Library stack rooms. The live loading indicated in Table 1607.1 for library stack rooms applies to stack room floors that support nonmobile, double-faced library book stacks, subject to the following limitations:</p> <ol style="list-style-type: none"> 1. The nominal book stack unit height shall not exceed 90 inches (2290 mm). 2. The nominal shelf depth shall not exceed 12 inches (305 mm) for each face. 3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches (914 mm) in width. 		<p>New requirement</p>
	<p>1607.19 Seating for assembly uses. Bleachers, folding and telescopic seating and grandstands shall be designed for the loads specified in ICC 300. Stadiums and arenas with fixed seats shall be designed for the horizontal sway loads in Section 1607.19.1.</p>		<p>New requirement</p>
	<p>1607.19.1 Horizontal sway loads. The design of stadiums and arenas with fixed seats shall include horizontal swaying forces applied to each row of seats as follows:</p> <ol style="list-style-type: none"> 1. Twenty-four pounds per linear foot (0.35 kN/m) of seat applied in a direction parallel to each row of seats. 2. Ten pounds per linear foot (0.15 kN/m) of seat applied in a direction perpendicular to each row of seats. <p>The parallel and perpendicular horizontal swaying forces are not required to be applied simultaneously.</p>		<p>New requirement</p>
	<p>1607.20 Sidewalks, vehicular driveways, and yards subject to trucking. The live loading indicated in Table 1607.1 for sidewalks, vehicular driveways, and yards subject to trucking shall comply with the requirements of this section.</p>		<p>New requirement</p>

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	1607.20.1 Uniform loads. In addition to the <i>loads</i> indicated in Table 1607.1, other uniform <i>loads</i> in accordance with an approved method that contains provisions for truck loading shall be considered where appropriate.		New requirement
	1607.20.2 Concentrated loads. The concentrated wheel <i>load</i> indicated in Table 1607.1 shall be applied on an area of 4½ inches by 4½ inches (114 mm by 114 mm).		New requirement
	1607.21 Stair leads. The concentrated <i>load</i> indicated in Table 1607.1 for <i>stair</i> treads shall be applied on an area of 2 inches by 2 inches (51 mm by 51 mm). This <i>load</i> need not be assumed to act concurrently with the uniform <i>load</i> .		New requirement
	1607.22 Residential attics. The <i>live loads</i> indicated in Table 1607.1 for <i>attics</i> in residential occupancies shall comply with the requirements of this section.		New requirement
	1607.22.1 Uninhabitable attics without storage. In residential occupancies, uninhabitable <i>attic</i> areas without storage are those where the maximum clear height between the joists and rafters is less than 42 inches (1067 mm), or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches (1067 mm) in height by 24 inches (610 mm) in width, or greater, within the plane of the trusses. The <i>live load</i> in Table 1607.1 need not be assumed to act concurrently with any other <i>live load</i> requirement.		New requirement
	1607.22.2 Uninhabitable attics with storage. In residential occupancies, uninhabitable <i>attic</i> areas with storage are those where the maximum clear height between the joist and rafter is 42 inches (1067 mm) or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches (1067 mm) in height by 24 inches (610 mm) in width, or greater, within the plane of the trusses. The <i>live load</i> in Table 1607.1 need only be applied to those portions of the joists or truss bottom chords where both of the following conditions are met: <ol style="list-style-type: none"> 1. The <i>attic</i> area is accessed from an opening not less than 20 inches (508 mm) in width by 30 inches (762 mm) in length that is located where the clear height in the <i>attic</i> is not less than 30 inches (762 mm). 2. The slope of the joists of truss bottom chords is not greater than 2 units vertical in 12 units horizontal. 		New requirement

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	<u>The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 pounds per square foot (0.48 kN/m²).</u>		
	<u>1607.22.3 Attics served by stairs. Attic spaces served by stairways other than the pull-down type shall be designed to support the minimum live load specified for habitable attics and sleeping rooms.</u>		New requirement
	SECTION 1608 SNOW LOADS 1608.1 General. Design snow loads shall be determined in accordance with Chapter 7 of ASCE 7, but the design roof load shall not be not less than that determined by Section 1607.		Edits made to clarify code, no major changes to code requirements.
	1608.3 Ponding instability. Susceptible bays of roofs shall be evaluated for ponding instability in accordance with Section 7.11 Chapters 7 and 8 of ASCE 7.		Edits made to clarify code, no major changes to code requirements.
	SECTION 1609 WIND LOADS	SECTION 1609 WIND LOADS	
1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the ultimate design wind speed, Vult , and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered. {EDITORIAL NOTE: PORTIONS OF 1609.1.1 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IBC.} The wind speeds in Figures 1609.3(1), 1609.3(2) and 1609.3(3) are ultimate design wind speeds as determined in accordance with Section 1609.3, Vult , and shall be converted in accordance with Section 1609.3.1 to nominal design wind speeds, Vasd , when the provisions of the standards referenced in Exceptions 4 and 5 are used.	1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the ultimate basic design wind speed, V_{ult} , and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered. Exceptions: 1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings. 2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AWC WFCM. 3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230. 4. Designs using NAAMM FP 1001.	1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7. The type of opening protection required, the basic design wind speed, V , and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered. EDITORIAL NOTE: PORTIONS OF SECTION 1609.1.1 NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2021 IBC. The wind speeds in Figures 1609.3(1), 1609.3(2) and 1609.3(3) are basic design wind speeds as determined in accordance with Section 1609.3, V , and shall be converted in accordance with Section 1609.3.1 to allowable stress design wind speeds, V_{asd} , when the provisions of the standards referenced in Exceptions 4 and 5 are used.	New requirement Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.

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	<p>5. Designs using TIA-222 for antenna-supporting structures and antennas, provided that the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.</p> <p>6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.</p> <p>The wind speeds in Figures 1609.3(1), 1609.3(2) through and 1609.3(38) are ultimate basic design wind speeds, V_{ult}, and shall be converted in accordance with Section 1609.3.1 to nominal allowable stress design wind speeds, V_{asd}, when the provisions of the standards referenced in Exceptions 4 and 5 are used.</p>		
	<p>1609.1.1.1 Applicability. The provisions of ICC 600 are applicable only to buildings located within Exposure B or C as defined in Section 1609.4. The provisions of ICC 600, AWC WFCM and AISI S230 shall not apply to buildings sited on the upper half of an isolated hill, ridge or escarpment meeting all of the following conditions:</p> <ol style="list-style-type: none"> 1. The hill, ridge or escarpment is 60 feet (18 288 mm) or higher if located in Exposure B or 30 feet (9144 mm) or higher if located in Exposure C; and 2. The maximum average slope of the hill exceeds 10 percent; and 3. The hill, ridge or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or 1/2 miles (4.64-3.22 km), whichever is greater. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1609.1.2.4-1609.2.1 Louvers.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1609.1.2.2-1609.2.2 Application of ASTM E1996. The text of Section 6.2.2 of ASTM E1996 shall be substituted as follows:</p> <p>6.2.2 Unless otherwise specified, select the wind zone based on the strength-basic design wind speed, V_{ult}, as follows:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>6.2.2.1 Wind Zone 1-130 mph □ ultimate basic design wind speed, $V_{ult} < 140$ mph.</p> <p>6.2.2.2 Wind Zone 2-140 mph □ ultimate basic design wind speed, $V_{ult} < 150$ mph at greater than one mile (1.6 km) from the coastline. The coastline shall be measured from the mean high water mark.</p> <p>6.2.2.3 Wind Zone 3-150 mph (58 m/s) □ ultimate basic design wind speed, $V_{ult} \square 160$ mph (63 m/s), or 140 mph (54 m/s) □ ultimate basic design wind speed, $V_{ult} \square 160$ mph (63 m/s) and within one mile (1.6 km) of the coastline. The coastline shall be measured from the mean high water mark.</p> <p>6.2.2.4 Wind Zone 4- □ ultimate basic design wind speed, $V_{ult} > 160$ mph (63 m/s).</p>		
	<p>1609.1.2.3-1609.2.3 Garage doors.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1609.2 Definitions. For the purposes of Section 1609 and as used elsewhere in this code, the following terms are defined in Chapter 2.</p> <p>HURRICANE-PRONE REGIONS.</p> <p>WIND-BORNE DEBRIS REGION.</p> <p>WIND SPEED, V_{ult}.</p> <p>WIND SPEED, V_{asd}.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1609.3 Ultimate design wind speed. The ultimate design wind speed, V_{ult}, in mph, for the determination of the wind loads shall be determined by entering the physical address of the property where the building will be constructed into the ASCE 7 Windspeed Website: http://hazards.atcouncil.org/. The proposed design windspeed for the structure shall be based on the appropriate risk category as determined by Table 1604.5. An applicant shall include a pdf copy of the windspeed determination from the website when submitting the design documents/plans for code compliance verification and permit approval. Figures 1609.3(1), 1609.3(2) and 1609.3(3). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category III and IV buildings and structures shall be obtained from Figure 1609.3(2). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609.3(3). The ultimate design wind speed, V_{ult}, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The ultimate design wind speeds, V_{ult}, determined by the local jurisdiction shall be in accordance with Section 26.5.1 of ASCE 7. The basic design wind speed, V, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1) through 1609.3(12). The basic design wind speed, V, for use in the design of Risk Category II buildings and structures shall be obtained from Figures 1609.3(1), 1609.3(5) and 1609.3(6). The basic design wind speed, V, for use in the design of Risk Category III buildings and structures shall be obtained from Figures 1609.3(2), 1609.3(7) and 1609.3(8). The basic design wind speed, V, for use in the design of Risk Category IV buildings and structures shall be obtained from Figures 1609.3(3), 1609.3(9) and 1609.3(10). The basic design wind speed, V, for use in the design of Risk Category I buildings and structures shall be obtained from Figures 1609.3(4), 1609.3(11) and 1609.3(12). The basic design wind speed, V, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The basic design wind speeds, V, determined by the local jurisdiction shall be in accordance with Chapter 26 of ASCE 7. Design Windspeed shall be determined by entering the physical address of the property where the building will be constructed into the ASCE 7 Windspeed Website: http://hazards.atcouncil.org/. A copy of the windspeed</p>	<p>1609.3 Ultimate-Basic design wind speed. The ultimate design wind speed, V_{ult}, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1), 1609.3(2) and 1609.3(3). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category III and IV buildings and structures shall be obtained from Figure 1609.3(2). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609.3(3). The ultimate design wind speed, V_{ult}, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The ultimate design wind speeds, V_{ult}, determined by the local jurisdiction shall be in accordance with Section 26.5.1 of ASCE 7. The basic design wind speed, V, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1) through 1609.3(12). The basic design wind speed, V, for use in the design of Risk Category II buildings and structures shall be obtained from Figures 1609.3(1), 1609.3(5) and 1609.3(6). The basic design wind speed, V, for use in the design of Risk Category III buildings and structures shall be obtained from</p>	<p>1609.3 Basic design wind speed. The basic design wind speed, V, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1) through 1609.3(12). The basic design wind speed, V, for use in the design of Risk Category II buildings and structures shall be obtained from Figures 1609.3(1), 1609.3(5) and 1609.3(6). The basic design wind speed, V, for use in the design of Risk Category III buildings and structures shall be obtained from Figures 1609.3(2), 1609.3(7) and 1609.3(8). The basic design wind speed, V, for use in the design of Risk Category IV buildings and structures shall be obtained from Figures 1609.3(3), 1609.3(9) and 1609.3(10). The basic design wind speed, V, for use in the design of Risk Category I buildings and structures shall be obtained from Figures 1609.3(4), 1609.3(11) and 1609.3(12). The basic design wind speed, V, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The basic design wind speeds, V, determined by the local jurisdiction shall be in accordance with Chapter 26 of ASCE 7. Design Windspeed shall be determined by entering the physical address of the property where the building will be constructed into the ASCE 7 Windspeed Website: http://hazards.atcouncil.org/. A copy of the windspeed</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No major change to amendment, updates hazard website to the ASCE Hazard Tool.</p>

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<p>V_{ult} determined by the local jurisdiction shall be in accordance with Section 26.5.1 of ASCE 7.</p> <p>In nonhurricane-prone regions, when the ultimate design wind speed, V_{ult}, is estimated from regional climatic data, the ultimate design wind speed, V_{ult}, shall be determined in accordance with Section 26.5.3 of ASCE 7.</p>	<p>Figures 1609.3(2), 1609.3(7) and 1609.3(8). The basic design wind speed, V, for use in the design of Risk Category IV buildings and structures shall be obtained from Figures 1609.3(3), 1609.3(9) and 1609.3(10). The basic design wind speed, V, for use in the design of Risk Category I buildings and structures shall be obtained from Figures 1609.3(4), 1609.3(11) and 1609.3(12). The basic design wind speed, V, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The basic design wind speeds, V, determined by the local jurisdiction shall be in accordance with Chapter 26 of ASCE 7. In nonhurricane-prone regions, when the basic design wind speed, V, is estimated from regional climatic data, the basic design wind speed, V, shall be determined in accordance with Chapter 26 of ASCE 7.</p> <p>In nonhurricane-prone regions, when the ultimate design wind speed, V_{ult}, is estimated from regional climatic data, the ultimate design wind speed, V_{ult}, shall be determined in accordance with Section 26.5.3 of ASCE 7.</p>	<p>printout from the website shall be attached to the plans for verification. In nonhurricane-prone regions, when the basic design wind speed, V, is estimated from regional climatic data, the basic design wind speed, V, shall be determined in accordance with Chapter 26 of ASCE 7.</p>	
	<p>FIGURE 1608.2(1) GROUND SNOW LOADS, p_g, FOR THE UNITED STATES (psf) – Note</p> <p>FIGURE 1608.2(2) GROUND SNOW LOADS, p_g, FOR THE UNITED STATES (psf) – Note</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>1609.3.1 Wind speed conversion. When required, the ultimate design wind speeds of Figures 1609.3(1), 1609.3(2) and 1609.3(3) from the ASCE 7 Windspeed Website: http://hazards.atcouncil.org/ shall be converted to nominal design wind speeds, V_{asd}, using Table 1609.3.1 or Equation 16-33.</p> <p>$V_{asd} = V_{ult} \sqrt{0.6}$ (Equation 16-33)</p> <p>where:</p> <p>V_{asd} = Nominal design wind speed applicable to methods specified in Exceptions 4 and 5 of Section 1609.1.1.</p> <p>V_{ult} = Ultimate design wind speeds determined from Figures 1609.3(1), 1609.3(2) or 1609.3(3) the ASCE 7 Windspeed Website: http://hazards.atcouncil.org/.</p>	<p>1609.3.1 Wind speed conversion. When Where required, the ultimate basic design wind speeds of Figures 1609.3(1), 1609.3(2) through and 1609.3(12) shall be converted to nominal allowable stress design wind speeds, V_{asd}, using Table 1609.3.1 or Equation 16-17.</p> <p>$V_{asd} = V \sqrt{0.6}$ (Equation 16-17)</p> <p>where:</p> <p>V_{asd} = Allowable stress design wind speed applicable to methods specified in Exceptions 4 and 5 of Section 1609.1.1.</p> <p>V = Basic design wind speeds determined from Figures 1609.3(1) through 1609.3(12).</p>	<p>1609.3.1 Wind speed conversion. Where required, the basic design wind speeds of Figures 1609.3(1) through 1609.3(12) shall be converted to allowable stress design wind speeds, V_{asd}, using Table 1609.3.1 or Equation 16-17.</p> <p>$V_{asd} = V \sqrt{0.6}$ (Equation 16-17)</p> <p>where:</p> <p>V_{asd} = Allowable stress design wind speed applicable to methods specified in Exceptions 4 and 5 of Section 1609.1.1.</p> <p>V = Basic design wind speeds determined from Figures 1609.3(1) through 1609.3(12).</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Minor update to Houston amendment to coincide with base code changes.</p>
	<p>1609.4.2 Surface roughness categories. A ground surface roughness within each 45-degree (0.79 rad) sector shall be determined for a distance upwind of the site as defined in Section 1609.4.3 from the following categories defined below, for the purpose of assigning an exposure category as defined in Section 1609.4.3.</p> <p>Surface Roughness B. Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Surface Roughness C. Open terrain with scattered obstructions having heights generally less than 30 feet (9144 mm). This category includes flat open country, and grasslands.</p> <p>Surface Roughness D. Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats and unbroken ice.</p>		
	<p>1609.4.3 Exposure categories. An exposure category shall be determined in accordance with the following:</p> <p>Exposure B. For buildings with a mean roof height of less than or equal to 30 feet (9144 mm), Exposure B shall apply where the ground surface roughness, as defined by Surface Roughness B, prevails in the upwind direction for a distance of at least not less than 1,500 feet (457 m). For buildings with a mean roof height greater than 30 feet (9144 mm), Exposure B shall apply where Surface Roughness B prevails in the upwind direction for a distance of at least not less than 2,600 feet (792 m) or 20 times the height of the building, whichever is greater.</p> <p>Exposure C. Exposure C shall apply for all cases where Exposure B or D does not apply.</p> <p>Exposure D. Exposure D shall apply where the ground surface roughness, as defined by Surface Roughness D, prevails in the upwind direction for a distance of at least not less than 5,000 feet (1524 m) or 20 times the height of the building, whichever is greater. Exposure D shall also apply where the ground surface roughness immediately upwind of the site is B or C, and the site is within a distance of 600 feet (183 m) or 20 times the building height, whichever is greater, from an Exposure D condition as defined in the previous sentence.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1609.5.3 Rigid tile. Wind loads on rigid tile roof coverings shall be determined in accordance with the following equation:</p> <p>(Equation 16-34)</p> <p>For SI:</p> <p>where:</p> <p>b = Exposed width, feet (mm) of the roof tile.</p> <p>CL = Lift coefficient. The lift coefficient for concrete and clay tile shall be 0.2 or shall be determined by test in accordance with Section 1504.2.1.</p> <p>GCp = Roof pressure coefficient for each applicable roof zone determined from Chapter 30 of ASCE 7. Roof coefficients shall not be adjusted for internal pressure.</p>		

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	<p>L = Length, feet (mm) of the roof tile.</p> <p>La = Moment arm, feet (mm) from the axis of rotation to the point of uplift on the roof tile. The point of uplift shall be taken at 0.76L from the head of the tile and the middle of the exposed width. For roof tiles with nails or screws (with or without a tail clip), the axis of rotation shall be taken as the head of the tile for direct deck application or as the top edge of the batten for battened applications. For roof tiles fastened only by a nail or screw along the side of the tile, the axis of rotation shall be determined by testing. For roof tiles installed with battens and fastened only by a clip near the tail of the tile, the moment arm shall be determined about the top edge of the batten with consideration given for the point of rotation of the tiles based on straight bond or broken bond and the tile profile.</p> <p>Ma = Aerodynamic uplift moment, feet-pounds (N-mm) acting to raise the tail of the tile.</p> <p>qh = Wind velocity pressure, psf (kN/m²) determined from Section 27.3.2 of ASCE 7.</p> <p>Concrete and clay roof tiles complying with the following limitations shall be designed to withstand the aerodynamic uplift moment as determined by this section.</p> <ol style="list-style-type: none"> 1. The roof tiles shall be either loose laid on battens, mechanically fastened, mortar set or adhesive set. 2. The roof tiles shall be installed on solid sheathing that has been designed as components and cladding. 3. An underlayment shall be installed in accordance with Chapter 15. 4. The tile shall be single lapped interlocking with a minimum head lap of not less than 2 inches (51 mm). 5. The length of the tile shall be between 1.0 and 1.75 feet (305 mm and 533 mm). 6. The exposed width of the tile shall be between 0.67 and 1.25 feet (204 mm and 381 mm). 7. The maximum thickness of the tail of the tile shall not exceed 1.3 inches (33 mm). 8. Roof tiles using mortar set or adhesive set systems shall have at least not less than two-thirds of the tile's area free of mortar or adhesive contact. 		
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	<p>1609.6 Alternate all heights method. The alternate wind design provisions in this section are simplifications of the ASCE 7 Directional Procedure.</p>		
	<p>1609.6.1 Scope. As an alternative to ASCE 7 Chapters 27 and 30, the following provisions are permitted to be used to determine the wind effects on regularly shaped buildings, or other structures that are regularly shaped, that meet all of the following conditions:</p> <ol style="list-style-type: none"> 1. The building or other structure is less than or equal to 75 feet (22 860 mm) in height with a height to least width ratio of 4 or less, or the building or other structure has a fundamental frequency greater than or equal to 1 hertz. 2. The building or other structure is not sensitive to dynamic effects. 3. The building or other structure is not located on a site for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration. 4. The building shall meet the requirements of a simple diaphragm building as defined in ASCE 7 Section 26.2, where wind loads are only transmitted to the main windforce resisting system (MWFRS) at the diaphragms. 5. For open buildings, multspan gable roofs, stepped roofs, sawtooth roofs, domed roofs, roofs with slopes greater than 45 degrees (0.79 rad), solid freestanding walls and solid signs, and rooftop equipment, apply ASCE 7 provisions. 		
	<p>1609.6.1.1 Modifications. The following modifications shall be made to certain subsections in ASCE 7: in Section 1609.6.2, symbols and notations that are specific to this section are used in conjunction with the symbols and notations in ASCE 7 Section 26.3.</p>		
	<p>1609.6.1.1 Modifications. The following modifications shall be made to certain subsections in ASCE 7: in Section 1609.6.2, symbols and notations that are specific to this section are used in conjunction with the symbols and notations in ASCE 7 Section 26.3.</p>		
	<p>1609.6.2 Symbols and notations. Coefficients and variables used in the alternative all heights method equations are as follows:</p> <p>$C_{net} = \text{Net pressure coefficient based on } K_d [(G) (C_p) - (GC_{pi})]$, in accordance with Table 1609.6.2.</p>		

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	<p>G = Gust effect factor for rigid structures in accordance with ASCE 7 Section 26.9.1.</p> <p>Kd = Wind directionality factor in accordance with ASCE 7 Table 26-6.</p> <p>Pnet = Design wind pressure to be used in determination of wind loads on buildings or other structures or their components and cladding, in psf (kN/m²).</p>		
	<p>TABLE 1609.6.2</p> <p>NET PRESSURE COEFFICIENTS, Cnet</p> <p>a, b</p>		Removed
	<p>1609.6.3 Design equations. When using the alternative all-heights method, the MWFRS, and components and cladding of every structure shall be designed to resist the effects of wind pressures on the building envelope in accordance with Equation 16-35.</p> <p>Pnet = 0.00256V²KzCnetKzt (Equation 16-35)</p> <p>Design wind forces for the MWFRS shall be not less than 16 psf (0.77 kN/m²) multiplied by the area of the structure projected on a plane normal to the assumed wind direction (see ASCE 7 Section 27.4.7 for criteria). Design net wind pressure for components and cladding shall be not less than 16 psf (0.77 kN/m²) acting in either direction normal to the surface.</p>		
	<p>1609.6.4 Design procedure. The MWFRS and the components and cladding of every building or other structure shall be designed for the pressures calculated using Equation 16-35.</p>		
	<p>1609.6.4.1 Main windforce-resisting systems. The MWFRS shall be investigated for the torsional effects identified in ASCE 7 Figure 27.4-8.</p>		
	<p>1609.6.4.2 Determination of Kz and Kzt. Velocity pressure exposure coefficient, Kz, shall be determined in accordance with ASCE 7 Section 27.3.1 and the topographic factor, Kzt, shall be determined in accordance with ASCE 7 Section 26.8.</p> <p>1. For the windward side of a structure, Kzt and Kz shall be based on height z.</p> <p>2. For leeward and sidewalls, and for windward and leeward roofs, Kzt and Kz shall be based on mean roof height h.</p>		

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	<p>1609.6.4.3 Determination of net pressure coefficients, Cnet. For the design of the MWFRS and for components and cladding, the sum of the internal and external net pressure shall be based on the net pressure coefficient, Cnet.</p> <p>1. The pressure coefficient, Cnet, for walls and roofs shall be determined from Table 1609.6.2.</p> <p>2. Where Cnet has more than one value, the more severe wind load condition shall be used for design.</p>		
	<p>1609.6.4.4 Application of wind pressures. When using the alternative all heights method, wind pressures shall be applied simultaneously on, and in a direction normal to, all building envelope wall and roof surfaces.</p>		
	<p>1609.6.4.4.1 Components and cladding. Wind pressure for each component or cladding element is applied as follows using Cnet values based on the effective wind area, A, contained within the zones in areas of discontinuity of width and/or length "a," "2a" or "4a" at: corners of roofs and walls; edge strips for ridges, rakes and eaves; or field areas on walls or roofs as indicated in figures in tables in ASCE 7 as referenced in Table 1609.6.2 in accordance with the following:</p> <p>1. Calculated pressures at local discontinuities acting over specific edge strips or corner boundary areas.</p> <p>2. Include "field" (Zone 1, 2 or 4, as applicable) pressures applied to areas beyond the boundaries of the areas of discontinuity.</p> <p>3. Where applicable, the calculated pressures at discontinuities (Zone 2 or 3) shall be combined with design pressures that apply specifically on rakes or eave overhangs.</p>		
	<p style="text-align: center;">SECTION 1610</p> <p style="text-align: center;">SOIL LATERAL LOADS <u>AND HYDROSTATIC PRESSURE</u></p> <p>1610.1 General. <u>Lateral pressures.</u> Foundation walls and retaining walls shall be designed to resist lateral soil loads <u>from adjacent soil</u>. Soil loads specified in Table 1610.1 shall be used as the minimum design lateral soil loads unless determined otherwise by a geotechnical investigation in accordance with Section 1803. Foundation walls and other walls in which horizontal movement is restricted at the top shall be designed for at-rest pressure. Retaining walls free to move and rotate at the top shall be permitted to be designed for active pressure. Design lateral <u>Lateral</u> pressure from surcharge loads shall be added to the lateral earth pressure <u>soil load</u>. Design lateral <u>Lateral</u> pressure shall be increased if <u>expansive</u> soils <u>are present</u> at the site are expansive. Foundation walls shall</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>be designed to support the weight of the full hydrostatic pressure of undrained backfill unless a drainage system is installed in accordance with Sections 1805.4.2 and 1805.4.3.</p> <p>Exception: Foundation walls extending not more than 8 feet (2438 mm) below grade and laterally supported at the top by flexible <i>diaphragms</i> shall be permitted to be designed for active pressure.</p>		
	<p>1610.2 Uplift loads and floor and foundations. Basement floors, slabs on ground, foundations, and similar approximately horizontal elements below grade shall be designed to resist uplift loads where applicable. The upward pressure of water shall be taken as the full hydrostatic pressure applied over the entire area. The hydrostatic load shall be measured from the underside of the element being evaluated. The design for upward loads caused by expansive soils shall comply with Section 1808.6.</p>		<p>New requirement</p>
	<p style="text-align: center;">SECTION 1611 RAIN LOADS</p> <p>1611.1 Design rain loads. Each portion of a roof shall be designed to sustain the load of rainwater that will accumulate on it if the primary drainage system for that portion is blocked plus the uniform load caused by water that rises above the inlet of the secondary drainage system at its design flow as per the requirements of Chapter 8 of ASCE 7. The design rainfall shall be based on the 100-year 15-minute duration event, or on other rainfall rates determined from approval local weather data. Alternatively, a design rainfall of twice the 100-year hourly rainfall rate indicated in Figures 1611.1(1) through 1611.1(5) shall be permitted.</p> <p>$R = 5.2(d_s + d_h)$ (Equation 16-36 16-35)</p> <p>For SI: $R = 0.0098(d_s + d_h)$</p> <p>where:</p> <p>d_h = Additional depth of water on the undeflected roof above the inlet of secondary drainage system at its design flow (in other words, the hydraulic head), in inches (mm).</p> <p>d_s = Depth of water on the undeflected roof up to the inlet of secondary drainage system when the primary drainage system is blocked (in other words, the static head), in inches (mm).</p> <p>R = Rain load on the undeflected roof, in psf (kN/m²). When the phrase “undeflected roof” is used, deflections from loads (including dead loads) shall not be considered when determining the amount of rain on the roof.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1611.2 Ponding instability. Susceptible bays of roofs shall be evaluated for ponding instability in accordance with Chapters 7 and 8 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1611.3 Controlled drainage. Roofs equipped with hardware to control the rate of drainage shall be equipped with a secondary drainage system at a higher elevation that limits accumulation of water on the roof above that elevation. Such roofs shall be designed to sustain the load of rainwater that will accumulate on them to the elevation of the secondary drainage system plus the uniform load caused by water that rises above the inlet of the secondary drainage system at its design flow determined from Section 1611.1. Such roofs shall also be checked for ponding instability in accordance with Section 1611.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>{EDITORIAL NOTE: DELETE SECTION 1612 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</p> <p>1612.1 General. <u>See Chapter 19 of the City Code and the Infrastructure Design Manual.</u></p>	<p style="text-align: center;">SECTION 1612 FLOOD LOADS</p> <p>1612.1 General. Within flood hazard areas as established in Section 1612.3, all new construction of buildings, structures and portions of buildings and structures, including substantial improvement and restoration of substantial damage to buildings and structures, shall be designed and constructed to resist the effects of flood hazards and flood loads. For buildings that are located in more than one flood hazard area, the provisions associated with the most restrictive flood hazard area shall apply.</p>	<p style="text-align: center;">SECTION 1612 FLOOD LOADS</p> <p>{EDITORIAL NOTE: DELETE SECTION 1612 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</p> <p>1612.1 General. <u>See Chapter 19 of the City Code and the Infrastructure Design Manual.</u></p>	<p>No changes to Houston amendment.</p>
	<p>1612.2 Definitions—Design and construction. The following terms are defined in Chapter 2: The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24.</p> <p>BASE FLOOD.</p> <p>BASE FLOOD ELEVATION.</p> <p>BASEMENT.</p> <p>COASTAL A ZONE.</p> <p>COASTAL HIGH HAZARD AREA.</p> <p>DESIGN FLOOD.</p> <p>DESIGN FLOOD ELEVATION.</p> <p>DRY FLOODPROOFING.</p> <p>EXISTING STRUCTURE.</p> <p>FLOOD or FLOODING.</p> <p>FLOOD DAMAGE RESISTANT MATERIALS.</p> <p>FLOOD HAZARD AREA.</p> <p>FLOOD INSURANCE RATE MAP (FIRM).</p> <p>FLOOD INSURANCE STUDY.</p> <p>FLOODWAY.</p>		

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	<p>LOWEST FLOOR.</p> <p>SPECIAL FLOOD HAZARD AREA.</p> <p>START OF CONSTRUCTION.</p> <p>SUBSTANTIAL DAMAGE.</p> <p>SUBSTANTIAL IMPROVEMENT.</p>		
	<p>FIGURE 1611.1(1) 100-YEAR, 1-HOUR RAINFALL (INCHES) WESTERN UNITED STATES</p> <p>FIGURE 1611.1(2) 100-YEAR, 1-HOUR RAINFALL (INCHES) CENTRAL UNITED STATES</p> <p>FIGURE 1611.1(3) 100-YEAR, 1-HOUR RAINFALL (INCHES) EASTERN UNITED STATES</p> <p>FIGURE 1611.1(4) 100-YEAR, 1-HOUR RAINFALL (INCHES) ALASKA</p> <p>FIGURE 1611.1(5) 100-YEAR, 1-HOUR RAINFALL (INCHES) HAWAII</p>		<p>New figures for rainfall</p>
	<p>1612.3.1 Design flood elevations. Where design flood elevations are not included in the flood hazard areas established in Section 1612.3, or where floodways are not designated, the building official is authorized to require the applicant to do one of the following:</p> <ol style="list-style-type: none"> 1. Obtain and reasonably utilize any design flood elevation and floodway data available from a federal, state or other source, or, 2. Determine the design flood elevation and or floodway in accordance with accepted hydrologic and hydraulic engineering practices used to define special flood hazard areas. Determinations shall be undertaken by a registered design professional who shall document that the technical methods used reflect currently accepted engineering practice. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1612.4 Design and construction. The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24.</p> <p>1612.5 Flood hazard documentation. The following documentation shall be prepared and sealed by a <i>registered design professional</i> and submitted to the <i>building official</i>:</p> <ol style="list-style-type: none"> 1. For construction in <i>flood hazard areas</i> other than <i>coastal high hazard areas</i> or <i>coastal A zones</i>: <ol style="list-style-type: none"> 1.1. The elevation of the <i>lowest floor</i>, including the basement, as required by the lowest floor elevation 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>inspection in Section 110.3.3 and for the final inspection in Section 110.3.10.4-110.3.12.1.</p> <p>1.2. For fully enclosed area below the <i>design flood elevation</i> where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.7.2.1 of ASCE 24, <i>construction documents</i> shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.7.2.2 of ASCE 24.</p> <p>1.3. For <i>dry floodproofed</i> nonresidential buildings, <i>construction documents</i> shall include a statement that the <i>dry floodproofing</i> is designed in accordance with ASCE 24 and shall include the flood emergency plan specified in Chapter 6 of ASCE 24.</p> <p>2. For construction in <i>coastal high hazard areas</i> and <i>coastal A zones</i>:</p> <p>2.1. The elevation of the bottom of the lowest horizontal structural member as required by the <i>lowest floor</i> elevation inspection in Section 110.3.3 and for the final inspection in Section 110.3.10.4-110.3.12.1.</p> <p>2.2. <i>Construction documents</i> shall include a statement that the building is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and <i>floodloads</i> acting simultaneously on all building components, and other <i>load</i> requirements of Chapter 16.</p> <p>2.3. For breakaway walls designed to have a resistance of more than 20 psf (0.96 kN/m²) determined using <i>allowable stress design</i>, <i>construction documents</i> shall include a statement that the breakaway wall is designed in accordance with ASCE 24.</p> <p>2.4. For breakaway walls where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.7.2.1 of ASCE 24, construction documents shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.7.2.2 of ASCE 24.</p>		
	<p style="text-align: center;">SECTION 1613 EARTHQUAKE LOADS</p> <p>1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with Chapters 11, 12, 13, 15, 17 and 18 of ASCE 7, excluding Chapter 14 and Appendix 11-AASCE 7, as applicable.</p>	<p style="text-align: center;">SECTION 1613 EARTHQUAKE LOADS</p>	<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>The seismic design category for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Detached one- and two-family dwellings, assigned to Seismic Design Category A, B or C, or located where the mapped short-period spectral response acceleration, S_s, is less than 0.4 g. 2. The seismic force-resisting system of wood-frame buildings that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section. 3. Agricultural storage structures intended only for incidental human occupancy. 4. Structures that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic structures, buried utility lines and their appurtenances and nuclear reactors. 		
	<p>1613.2 Definitions. The following terms are defined in Chapter 2:</p> <p>DESIGN EARTHQUAKE GROUND MOTION.</p> <p>ORTHOGONAL.</p> <p>RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE) GROUND MOTION RESPONSE ACCELERATION.</p> <p>SEISMIC DESIGN CATEGORY.</p> <p>SEISMIC FORCE-RESISTING SYSTEM.</p> <p>SITE CLASS.</p> <p>SITE COEFFICIENTS.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1613.3-1613.2 Seismic ground motion values.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1613.3.1-1613.2.1 Mapped acceleration parameters.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1613.3.2 1613.2.2 Site class definitions.—Based on the site soil properties, the site shall be classified as Site Class A, B, C, D, E or F in accordance with Chapter 20 of ASCE 7.</p> <p>Where the soil properties are not known in sufficient detail to determine the site class, Site Class D, subjected to the requirements of Section 1613.2.3, shall be used unless the building official or geotechnical data determines that Site Class E or F soils are present at the site.</p> <p>Where site investigations that are performed in accordance with Chapter 20 of ASCE 7 reveal rock conditions consistent with Site Class B, but site-specific velocity measurements are not made, the site coefficients F_a and F_v shall be taken at unity (1.0).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1613.3.3 1613.2.3 Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. The maximum considered earthquake spectral response acceleration for short periods, S_{MS}, and at 1-second period, S_{M1}, adjusted for site class effects shall be determined by Equations 16-37 and 16-38 16-36 and 16-37, respectively:</p> <p>$S_{MS} = F_a S_s$ (Equation 16-36 16-37)</p> <p>$S_{M1} = F_v S_1$ (Equation 16-37 16-38)</p> <p>but S_{MS} shall not be taken less than S_{M1} except when determining the seismic design category in accordance with Section 1613.2.5.</p> <p>where:</p> <p>F_a = Site coefficient defined in Table 1613.3.3(1) 1613.2.3(1).</p> <p>F_v = Site coefficient defined in Table 1613.3.3(2) 1613.2.3(2).</p> <p>S_s = The mapped spectral accelerations for short periods as determined in Section 1613.3.4 1613.2.1.</p> <p>S_1 = The mapped spectral accelerations for a 1-second period as determined in Section 1613.3.4 1613.2.1.</p> <p>Where Site Class D is selected as the default site class per Section 1613.2.2, the value of F_a shall be not less than 1.2. Where the simplified design procedure of ASCE 7 Section 12.14 is used, the value of F_a shall be determined in accordance with ASCE 7 Section 12.14.8.1, and the values of F_v, S_{MS} and S_{M1} need not be determined.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1613.2.4 Design spectral response acceleration parameters. Five-percent damped design spectral response acceleration at short periods, SDS, and at 1-second period, SD1, shall be determined from Equations 16-38 and 16-39, respectively:</p> <p>1613.3.4 Design spectral response acceleration parameters. Five percent damped design spectral response acceleration at short periods, SDS, and at 1-second period, SD1, shall be determined from (Equations 16-39 and 16-40, respectively:8)</p> $S_{DI} = \frac{2}{3} S_{MI} \text{ (Equation 16-39)}$ <p>where:</p> <p>SMS = The maximum considered earthquake spectral response accelerations for short period as determined in Section 1613.3.3 1613.2.3.</p> <p>SM1 = The maximum considered earthquake spectral response accelerations for 1-second period as determined in Section 1613.3.3 1613.2.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1613.3.5 1613.2.5 Determination of seismic design category. Structures classified as Risk Category I, II or III that are located where the mapped spectral response acceleration parameter at 1-second period, S1, is greater than or equal to 0.75 shall be assigned to Seismic Design Category E. Structures classified as Risk Category IV that are located where the mapped spectral response acceleration parameter at 1-second period, S1, is greater than or equal to 0.75 shall be assigned to Seismic Design Category F. All Other structures shall be assigned to a seismic design category based on their risk category and the design spectral response acceleration parameters, SDS and SD1, determined in accordance with Section 1613.3.4 1613.2.4 or the site-specific procedures of ASCE 7. Each building and structure shall be assigned to the more severe seismic design category in accordance with Table 1613.3.5(1) or 1613.3.5(2) 1613.2.5(1) or 1613.2.5(2), irrespective of the fundamental period of vibration of the structure, T.</p>	<p>1613.2.5 Determination of seismic design category. <u>This jurisdiction is classified as Seismic Design Category A.</u> Structures classified as Risk Category I, II or III that are located where the mapped spectral response acceleration parameter at 1-second period, S1, is greater than or equal to 0.75 shall be assigned to Seismic Design Category E. Structures classified as Risk Category IV that are located where the mapped spectral response acceleration parameter at 1-second period, S1, is greater than or equal to 0.75 shall be assigned to Seismic Design Category F. Other structures shall be assigned to a seismic design category based on their risk category and the design spectral response acceleration parameters, SDS and SD1, determined in accordance with Section 1613.2.4 or the site-specific procedures of ASCE 7. Each building and structure shall be assigned to the more severe seismic design category in accordance with Table 1613.2.5(1) or 1613.2.5(2), irrespective of the fundamental period of vibration of the structure, T.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment, relocated from 1613.3.5.</p>
	<p>1613.3.5.1 1613.2.5.1 Alternative seismic design category determination.</p>		
	<p>1613.3.5.2 1613.2.5.2 Simplified design procedure.</p>		

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		<p>1613.3 Ballasted photovoltaic panel systems. Ballasted, roof-mounted photovoltaic panel systems shall not be installed on roofs within Houston. All roof-mounted photovoltaic panel systems shall conform to Section 3111. Ballasted, roof-mounted photovoltaic panel systems need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to Seismic Design Category C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response history or other approved analysis or shake table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.</p>	<p>No change to Houston amendment, relocated from 1613.6, updated to correct reference.</p>
<p>1613.3.5 Determination of seismic design category. This jurisdiction is classified as Seismic Design Category A. Structures classified as Risk Category I, II or III that are located where the mapped spectral response acceleration parameter at 1-second period, S_{1s}, is greater than or equal to 0.75 shall be assigned to Seismic Design Category E. Structures classified as Risk Category IV that are located where the mapped spectral response acceleration parameter at 1-second period, S_{1s}, is greater than or equal to 0.75 shall be assigned to Seismic Design Category F. All other structures shall be assigned to a seismic design category based on their risk category and the design spectral response acceleration parameters, S_{DS} and S_{D1s}, determined in accordance with Section 1613.4 or the site-specific procedures of ASCE 7. Each building and structure shall be assigned to the more severe seismic design category in accordance with Table 1613.3.5(1) or 1613.3.5(2), irrespective of the fundamental period of vibration of the structure, T.</p> <p>Moved to 1613.2.5</p>	<p>N/A</p>		
	<p>1613.4 Alternatives to ASCE 7. The provisions of Section 1613.4 shall be permitted as alternatives to the relevant provisions of ASCE 7.</p>		
	<p>1613.4.1 Additional seismic force-resisting systems for seismically isolated structures. Add the following exception to the end of Section 17.5.4.2 of ASCE 7:</p> <p>Exception: For isolated structures designed in accordance with this standard, the structural system limitations including structural height limits, in Table 12.2-1 for ordinary steel concentrically braced frames (OCBFs) as defined in Chapter 11 and ordinary moment frames (OMFs) as defined in Chapter 11 are permitted to be taken as 160 feet</p>		

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	<p>(48 768 mm) for structures assigned to Seismic Design Category D, E or F, provided that the following conditions are satisfied:</p> <ol style="list-style-type: none"> 1. The value of RI as defined in Chapter 17 is taken as 1. 2. For OMFs and OCBFs, design is in accordance with AISC 341. 		
	<p>1613.3. Ballasted, roof-mounted photovoltaic panel systems need not be rigidly attached to the roof or supporting structure. Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to Seismic Design Category C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response-history or other approved analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.</p>		<p>New requirement</p>
	<p>1613.5 Amendments to ASCE 7. The provisions of Section 1613.5 shall be permitted as an amendment to the relevant provisions of ASCE 7.</p>		
	<p>1613.5.1 Transfer of anchorage forces into diaphragm. Modify ASCE 7 Section 12.11.2.2.1 as follows:</p> <p>12.11.2.2.1 Transfer of anchorage forces into diaphragm. Diaphragms shall be provided with continuous ties or struts between diaphragm chords to distribute these anchorage forces into the diaphragms. Diaphragm connections shall be positive, mechanical or welded. Added chords are permitted to be used to form subdiaphragms to transmit the anchorage forces to the main continuous cross-ties. The maximum length to width ratio of a wood, wood structural panel or untopped steel deck sheathed structural subdiaphragm that serves as part of the continuous tie system shall be 2.5 to 1. Connections and anchorages capable of resisting the prescribed forces shall be provided between the diaphragm and the attached components. Connections shall extend into the diaphragm a sufficient distance to develop the force transferred into the diaphragm.</p>		
	<p>1613.6 Ballasted photovoltaic panel systems. Ballasted, roof-mounted photovoltaic panel systems need not be rigidly attached to the roof or supporting structure. Ballasted nonpenetrating systems shall be designed and installed only on roofs with slopes not more</p>		

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	<p>than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to Seismic Design Category C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response history analysis or shake table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.</p>		
<p>1613.6 Ballasted photovoltaic panel systems. Ballasted, roof-mounted <i>photovoltaic panel systems</i> shall not be installed on roofs within Houston. All roof-mounted <i>photovoltaic panel systems</i> shall conform to Section 1510.7. Ballasted, roof-mounted <i>photovoltaic panel systems</i> need not be rigidly attached to the roof or supporting structure. Ballasted nonpenetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to <i>Seismic Design Category C, D, E or F</i>, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response history analysis or shake table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.</p> <p>Moved to Section 1613.3</p>	<p>N/A</p>		
	<p>SECTION 1614 ATMOSPHERIC ICE LOADS</p>		
	<p>SECTION 1615 STRUCTURAL INTEGRITY TSUNAMI LOADS</p> <p>1615.1 General. High-rise buildings that are assigned to Risk Category III or IV shall comply with the requirements of this section. Frame structures shall comply with the requirements of Section 1615.3. Bearing wall structures shall comply with the requirements of Section 1615.4 The design and construction of Risk Category III and IV buildings and structures located in the Tsunami Design Zones defined in the Tsunami Design Geodatabase shall be in accordance with Chapter 6 of ASCE 7, except as modified by this code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1615.2 Definitions. The following words and terms are defined in Chapter 2:</p> <p>BEARING WALL STRUCTURE.</p> <p>FRAME STRUCTURE.</p>		
	<p style="text-align: center;">SECTION 1616</p> <p style="text-align: center;">STRUCTURAL INTEGRITY</p> <p>1616.1 General. High-rise buildings that are assigned to Risk Category III or IV shall comply with the requirements of Section 1616.2 if they are frame structures, or Section 1616.3 if they are bearing wall structures.</p>		New requirement
	<p>1615.3-1616.2 Frame structures.</p>		
	<p>1615.3.1-1616.2.1 Concrete frame structures.</p>		
	<p>1615.3.2-1616.3.2 Structural steel, open web steel joist or joist girder, or composite steel and concrete frame structures.</p>		
	<p>1615.3.2.1-1616.3.2.1 Columns.</p>		
	<p>1615.3-1615.2.2 Beams.</p>		
	<p>1615.4-1616.3 Bearing wall structures.</p>		
	<p>1615.4.1-1616.3.1 Concrete wall structures.</p>		

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	<p>1615.4.2-1616.3.2 Other bearing wall structures.</p>		
	<p>1616.3.2.1 Longitudinal ties. Longitudinal ties shall consist of continuous reinforcement in slabs; continuous or spliced decks or sheathing; continuous or spliced members framing to, within or across walls; or connections of continuous framing members to walls. Longitudinal ties shall extend across interior load-bearing walls and shall connect to exterior load-bearing walls and shall be spaced at not greater than 10 feet (3038 mm) on center. Ties shall have a minimum nominal tensile strength, TT, given by Equation 16-40. For ASD the minimum nominal tensile strength shall be permitted to be taken as 1.5 times the allowable tensile stress times the area of the tie.</p> <p>1615.4.2.1 Longitudinal ties. Longitudinal ties shall consist of continuous reinforcement in slabs; continuous or spliced decks or sheathing; continuous or spliced members framing to, within or across walls; or connections of continuous framing members to walls. Longitudinal ties shall extend across interior load-bearing walls and shall connect to exterior load-bearing walls and shall be spaced at not greater than 10 feet (3038 mm) on center. Ties shall have a minimum nominal tensile strength, TT, given by Equation 16-41. For ASD the minimum nominal tensile strength shall be permitted to be taken as 1.5 times the allowable tensile stress times the area of the tie.</p> <p>TT = w LS ≤ αT S (Equation 16-41)</p> <p>where:</p> <p>L = The span of the horizontal element in the direction of the tie, between bearing walls, feet (m).</p> <p>w = The weight per unit area of the floor or roof in the span being tied to or across the wall, psf (N/m²).</p> <p>S = The spacing between ties, feet (m).</p> <p>αT = A coefficient with a value of 1,500 pounds per foot (2.25 kN/m) for masonry</p>		<p>New requirement</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	bearing wall structures and a value of 375 pounds perfoot (0.6 kN/m) for structures with bearing walls of cold-formed steel light-frame construction.		
	1615.4.2.2 1616.3.2.2 Transverse ties.		
	1615.4.2.3 1616.3.2.3 Perimeter ties.		
	1615.4.2.4 1616.3.2.4 Vertical ties.		
2015 Houston IBC – Chapter 17 Special Inspections and Tests	2021 IBC – Chapter 17	2021 Houston Amendments – Chapter 17	Code Analysis
	SECTION 1701 GENERAL		
	1701.2 New materials. New building materials, equipment, appliances, systems or methods of construction not provided for in this code, and any material of questioned suitability proposed for use in the construction of a building or structure, shall be subjected to the tests prescribed in this chapter and in the approved rules to determine character, quality and limitations of use.		
	SECTION 1702 DEFINITIONS NEW MATERIALS 1702.1 Definitions General. The following terms are defined in Chapter 2: New building materials, equipment, appliances, systems or methods of construction not provided for in this code, and any material of questioned suitability proposed for use in the construction of a building or structure, shall be subjected to the tests prescribed in this chapter and in the approved rules to determine character, quality and limitations of use APPROVED AGENCY.		

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	<p>APPROVED FABRICATOR.</p> <p>CERTIFICATE OF COMPLIANCE.</p> <p>DESIGNATED SEISMIC SYSTEM.</p> <p>FABRICATED ITEM.</p> <p>INTUMESCENT FIRE RESISTANT COATINGS.</p> <p>MAIN WINDFORCE RESISTING SYSTEM.</p> <p>MASTIC FIRE RESISTANT COATINGS.</p> <p>SPECIAL INSPECTION.</p> <p>Continuous special inspection.</p> <p>Periodic special inspection.</p> <p>SPECIAL INSPECTOR.</p> <p>SPRAYED FIRE RESISTANT MATERIALS.</p> <p>STRUCTURAL OBSERVATION.</p>		
	<p>SECTION 1703</p> <p>APPROVALS</p>		
	<p>1703.1.1 Independence. An approved agency shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall also disclose to the building official and the registered design professional in responsible charge possible conflicts of interest so that objectivity can be confirmed.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 1704</p> <p>SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION</p>		
	<p>1704.2.1 Special inspector qualifications. Prior to the start of the construction, the approved agencies shall provide written documentation to the building official demonstrating the competence and relevant experience or training of the special inspectors who will perform the special inspections and tests during construction. Experience or training shall be considered to be relevant where the documented experience or training is related in complexity to the same type of special inspection or testing activities for projects of similar complexity and material qualities. These qualifications are in addition to qualifications specified in other sections of this code.</p> <p>The registered design professional in responsible charge and engineers of record involved in the design of the project</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>are permitted to act as the approved agency and their personnel are permitted to act as special inspectors for the work designed by them, provided they qualify as special inspectors.</p>		
	<p>1704.2.5 Special inspection of fabricated items. Where fabrication of structural, load-bearing or lateral load-resisting members or assemblies is being conducted on the premises of a fabricator's shop, special inspections of the fabricated items shall be performed during fabrication.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Special inspections during fabrication are not required where the fabricator maintains approved detailed fabrication and quality control procedures that provide a basis for control of the workmanship and the fabricator's ability to conform to approved construction documents and this code. Approval shall be based upon review of fabrication and quality control procedures and periodic inspection of fabrication practices by the building official. 2. Special inspections are not required where the fabricator is registered and approved in accordance with Section 1704.2.5.1. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1704.2.5.1 Fabricator approval. Special inspections during fabrication are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. Approval shall be based upon review of the fabricator's written fabrication procedural procedures and quality control manuals that provide a basis for control of materials and workmanship, with periodic auditing of fabrication and quality control practices by an approved agency or the building official. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the owner or the owner's authorized agent for submittal to the building official as specified in Section 1704.5 stating that the work was performed in accordance with the approved construction documents.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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1704.5 Submittals to the building official. In addition to the submittal of reports of special inspections and tests in accordance with Section 1704.2.4, reports and certificates shall be submitted by the owner or the owner's authorized agent to the building official for each of the following:

1. Certificates of compliance for the fabrication of structural, load-bearing or lateral load-resisting members or assemblies on the premises of a registered and an approved fabricator in accordance with Section 1704.2.5.1.
2. Certificates of compliance for the seismic qualification of nonstructural components, supports and attachments in accordance with Section 1705.13.2.
3. Certificates of compliance for designated seismic systems in accordance with Section 1705.13.3.
4. Reports of preconstruction tests for shotcrete in accordance with Section 1908.5.
5. Certificates of compliance for open web steel joists and joist girders in accordance with Section 2207.5.
6. Reports of material properties verifying compliance with the requirements of AWS D1.4 for weldability as specified in Section 26.6.4 of ACI 318 for reinforcing bars in concrete complying with a standard other than ASTM A706 that are to be welded and.
7. Reports of mill tests in accordance with Section 20.2.2.5 of ACI 318 for reinforcing bars complying with ASTM A615 and used to resist earthquake-induced flexural or axial forces in the special moment frames, special structural walls or coupling beams connecting special structural walls of seismic force-resisting systems in structures assigned to Seismic Design Category B, C, D, E or F.

Edits made to clarify code, no major changes to code requirements.

1704.6 Structural observations. Where required by the provisions of 1704.6.1, ~~1704.6.2 or 1704.6.3~~, the owner or the owner's authorized agent shall employ a registered design professional to perform structural observations. The structural observer shall visually observe representative locations of structural systems, details and load paths for general conformance to the approved construction documents. *Structural observation* does not include or waive the responsibility for the inspections in Section 110 or the *special inspections* in Section 1705 or other sections of this code. Prior to the commencement of observations, the structural observer shall submit to the *building official* a written statement identifying the frequency and extent of *structural observations*. At the conclusion of the work included in the permit, the structural observer shall submit to the *building official* a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.

Edits made to clarify code, no major changes to code requirements.

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	<p>1704.6.1 Structural observations for seismic resistance structures. <i>Structural observations</i> shall be provided for those structures assigned to Seismic Design Category D, E or F where one or more of the following conditions exist:</p> <ol style="list-style-type: none"> 1. The structure is classified as Risk Category III or IV. 2. The height of the structure is greater than 75 feet (22 860 mm) above the base as defined in ASCE 7. The structure is a <i>high-rise building</i>. 3. The structure is assigned to Seismic Design Category E, and is greater than two stories above the grade plane. 3. 4. The structure is assigned to Seismic Design Category E, is classified as Risk Category I or II, and is greater than two stories above grade plane. Such observation is required by the registered design professional responsible for the structural design. 4. 5. When so designated by the registered design professional responsible for the structural Design Such observation is specifically required by the building official. 5. When such observation is specifically required by the building official. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1704.6.2 Structural observations for wind requirements seismic resistance. <i>Structural observations</i> shall be provided for those structures sited where V_{asd} as determined in accordance with Section 1609.3.1 exceeds 110 mph (49 m/sec), assigned to Seismic Design Category D, E or F where one or more of the following conditions exist:</p> <ol style="list-style-type: none"> 1. The structure is classified as Risk Category III or IV. 2. The building height is greater than 75 feet (22 860 mm) The structure is assigned to Seismic Design Category E, is classified as Risk Category I or II, and is greater than two stories above the grade plane. 3. When so designated by the registered design professional responsible for the structural design. 4. When such observation is specifically required by the building official. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1704.6.3 Structural observations for wind resistance. <i>Structural observations</i> shall be provided for those structures sited where V is 130 mph (58 m/sec) or greater and the structure is classified as Risk Category III or IV.</p>		

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	SECTION 1705 REQUIRED SPECIAL INSPECTIONS AND TESTS	SECTION 1705 REQUIRED SPECIAL INSPECTIONS AND TESTS																
	<p>1705.2 Steel construction. The special inspections and nondestructive testing of steel construction in buildings, structures, and portions thereof shall be in accordance with this section.</p> <p>Exception: Special inspections of the steel fabrication process shall not be required where the fabrication process for the entire building or structure does not perform include any welding, thermal cutting or heating operation of any kind as part of the fabrication process. In such cases, the fabricator shall be required to submit a detailed procedure for material control that demonstrates the fabricator's ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification and grade for the main stress-carrying elements are capable of being determined. Mill test reports shall be identifiable to the main stress-carrying elements when where required by the approved construction documents.</p>		Edits made to clarify code, no major changes to code requirements.															
		<p>1705.2.5 Metal building systems. Special inspections of metal building systems shall be performed in accordance with Sections 1705.2.1, 1705.2.2, 1705.2.3, and 1705.2.4, and in accordance with Table 1705.2.5. The approved agency shall perform inspections of the erected metal building system to verify compliance with the approved construction documents.</p> <p style="text-align: center;">TABLE 1705.2.5 SPECIAL INSPECTIONS OF METAL BUILDING SYSTEMS</p> <table border="1"> <thead> <tr> <th>TYPE</th> <th>CONTINUOUS SPECIAL INSPECTION</th> <th>PERIODIC SPECIAL INSPECTION</th> </tr> </thead> <tbody> <tr> <td>1. Installation of rafter / beam flange braces and column flange braces.</td> <td style="text-align: center;">---</td> <td style="text-align: center;">x</td> </tr> <tr> <td>2. Installation of purlins and girts, including specified lapping.</td> <td style="text-align: center;">---</td> <td style="text-align: center;">x</td> </tr> <tr> <td>3. Purlin and girt restraint / bridging / bracing.</td> <td style="text-align: center;">---</td> <td style="text-align: center;">x</td> </tr> <tr> <td>4. Installation of X-bracing, tightened to remove any sag.</td> <td style="text-align: center;">---</td> <td style="text-align: center;">x</td> </tr> </tbody> </table>	TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	1. Installation of rafter / beam flange braces and column flange braces.	---	x	2. Installation of purlins and girts, including specified lapping.	---	x	3. Purlin and girt restraint / bridging / bracing.	---	x	4. Installation of X-bracing, tightened to remove any sag.	---	x	New amendment accepted during Public Comment to incorporate changes from 2024 IBC.
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION																
1. Installation of rafter / beam flange braces and column flange braces.	---	x																
2. Installation of purlins and girts, including specified lapping.	---	x																
3. Purlin and girt restraint / bridging / bracing.	---	x																
4. Installation of X-bracing, tightened to remove any sag.	---	x																
	<p>1705.4.1 Empirically designed masonry, Glass unit masonry and masonry veneer in Risk Category IV. Special inspections and tests for empirically designed masonry, glass unit masonry or masonry veneer designed in accordance with Section 2110 or Chapter 14, respectively, where they are part of a structure classified as Risk Category IV shall be performed in accordance with TMS 602 402/ACI 530/ASCE 5 Level 2B Quality Assurance.</p>		Edits made to clarify code, no major changes to code requirements.															

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	<p>1705.5.2 Metal-plate-connected wood trusses. Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package. Special inspections of wood trusses with overall heights of 60 inches (1524 mm) or greater shall be performed to verify that the installation of the permanent individual truss member restraint/bracing has been installed in accordance with the approved truss submittal package. For wood trusses with a clear span of 60 feet (18 288 mm) or greater, the special inspector shall verify during construction that the temporary installation restraint/bracing is installed in accordance with the approved truss submittal package.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 1705.3 REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION</p>		
	<p>1705.5.3 Mass timber construction. Special inspections of mass timber elements in Types IV-A, IV-B and IV-C construction shall be in accordance with Table 1705.5.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1705.6 Soils. Special inspections and tests of existing site soil conditions, fill placement and load-bearing requirements shall be performed in accordance with this section and Table 1705.6. The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance. During fill placement, the special inspector shall verify that proper materials and procedures are used in accordance with the provisions of the approved geotechnical report.</p> <p>Exception: Where Section 1803 does not require reporting of materials and procedures for fill placement, the special inspector shall verify that the in-place dry density of the compacted fill is not less than 90 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D1557.</p>		
	<p>1705.10 Structural integrity of deep foundation elements. Whenever there is a reasonable doubt as to the structural integrity of a deep foundation element, an engineering assessment shall be required. The engineering assessment shall include tests for defects performed in accordance with ASTM D4945, ASTM D5882, ASTM D6760 or ASTM D7949, or other approved method.</p>		<p>New requirement</p>

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	TABLE 1705.5.3 REQUIRED SPECIAL INSPECTIONS OF MASS TIMBER CONSTRUCTION		New table
	TABLE 1705.6 REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS		Edits made to clarify code, no major changes to code requirements.
	<p>1705.11 1705.12 Special inspections for wind resistance. Special inspections for wind resistance specified in Sections 1705.12.1 through 1705.12.3, unless exempted by the exceptions to Section 1704.2, are required for buildings and structures constructed in the following areas:</p> <p>1. In wind Exposure Category B, where Vasd as determined in accordance with Section 1609.3.1 is 120 is 150 miles per hour (52.8 67 m/sec) or greater.</p> <p>2. In wind Exposure Category C or D, where Vasd as determined in accordance with Section 1609.3.1 is 110 is 140 mph (49 62.6 m/sec) or greater.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1705.11.4 1705.12.1 Structural wood. <i>Continuous special inspection</i> is required during field gluing operations of elements of the <i>main windforce-resisting system</i>. <i>Periodic special inspection</i> is required for nailing, bolting, anchoring and other fastening of elements of the <i>main windforce-resisting system</i>, including wood <i>shear walls</i>, wood <i>diaphragms</i>, <i>drag struts</i>, braces and <i>hold-downs</i>.</p> <p>Exception: <i>Special inspections</i> are not required for wood <i>shear walls</i>, shear panels and <i>diaphragms</i>, including nailing, bolting, anchoring and other fastening to other elements of the <i>main windforce-resisting system</i>, where the lateral resistance is provided by structural sheathing and the specified fastener spacing of the sheathing at panel edges is more than 4 inches (102 mm) on center.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1705.11.2 1705.12.2 Cold-formed steel light-frame construction. Periodic special inspection is required for welding operations of elements of the main windforce-resisting system. Periodic special inspection is required for screw attachment, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs.</p> <p>Exception: Special inspections are not required for cold-formed steel light-frame shear walls and diaphragms, including screwing, bolting, anchoring and other fastening to components of the</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>windforce-resisting system, where either of the following applies:</p> <ol style="list-style-type: none"> 1. The sheathing is gypsum board or fiberboard. 2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the specified fastener spacing of at the sheathing panel or sheet edges is more than 4 inches (102 mm) on center (o.c). 		
	4705.11.3 1705.12.3 Wind-resisting components.		Edits made to clarify code, no major changes to code requirements.
	4705.12 1705.13 Special inspections for seismic resistance.		Edits made to clarify code, no major changes to code requirements.
	TABLE 1705.7 REQUIRED SPECIAL INSPECTIONS AND TESTS OF DRIVEN DEEP FOUNDATION ELEMENTS		Edits made to clarify code, no major changes to code requirements.
	TABLE 1705.8 REQUIRED SEPCIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS		Edits made to clarify code, no major changes to code requirements.
	4705.12.4 1705.13.1 Structural steel.		
	<p>4705.12.4.1 1705.13.1.1 Seismic force-resisting systems. Special inspections of structural steel in the seismic force-resisting systems of in buildings and structures assigned to Seismic Design Category B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341.</p> <p>Exceptions: Special inspections are not required in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C that are not specifically detailed for</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>seismic resistance, with a response modification coefficient, R, of 3 or less, excluding cantilever column systems.</p> <p>1. In buildings and structures assigned to Seismic Design Category B or C, special inspections are not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, has been used for design and detailing</p> <p>2. In structures assigned to Seismic Design Category D, E, or F, special inspections are not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.</p>		
	<p>1705.12.1.2 1705.13.1.2 Structural steel elements. Special inspections of structural steel elements in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B, C, D, E or F other than those covered in Section 1705.12.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.</p> <p>Exceptions:</p> <p>1. In buildings and structures assigned to Seismic Design Category B or C, special inspections of structural steel elements are not required in the for seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C with a response modification coefficient, R, of 3 or less.</p> <p>2. In structures assigned to Seismic Design Category D, E, or</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>F, special inspections of structural steel elements are not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. Special inspection shall be in accordance with the applicable referenced standard listed in ASCE 7, Table 15.4-1.</p>		
	<p>1705.12.2 1705.13.2 Structural wood. For the <i>seismic force-resisting systems</i> of structures assigned to <i>Seismic Design Category C, D, E or F</i>:</p> <ol style="list-style-type: none"> 1. <i>Continuous special inspection</i> shall be required during field gluing operations of elements of the <i>seismic force-resisting system</i>. 2. <i>Periodic special inspection</i> shall be required for nailing, bolting, anchoring and other fastening elements of the <i>seismic force-resisting system</i>, including wood <i>shear walls</i>, wood <i>diaphragms</i>, <i>drag struts</i>, braces, shear panels and <i>hold-downs</i>. <p>Exception: <i>Special inspections</i> are not required for wood <i>shear walls</i>, shear panels and <i>diaphragms</i>, including nailing, bolting, anchoring and other fastening to other elements of the <i>seismic force-resisting system</i>, where the lateral resistance is provided by structural sheathing, and the specified fastener spacing of at the sheathing is panel edges is more than 4 inches (102 mm) on center.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1705.12.3 1705.13.3 Cold-formed steel light-frame construction. For the <i>seismic force-resisting systems</i> of structures assigned to <i>Seismic Design Category C, D, E or F</i>, <i>periodical special inspection</i> shall be required for both:</p> <ol style="list-style-type: none"> 1. For Welding operations of elements of the <i>seismic force-resisting system</i>; and. 2. For Screw attachment, bolting, anchoring and other fastening elements of the <i>seismic force-resisting system</i>, including shear walls, braces, <i>diaphragms</i>, <i>collectors (drag struts)</i> and <i>hold-downs</i>. <p>Exception: <i>Special inspections</i> are not required for cold-formed steel light-frame shear walls and <i>diaphragms</i>, including screw installation, bolting, anchoring and other fastening to components of the <i>seismic force-resisting system</i>, where either of the following applies:</p> <ol style="list-style-type: none"> 1. The sheathing is gypsum board or <i>fiberboard</i>. 2. The sheathing is <i>wood structural panel</i> or steel sheets on only one side of the <i>shear wall</i>, shear panel 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>or <i>diaphragm</i> assembly and the specified fastener spacing of the sheathing at the panel or sheet edge is more than 4 inches (102 mm) on center.</p>		
	<p>1705.12.4 1705.13.4 Designated seismic systems.</p>		
	<p>1705.12.5 1705.13.5 Architectural components.</p>		
	<p>1705.12.5.1 1705.13.5.1 Access floors.</p>		
	<p>1705.12.6 1705.13.6 Plumbing, mechanical and electrical components. <i>Periodic special inspection</i> of plumbing, mechanical and electrical components shall be required for the following:</p> <ol style="list-style-type: none"> 1. Anchorage of electrical equipment for emergency and standby power systems in structures assigned to <i>Seismic Design Category C, D, E or F</i>. 2. Anchorage of other electrical equipment in structures assigned to <i>Seismic Design Category E or F</i>. 3. Installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to <i>Seismic Design Category C, D, E or F</i>. 4. Installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to <i>Seismic Design Category C, D, E or F</i>. 5. Installation and anchorage of vibration isolation systems in structures assigned to <i>Seismic Design Category C, D, E or F</i> where the <i>approved construction documents</i> require a nominal clearance of ¼ inch (6.4 mm) or less between the equipment support frame and restraint. 6. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic sprinkler systems are installed in structures assigned to <i>Seismic Design Category C, D, E or F</i> to verify one of the following: 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>6.1. Minimum clearances have been provided as required by Section 13.2.3 ASCE/SEI 7.</p> <p>6.2. A nominal clearance of not less than 3 inches (76 mm) has been provided between fire protection automatic sprinkler system drops and sprigs and structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.</p> <p>Where flexible sprinkler hose fittings are used, <i>special inspection</i> of minimum clearances is not required.</p>		
	<p>1705.12.7 1705.13.7 Storage racks. Periodic special inspection is required for the anchorage of storage racks that are 8 feet (2438 mm) or greater in height in structures assigned to Seismic Design Category D, E or F. Steel storage racks and steel cantilevered storage racks that are 8 feet (2438 mm) in height or greater and assigned to Seismic Design Category D, E or F shall be provided with periodic special inspection as required by Table 1705.13.7.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1705.12.8 1705.13.8 Seismic isolation systems.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 1705.13.7 REQUIRED INSPECTIONS OF STORAGE RACK SYSTEMS</p>		New Table
	<p>1705.12.8 1705.13.8 Seismic isolation systems.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1705.12.9 1705.13.9 Cold-formed steel special bolted moment frames.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1705.13 1705.14 Testing for seismic resistance.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>1705.13.1 1705.14.1 Structural steel.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1705.13.1.1 1705.14.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel in the seismic force-resisting systems of in buildings and structures assigned to Seismic Design Category B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341.</p> <p>Exception: Nondestructive testing is not required in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C that are not specifically detailed for seismic resistance, with a response modification coefficient, R, of 3 or less, excluding cantilever column systems.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing is not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, has been used for design and detailing. 2. In structures assigned to Seismic Design Category D, E, or F, nondestructive testing is not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1705.13.1.2 1705.14.1.2 Structural steel elements. Nondestructive testing of structural steel elements in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B, C, D, E or F other than those covered in Section 1705.13.1.1, including</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In buildings and structures assigned to Seismic Design Category B or C, no on destructive testing of structural steel elements is not required in the for seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B or C with a response modification coefficient, R, of 3 or less. 2. In structures assigned to Seismic Design Category D, E or F, nondestructive testing of structural steel elements is not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. Nondestructive testing of structural steel elements shall be in accordance with the applicable referenced standard listed in ASCE 7, Table 15.4-1. 		
	<p>1705.13.2 1705.14.2 Nonstructural components.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1705.13.3 1705.14.3 Designated seismic systems.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1705.13.4 1705.14.4 Seismic isolation systems.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BF] 1705.14 1705.15 Sprayed fire-resistant materials. <i>Special inspections</i> and tests of sprayed fire-resistant materials applied to floor, roof and wall assemblies and structural members shall be performed in accordance with Sections 1705.15.1 through 1705.15.6. <i>Special inspections</i> shall be based on the fire-resistance design as designated in the <i>approved construction documents</i>. The tests set forth in this section shall be based on samplings from</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	specific floor, roof and wall assemblies and structural members. <i>Special inspections</i> and tests shall be performed <u>during construction with an additional visual inspection</u> after the rough installation of electrical, automatic sprinkler, mechanical and plumbing system and suspension systems for ceilings, <u>and before concealment</u> where applicable. <u>The required sample size shall not exceed 110 percent of that specified by the referenced standards in Section 1705.15.4.1 through 1705.15.4.9.</u>		
	[BF] 1705.14.4 1705.15.1 Physical and visual tests.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.2 1705.15.2 Structural member surface conditions.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.3 1705.15.3 Application.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.4 1705.15.4 Thickness. Not more than 10 percent of the thickness measurements of the sprayed fire-resistant materials applied to floor, roof and wall assemblies and structural members shall be less than the thickness required by the approved fire-resistance design, but in no case and none shall less than the minimum allowable thickness required by Section 1705.14.4.1.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.4.1 1705.15.4.1 Minimum allowable thickness.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.4.2 1705.15.4.2 Floor, roof and wall assemblies.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.4.3 1705.15.4.3 Cellular decks. Thickness measurements shall be selected from a square area, 12 inches by 12 inches (305 mm by 305 mm) in size. A minimum Not fewer than four measurements shall be made, located symmetrically within the square area.		Edits made to clarify code, no major changes to code requirements.

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	<p>[BF] 1705.14.4.4 1705.15.4.4 Fluted decks. Thickness measurements shall be selected from a square area, 12 inches by 12 inches (305 mm by 305 mm) in size. A minimum Not fewer than four measurements shall be made, located symmetrically within the square area, including one each of the following: valley, crest and sides. The average of the measurements shall be reported.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1705.14.4.5 1705.15.4.5 Structural members.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1705.14.4.6 1705.15.4.6 Beams and girders.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1705.14.4.7 1705.15.4.7 Joists and trusses.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1705.14.4.8 1705.15.4.8 Wide-flanged columns.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1705.14.4.9 1705.15.4.9 Hollow structural section and pipe columns. At hollow structural section and pipe columns, thickness measurements shall be made at a minimum Not fewer than four locations around the column at each end of a 12-inch (305 mm) length.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>[BF] 1705.14.5 1705.15.5 Density. The density of the sprayed fire-resistant material shall not be not less than the density specified in the approved fire-resistance design. Density of the sprayed fire-resistant material shall be determined in accordance with ASTM E605. The test samples for determining the density of the sprayed fire-resistant materials shall be selected as follows:</p> <ol style="list-style-type: none"> 1. From each floor, roof and wall assembly at the rate of not less than one sample for every 2,500 square feet (232 m²) or portion thereof of the sprayed area in each story. 2. From beams, girders, trusses and columns at the rate of not less than one sample for each type of 		Edits made to clarify code, no major changes to code requirements.

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	structural member for each 2,500 square feet (232 m ²) of floor area or portion thereof in each story.		
	[BF] 4705.14.6 1705.15.6 Bond strength. The cohesive/adhesive bond strength of the cured sprayed fire-resistant material applied to floor, roof and wall assemblies and structural members shall not be not less than 150 pounds per square foot (psf) (7.18 kN/m ²). The cohesive/adhesive bond strength shall be determined in accordance with the field test specified in ASTM E736 by testing in-place samples of the sprayed fire-resistant material selected in accordance with Sections 1705.14.6.1 through 1705.14.6.3.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.6.1 1705.15.6.1 Floor, roof and wall assemblies.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.6.2 1705.15.6.2 Structural members.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.14.6.3 1705.15.6.3 Primer, paint and encapsulant bond tests. Bond tests to qualify a primer, paint or encapsulant shall be conducted when where the sprayed fire-resistant material is applied to a primed, painted or encapsulated surface for which acceptable bond-strength performance between these coatings and the fire-resistant material has not been determined. A bonding agent approved by the SFRM manufacturer shall be applied to a primed, painted or encapsulated surface where the bond strengths are found to be less than required values.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.15 1705.16 Mastic and intumescent fire-resistant coatings. <i>Special inspections</i> and tests for mastic and <i>intumescent fire-resistant coatings</i> applied to structural elements and decks shall be performed in accordance with AWCI 12-B. <i>Special inspections</i> and tests shall be based on the fire-resistance design as designated in the <i>approved construction documents</i> . <u>Special inspections and tests shall be performed during construction. Additional visual inspection shall be performed after the rough installation and, where applicable, prior to the concealment of electrical, automatic sprinkler, mechanical and plumbing systems.</u>		Edits made to clarify code, no major changes to code requirements.

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	4705.16 1705.17 Exterior insulation and finish systems (EIFS).		Edits made to clarify code, no major changes to code requirements.
	4705.16.1 1705.17.1 Water-resistive barrier coating. A water-resistive barrier coating complying with ASTM E2570 requires special inspection of the water-resistive barrier coating when where installed over a sheathing substrate.		Edits made to clarify code, no major changes to code requirements.
	[BF] 1705.18 Fire-resistant penetrations and joints. In high-rise buildings or , in buildings assigned to <i>Risk Category III</i> or <i>IV</i> , or in fire areas containing Group R occupancies with an occupant load greater than 250 , special inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems and perimeter fire barrier containment systems that are tested and listed in accordance with Sections 714.4.1.2, 714.5.1.2, 715.3.1 and 715.4 shall be in accordance with Section 1705.18.1 or 1705.18.2.		Edits made to clarify code, no major changes to code requirements.
	[BF] 4705.47.4 1705.18.1 Penetration firestops.		Edits made to clarify code, no major changes to code requirements.
	[BF] 4705.47.2 1705.18.2 Fire-resistant joint systems.		Edits made to clarify code, no major changes to code requirements.
<u>1705.19 Testing systems utilizing electric or electromagnetic locks.</u> Electric and electromagnetic locking systems shall be tested by an <i>approved</i> third-party agency. A certification letter/report shall be provided to the Authority Having Jurisdiction documenting compliance with the appropriate code provisions of Section 907 and Chapter 10 of the <i>Building Code</i> , and NFPA 72, for each specific installation. Move to 1705.21	[F] 4705.48 1705.19 Testing for smoke control. Smoke control systems shall be tested by a special inspector.		Edits made to clarify code, no major changes to code requirements.
<u>1705.19.1 Activation.</u> Electronic and electromagnetic locking systems shall not be activated prior to required plan review, permitting and final on-site approval. Move to 1705.21.1	[F] 4705.48.1 1705.19.1 Testing scope. The test scope shall be as follows: 1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location. 2. Prior to occupancy and after sufficient completion for the purposes of pressure difference testing, flow measurements and detection and control verification.		Edits made to clarify code, no major changes to code requirements.

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	[F] 1705.18.2 1705.19.2 Qualifications.		Edits made to clarify code, no major changes to code requirements.
	1705.20 Sealing of mass timber. Periodic special inspections of sealants or adhesives shall be conducted where sealant or adhesive required by Section 703.7 is applied to mass timber building elements as designated in the approved construction documents.		New requirement for mass timber
		1705.21 Testing systems utilizing electric or electromagnetic locks. Electric and electromagnetic locking systems shall be tested by an <i>approved</i> third-party agency. A certification letter/report shall be provided to the <i>authority having jurisdiction</i> documenting compliance with the appropriate code provisions of Section 907 and Chapter 10 and NFPA 72, for each specific installation.	No changes to amendment, relocated from 1705.19.
		1705.21.1 Activation. Electronic and electromagnetic locking systems shall not be activated prior to required plan review, permitting and final on-site approval.	No changes to amendment, relocated from 1705.19.1.
	SECTION 1706 DESIGN STRENGTHS OF MATERIALS		
	SECTION 1707 ALTERNATIVE TEST PROCEDURE		
	SECTION 1708 IN-SITU LOAD TESTS		
	1708.1 General. Whenever there is a reasonable doubt as to the stability or load-bearing capacity of a completed building, structure or portion thereof for the expected loads, an engineering assessment shall be required. The engineering assessment shall involve either a structural analysis or an in-situ load test, or both. The structural analysis shall be based on actual material properties and other as-built conditions that affect stability or load-bearing capacity, and shall be conducted in accordance with the applicable design standard. If the in-situ structural assessment determines that the load-bearing capacity is less than that required by the code, load tests shall be conducted in accordance with Section 1708.2. If the building, structure or portion thereof is found to have inadequate stability or load-bearing capacity for the expected loads,		Edits made to clarify code, no major changes to code requirements.

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	<p>modifications to ensure structural adequacy or the removal of the inadequate construction shall be required.</p>		
	<p>1708.2 Test standards In-situ load tests. Structural components and assemblies shall be tested in accordance with the appropriate referenced standards. In the absence of a standard that contains an applicable load test procedure, the test procedure shall be developed by a registered design professional and approved. The test procedure shall simulate loads and conditions of application that the completed structure or portion thereof will be subjected to in normal use.In-situ load tests shall be conducted in accordance with Section 1708.2.1 or 1708.2.2 and shall be supervised by a registered design professional. The test shall simulate the applicable loading conditions specified in Chapter 16 as necessary to address the concerns regarding structural stability of the building, structure or portion thereof.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1708.32.1 In-situ load tests Load test procedure specified. In-situ load tests shall be conducted in accordance with Section 1708.3.1 or 1708.3.2 and shall be supervised by a registered design professional. The test shall simulate the applicable loading conditions specified in Chapter 16 as necessary to address the concerns regarding structural stability of the building, structure or portion thereof. Where a referenced material standard contains an applicable load test procedure and acceptance criteria, the test procedure and acceptance criteria in the standard shall apply. In the absence of specific load factors or acceptance criteria, the load factors and acceptance criteria in Section 1708.2.2 shall apply.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1708.3.2 1708.2.2 Load test procedure not specified. In the absence of applicable load test procedures contained within a material standard referenced by this code or acceptance criteria for a specific material or method of construction, such existing structure shall be subjected to an approved test procedure developed by a registered design professional that simulates applicable loading and deformation conditions. For components that are not a part of the seismic force-resisting system, at a minimum the test load shall be equal to the specified factored design loads. For materials such as wood that have strengths that are dependent on load duration, the test load shall be adjusted to account for the difference in load duration of the test compared to the expected duration of the design loads being considered. For statically loaded components, the test load shall be left in place for a period of 24 hours. For components that carry dynamic loads (e.g. example, machine supports or fall arrest anchors), the load shall be left in place for a period consistent with the component's actual function. The structure shall be considered to have successfully met the test requirements where the following criteria are satisfied:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<ol style="list-style-type: none"> 1. Under the design load, the deflection shall not exceed the limitations specified in Section 1604.3. 2. Within 24 hours after removal of the test load, the structure shall have recovered not less than 75 percent of the maximum deflection. 3. During and immediately after the test, the structure shall not show evidence of failure. 		
	<p>SECTION 1709 PRECONSTRUCTION LOAD TESTS</p>		
	<p>1709.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1709.5.1 or 1709.5.2. For the purposes of this section, the required design pressure shall be determined using the allowable stress design load combinations of Section 1605.3 For exterior windows and doors tested in accordance with Section 1709.5.1 or 1709.5.2, required design wind pressure determined from ASCE 7 shall be permitted to be converted to allowable stress design by multiplying by 0.6.</p> <p>Exception: Structural wind load design pressure for window units smaller or door assemblies other than the size tested in accordance with Section 1709.5.1 or 1709.5.2 shall be permitted to be higher different than the design value of the tested assembly, provided that such pressures are determined by accepted engineering analysis or validated by an additional test of the window or door assembly to the alternative allowable design pressure in accordance with Section 1709.5.2. All Components of the small unit alternate size assembly shall be the same as the tested unit. Where such calculated design pressures are or labeled assembly. Where engineering analysis is used, they it shall be validated by an additional test of the window unit having the highest allowable design pressure. performed in accordance with the analysis procedures of AAMA 2502.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1709.5.2 Exterior windows and door assemblies are not provided for in Section 1709.5.1. Exterior window and door assemblies shall be tested in accordance with E331—2000(2016). Structural performance of garage doors and rolling doors shall be determined in accordance with either ASTM E330 or ANSI/DASMA 108, and shall meet the acceptance criteria of ANSI/DASMA 108. Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>1709.5.2.1 Garage doors and rolling doors. Garage doors and rolling doors shall be tested in accordance with either ASTM E330 or ANSI/DASMA 108, and shall meet the pass/fail criteria of ANSI/DASMA 108. Garage doors and rolling doors shall be labeled with a permanent label identifying the door manufacturer, the door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.</p>		New requirement for garage doors
	<p>1709.5.3 Windborne debris protection. Protection of exterior glazed openings in buildings located in windborne debris regions shall be in accordance with Section 1609.2.</p>		New requirement
	<p>1709.5.3.1 Impact protective systems testing and labeling. Impact protective systems shall be tested for impact resistance by an approved independent laboratory for compliance with ASTM E1886 and ASTM E1996 and for design wind pressure for compliance with ASTM E330. Required design wind pressures shall be determined in accordance with ASCE 7, and for the purposes of this section, multiplied by 0.6 to convert to allowable stress design. Impact protective systems shall have a permanent label applied in accordance with Section 1703.5.4, identifying the manufacturer, product designation, performance characteristics, and approved inspection agency.</p>		New requirement
2015 Houston IBC	2021 IBC – Chapter 18 Soils and Foundations	2021 Houston Amendments – Chapter 18	Code Analysis
	<p>SECTION 1801 GENERAL</p>		
	<p>1801.2 Design basis. Allowable bearing pressures, allowable stresses and design formulas provided in this chapter shall be used with the allowable stress design load combinations specified in Section 1605.3. The quality and design of materials used structurally in excavations and foundations shall comply with the requirements specified in Chapters 16, 19, 21, 22 and 23 of this code. Excavations and fills shall also comply with Chapter 33.</p>		
	<p>SECTION 1802 DEFINITIONS-DESIGN BASIS</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>1802.1 Definitions. The following words and terms are defined in Chapter 2:</p> <p>DEEP FOUNDATION.</p> <p>DRILLED SHAFT.</p> <p>Socketed drilled shaft.</p> <p>HELICAL PILE.</p> <p>MICROPILE.</p> <p>SHALLOW FOUNDATION.</p> <p>1802.1 General. Allowable bearing pressures, allowable stresses and design formulas provided in this chapter shall be used with the allowable stress design load combinations specified in Section 1605.3. The quality and design of materials used structurally in excavations and foundations shall comply with the requirements specified in Chapters 16, 19, 21, 22 and 23. Excavations and fills shall comply with Chapter 33.</p>		
	<p>SECTION 1803</p> <p>GEOTECHNICAL INVESTIGATIONS</p>		
	<p>1803.5.3 Expansive soil. In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist.</p> <p>Soils meeting all four of the following provisions shall be considered to be expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:</p> <ol style="list-style-type: none"> 1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D4318. 2. More than 10 percent of the soil particles pass a No. 200 sieve (75 µm), determined in accordance with ASTM D422. 3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D422. 4. Expansion index greater than 20, determined in accordance with ASTM D4829. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1803.5.5 Deep foundations. Where deep foundations will be used, a geotechnical investigation shall be conducted and shall include all of the following, unless sufficient data upon which to base the design and installation is otherwise available:</p> <ol style="list-style-type: none"> 1. Recommended deep foundation types and installed capacities. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<ol style="list-style-type: none"> 2. Recommended center-to-center spacing of deep foundation elements. 3. Driving criteria. 4. Installation procedures. 5. Field inspection and reporting procedures (to include procedures for verification of the installed bearing capacity where required). 6. Load test requirements. 7. Suitability of deep foundation materials for the intended environment. 8. Designation of bearing stratum or strata. 9. Reductions for group action, where necessary. 		
	<p>1803.5.6 Rock strata. Where subsurface explorations at the project site indicate variations in the structure of rock upon which foundations are to be constructed, a sufficient number of borings shall be drilled to sufficient depths to assess the competency of the rock and its load-bearing capacity.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1803.5.7 Excavation near foundations. Where excavation will reduce support from any foundation, a <i>registered design professional</i> shall prepare an assessment of the structure as determined from examination of the structure, the review of available design documents, available subsurface data, and, if necessary, excavation of test pits. The <i>registered design professional</i> shall determine the requirements for underpinning support and protection of any existing foundation and prepare site-specific plans, details and sequence of work for submission. Such support shall be provided by underpinning, sheeting and bracing, excavation retention systems, or by other means acceptable to the <i>building official</i>.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1803.5.12 Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F, the geotechnical investigation required by Section 1803.5.11 shall also include all of the following as applicable:</p> <ol style="list-style-type: none"> 1. The determination of dynamic seismic lateral earth pressures on foundation walls and retaining walls supporting more than 6 feet (1.83 m) of backfill height due to design earthquake ground motions. 2. The potential for liquefaction and soil strength loss evaluated for site peak ground acceleration, earthquake magnitude and source characteristics 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>consistent with the maximum considered earthquake ground motions. Peak ground acceleration shall be determined based on one of the following:</p> <ul style="list-style-type: none"> 2.1. A site-specific study in accordance with Section 21.5 Chapter 21 of ASCE 7. 2.2. In accordance with Section 11.8.3 of ASCE 7. <p>3. An assessment of potential consequences of liquefaction and soil strength loss including, but not limited to, the following:</p> <ul style="list-style-type: none"> 3.1. Estimation of total and differential settlement. 3.2. Lateral soil movement. 3.3. Lateral soil loads on foundations. 3.4. Reduction in foundation soil-bearing capacity and lateral soil reaction. 3.5. Soil downdrag and reduction in axial and lateral soil reaction for pile foundations. 3.6. Increases in soil lateral pressures on retaining walls. 3.7. Flotation of buried structures. <p>4. Discussion of mitigation measures such as, but not limited to, the following:</p> <ul style="list-style-type: none"> 4.1. Selection of appropriate foundation type and depths. 4.2. Selection of appropriate structural systems to accommodate anticipated displacements and forces. 4.3. Ground stabilization. 4.4. Any combination of these measures and how they shall be considered in the design of the structure. 		
	<p style="text-align: center;">SECTION 1804 EXCAVATION, GRADING AND FILL</p> <p>1804.1 Excavation near foundations. Excavation for any purpose shall not reduce vertical or lateral support from for any foundation or adjacent foundation without first <i>underpinning</i> or protecting the foundation against detrimental lateral or vertical movement, or both, in accordance with Section 1803.5.7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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1804.4 Site grading. The ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet (3048 mm) measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet (3048 mm) of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of not less than 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of not less than 2 percent away from the building.

Exceptions:

1. Where climatic or soil conditions warrant, the slope of the ground away from the building foundation shall be permitted to be reduced to not less than one unit vertical in 48 units horizontal (2-percent slope).
2. Impervious surfaces shall be permitted to be sloped less than 2 percent where the surface is a door landing or ramp that is required to comply with Section 1010.1.5, 1012.3 or 1012.6.1.

The procedure used to establish the final ground level adjacent to the foundation shall account for additional settlement of the backfill.

Edits made to clarify code, no major changes to code requirements.

1804.5 Grading and fill in flood hazard areas. In flood hazard areas established in Section 1612.3, grading, fill, or both, shall not be approved:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and
2. In floodways, unless it has been demonstrated through hydrologic and hydraulic analyses performed by a registered design professional in accordance with standard engineering practice that the proposed grading or fill, or both, will not result in any increase in flood levels during the occurrence of the design flood.
3. In coastal high hazard areas, unless such fill is conducted and placed to avoid diversion of water and waves toward any building or structure.
4. Where design flood elevations are specified but floodways have not been designated, unless it has been demonstrated that the cumulative effect of the proposed flood hazard area encroachment, when combined with all other existing and anticipated flood hazard area encroachment, will not increase the design flood elevation more than 1 foot (305 mm) at any point. erosion during the rise and fall of flood water and, as applicable, wave action.

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	<p>1804.6 Compacted fill material. Where shallow foundations will bear on compacted fill material, the compacted fill shall comply with the provisions of an approved geotechnical report, as set forth in Section 1803.</p> <p>Exception: Compacted fill material 12 inches (305 mm) in depth or less need not comply with an approved report, provided that the in-place dry density is not less than 90 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D1557. The compaction shall be verified by special inspection in accordance with Section 1705.6.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 1805 DAMP-PROOFING AND WATERPROOFING</p>		
	<p>1805.1.2.1 Flood hazard areas. For buildings and structures in flood hazard areas as established in Section 1612.3, the finished ground level of an under-floor space such as a crawl space shall be equal to or higher than the outside finished ground level on at least one side or more.</p> <p>Exception: Under-floor spaces of Group R-3 buildings that meet the requirements of FEMA TB 11.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1805.4.2 Foundation drain. A drain shall be placed around the perimeter of a foundation that consists of gravel or crushed stone containing not more than 10-percent material that passes through a No. 4 (4.75 mm) sieve. The drain shall extend a minimum of not less than 12 inches (305 mm) beyond the outside edge of the footing. The thickness shall be such that the bottom of the drain is not higher than the bottom of the base under the floor, and that the top of the drain is not less than 6 inches (152 mm) above the top of the footing. The top of the drain shall be covered with an approved filter membrane material. Where a drain tile or perforated pipe is used, the invert of the pipe or tile shall not be higher than the floor elevation. The top of joints or the top of perforations shall be protected with an approved filter membrane material. The pipe or tile shall be placed on not less than 2 inches (51 mm) of gravel or crushed stone complying with Section 1805.4.1, and shall be covered with not less than 6 inches (152 mm)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	of the same material.		
	SECTION 1806 PRESUMPTIVE LOAD-BEARING VALUES OF SOILS		
	1806.1 Load combinations. The presumptive load-bearing values provided in Table 1806.2 shall be used with the <i>allowable stress design</i> load combinations specified in ASCE 7, Section 2.4 or the alternative allowable stress design load combinations of Section 1605.2. The values of vertical foundation pressure and lateral bearing pressure given in Table 1806.2 shall be permitted to be increased by one-third where used with the alternative allowable stress design load combinations of Section 1605.2 that include wind or earthquake loads.		Edits made to clarify code, no major changes to code requirements.
	1806.3.2 Lateral sliding resistance limit. For clay, sandy clay, silty clay, clayey silt, silt and sandy silt, in no case shall the lateral sliding resistance shall not exceed one-half the dead load.		Edits made to clarify code, no major changes to code requirements.
	1806.3.3 Increase for depth. The lateral bearing pressures specified in Table 1806.2 shall be permitted to be increased by the tabular value for each additional foot (305 mm) of depth to a maximum of not greater than 15 times the tabular value.		Edits made to clarify code, no major changes to code requirements.
	SECTION 1807 FOUNDATION WALLS, RETAINING WALLS AND EMBEDDED POSTS AND POLES		
	1807.1.3 Rubble stone foundation walls. Foundation walls of rough or random rubble stone shall not be not less than 16 inches (406 mm) thick. Rubble stone shall not be used for foundation walls of structures assigned to Seismic Design Category C, D, E or F.		Edits made to clarify code, no major changes to code requirements.
	1807.1.4 Permanent wood foundation systems. Permanent wood foundation systems shall be designed and installed in accordance with AWC PWF. Lumber and plywood shall be preservative treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B and Section 5 Special Requirement 4.2) and shall be identified in accordance with Section 2303.1.9.1.		Edits made to clarify code, no major changes to code requirements.

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	<p>1807.1.6.1 Foundation wall thickness. The thickness of prescriptively designed foundation walls shall not be not less than the thickness of the wall supported, except that foundation walls of at least not less 8-inch (203 mm) nominal width shall be permitted to support brick-veneered frame walls and 10- inch-wide (254 mm) cavity walls provided that the requirements of Section 1807.1.6.2 or 1807.1.6.3 are met.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1807.1.6.2 Concrete foundation walls. Concrete foundation walls shall comply with the following:</p> <ol style="list-style-type: none"> 1. The thickness shall comply with the requirements of Table 1807.1.6.2. 2. The size and spacing of vertical reinforcement shown in Table 1807.1.6.2 are based on the use of reinforcement with a minimum yield strength of 60,000 pounds per square inch (psi) (414 MPa). Vertical reinforcement with a minimum yield strength of 40,000 psi (276 MPa) or 50,000 psi (345 MPa) shall be permitted, provided that the same size bar is used and the spacing shown in the table is reduced by multiplying the spacing by 0.67 or 0.83, respectively. 3. Vertical reinforcement, when where required, shall be placed nearest the inside face of the wall a distance, d, from the outside face (soil face) of the wall. The distance, d, is equal to the wall thickness, t, minus 1.25 inches (32 mm) plus one-half the bar diameter, db, [d = t - (1.25 + db / 2)]. The reinforcement shall be placed within a tolerance of ± 3/8 inch (9.5 mm) where d is less than or equal to 8 inches (203 mm) or ± 1/2 inch (12.7 mm) where d is greater than 8 inches (203 mm). 4. In lieu of the reinforcement shown in Table 1807.1.6.2, smaller reinforcing bar sizes with closer spacings that provide an equivalent cross-sectional area of reinforcement per unit length shall be permitted. 5. Concrete cover for reinforcement measured from the inside face of the wall shall not be not less than 3/4 inch (19.1 mm). Concrete cover for reinforcement measured from the outside face of the wall shall not be not less than 1 1/2 inches (38 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>mm) for No. 5 bars and smaller, and not less than 2 inches (51 mm) for larger bars.</p> <p>6. Concrete shall have a specified compressive strength, f_c, of not less than 2,500 psi (17.2 MPa).</p> <p>7. The unfactored axial load per linear foot of wall shall not exceed $1.2 t f_c$ where t is the specified wall thickness in inches.</p>		
	<p>1807.1.6.3 Masonry foundation walls. Masonry foundation walls shall comply with the following:</p> <ol style="list-style-type: none"> 1. The thickness shall comply with the requirements of Table 1807.1.6.3(1) for plain masonry walls or Table 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4) for masonry walls with reinforcement. 2. Vertical reinforcement shall have a minimum yield strength of 60,000 psi (414 MPa). 3. The specified location of the reinforcement shall equal or exceed the effective depth distance, d, noted in Tables 1807.1.6.3(2), 1807.1.6.3(3) and 1807.1.6.3(4) and 1807.1.6.3(4) and shall be measured from the face of the exterior (soil) side of the wall to the center of the vertical reinforcement. The reinforcement shall be placed within the tolerances specified in TMS 602/ACI 530.1/ASCE 6, Article 3.4.B.11, of the specified location. 4. Grout shall comply with Section 2103.3. 5. Concrete masonry units shall comply with ASTM C90. 6. Clay masonry units shall comply with ASTM C652 for hollow brick, except compliance with ASTM C62 or ASTM C216 shall be permitted where solid masonry units are installed in accordance with Table 1807.1.6.3(1) for plain masonry. 7. Masonry units shall be laid in running bond and installed with Type M or S mortar in accordance with Section 2103.2.1. 8. The unfactored axial load per linear foot of wall shall not exceed $1.2 t f_c$ where t is the specified wall thickness in inches and f_c is the specified compressive 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>strength of masonry in pounds per square inch.</p> <p>9. At least Not less than 4 inches (102 mm) of solid masonry shall be provided at girder supports at the top of hollow masonry unit foundation walls.</p> <p>10. Corbeling of masonry shall be in accordance with Section 2104.1. Where an 8-inch (203 mm) wall is corbeled, the top corbel shall not extend higher than the bottom of the floor framing and shall be a full course of headers At least Not less than 6 inches (152 mm) in length or the top course bed joint shall be tied to the vertical wall projection. The tie shall be W2.8 (4.8 mm) and spaced at a maximum horizontal distance of 36 inches (914 mm). The hollow space behind the corbelled masonry shall be filled with mortar or grout.</p>		
	<p>1807.1.6.3.1 Alternative foundation wall reinforcement. In lieu of the reinforcement provisions for masonry foundation walls in Table 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4), alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area of reinforcement per linear foot (mm) of wall shall be permitted to be used, provided that the spacing of reinforcement does not exceed 72 inches (1829 mm) and reinforcing bar sizes do not exceed No. 11.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1807.1.6.3.2 Seismic requirements. Based on the seismic design category assigned to the structure in accordance with Section 1613, masonry foundation walls designed using Tables 1807.1.6.3(1) through 1807.1.6.3(4) shall be subject to the following limitations:</p> <ol style="list-style-type: none"> 1. Seismic Design Categories A and B. No additional seismic requirements. 2. Seismic Design Category C. A design using Tables 1807.1.6.3(1) through 1807.1.6.3(4) is subject to the seismic requirements of Section 7.4.3 of TMS 402/ACI 530/ASCE 5. 3. Seismic Design Category D. A design using Tables 1807.1.6.3(2) through 1807.1.6.3(4) is subject to the seismic 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>requirements of Section 7.4.4 of TMS 402/ACI 530/ASCE 5.</p> <p>4. Seismic Design Categories E and F. A design using Tables 1807.1.6.3(2) through 1807.1.6.3(4) is subject to the seismic requirements of Section 7.4.5 of TMS 402/ACI 530/ASCE 5.</p>		
	<p>1807.2.1 General. Retaining walls shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, lateral soil pressures on both sides of the keyway shall be considered in the sliding analysis.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1807.2.2 Design lateral soil loads. Retaining walls shall be designed for the lateral soil loads set forth in Section 1610. For structures assigned to Seismic Design Category D, E, or F, the design of retaining walls supporting more than 6 feet (1829 mm) of backfill height shall incorporate the additional seismic lateral earth pressure in accordance with the geotechnical investigation where required in Section 1803.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1807.2.4 Segmental retaining walls. Dry-cast concrete units used in the construction of segmental retaining walls shall comply with ASTM C1372.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1807.3.2.1 Nonconstrained. The following formula shall be used in determining the depth of embedment required to resist lateral loads where no lateral constraint is not provided at the ground surface, such as by a rigid floor or rigid ground surface pavement, and where no lateral constraint is not provided above the ground surface, such as by a structural diaphragm.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1807.3.3 Backfill. The backfill in the annular space around columns not embedded in poured footings shall be by one of the following methods:</p> <p>1. Backfill shall be of concrete with a specified compressive strength of not less than 2,000 psi (13.8 MPa). The hole shall not be not less than 4 inches (102 mm) larger than the diameter of the column at its bottom or 4 inches (102 mm) larger than the diagonal dimension of a square or rectangular column.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Backfill shall be of clean sand. The sand shall be thoroughly compacted by tamping in layers not more than 8 inches (203 mm) in depth.</p> <p>3. Backfill shall be of controlled low-strength material (CLSM).</p>		
	<p style="text-align: center;">SECTION 1808 FOUNDATIONS</p> <p>1808.1 General. Foundations shall be designed and constructed in accordance with Sections 1808.2 through 1808.9. Shallow foundations shall also satisfy the requirements of Section 1809. Deep foundations shall also satisfy the requirements of Section 1810.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.3 Design loads. Foundations shall be designed for the most unfavorable effects due to the combinations of loads specified in Section 1605.2 or 1605.3. The dead load is permitted to include the weight of foundations and overlying fill. Reduced live loads, as specified in Sections 1607.10 and 1607.12 1607.11 and 1607.13, shall be permitted to be used in the design of foundations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.3.2 Surcharge. No fill Fill or other surcharge loads shall not be placed adjacent to any building or structure unless such building or structure is capable of withstanding the additional loads caused by the fill or the surcharge. Existing footings or foundations that will be affected by any excavation shall be underpinned or otherwise protected against settlement and shall be protected against detrimental lateral or vertical movement or both.</p> <p style="padding-left: 40px;">Exception: Minor grading for landscaping purposes shall be permitted where done with walk-behind equipment, where the grade is not increased more than 1 foot (305 mm) from original design grade or where approved by the building official.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.6.3 Removal of expansive soil. Where expansive soil is removed in lieu of designing foundations in accordance with Section 1808.6.1 or 1808.6.2, the soil shall be removed to a depth sufficient to ensure a constant moisture content in the remaining soil. Fill material shall not contain expansive soils and shall comply with Section 1804.5 or 1804.6.</p> <p style="padding-left: 40px;">Exception: Expansive soil need not be removed to the depth of constant moisture, provided that the confining pressure in the expansive soil created by the fill and supported structure exceeds the swell pressure.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1808.7.4 Foundation elevation. On graded sites, the top of any exterior foundation shall extend above the elevation of the street gutter at point of discharge or the inlet of an approved drainage device a minimum of not less than 12 inches (305 mm) plus 2 percent. Alternate elevations are permitted subject to the approval of the building official, provided that it can be demonstrated that required drainage to the point of discharge and away from the structure is provided at all locations on the site.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.8.1 Concrete or grout strength and mix proportioning. Concrete or grout in foundations shall have a specified compressive strength (f 'c) not less than the largest applicable value indicated in Table 1808.8.1. Where concrete is placed through a funnel hopper at the top of a deep foundation element, the concrete mix shall be designed and proportioned so as to produce a cohesive workable mix having a slump of not less than 4 inches (102 mm) and not more than 8 inches (204 mm). Where concrete or grout is to be pumped, the mix design including slump shall be adjusted to produce a pumpable mixture.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.8.2 Concrete cover. The concrete cover provided for prestressed and nonprestressed reinforcement in foundations shall be no less than the largest applicable value specified in Table 1808.8.2. Longitudinal bars spaced less than 1 1/2 inches (38 mm) clear distance apart shall be considered to be bundled bars for which the concrete cover provided shall also be not less than that required by Section 20.6.1.3.4 of ACI 318. Concrete cover shall be measured from the concrete surface to the outermost surface of the steel to which the cover requirement applies. Where concrete is placed in a temporary or permanent casing or a mandrel, the inside face of the casing or mandrel shall be considered to be the concrete surface.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.8.4 Protection of concrete. Concrete foundations shall be protected from freezing during depositing and for a period of not less than five 5 days thereafter. Water shall not be allowed to flow through the deposited concrete.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1808.9 Vertical masonry foundation elements. Vertical masonry foundation elements that are not foundation piers as defined in Section 202 shall be designed as piers, walls or columns, as applicable, in accordance with TMS 402 ACI 530/ASCE 5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 1809 SHALLOW FOUNDATIONS</p>		

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	<p>1809.4 Depth and width of footings. The minimum depth of footings below the undisturbed ground surface shall be 12 inches (305 mm). Where applicable, the requirements of Section 1809.5 shall also be satisfied. The minimum width of footings shall be 12 inches (305 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>1809.5.1 Frost protection at required exits. Frost protection shall be provided at exterior landings for all required exits with outward-swinging doors. Frost protection shall only be required to the extent necessary to ensure the unobstructed opening of the required exit doors.</u></p>		<p>New requirement</p>
	<p>1809.8 Plain concrete footings. The edge thickness of plain concrete footings supporting walls of other than light-frame construction shall not be not less than 8 inches (203 mm) where placed on soil or rock.</p> <p>Exception: For plain concrete footings supporting Group R-3 occupancies, the edge thickness is permitted to be 6 inches (152 mm), provided that the footing does not extend beyond a distance greater than the thickness of the footing on either side of the supported wall.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1809.9.1 Dimensions. Masonry-unit footings shall be laid in Type M or S mortar complying with Section 2103.2.1 and the depth shall not be not less than twice the projection beyond the wall, pier or column. The width shall not be not less than 8 inches (203 mm) wider than the wall supported thereon.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1809.10 Pier and curtain wall foundations. Except in Seismic Design Categories D, E and F, pier and curtain wall foundations shall be permitted to be used to support light-frame construction not more than two stories above grade plane, provided that the following requirements are met:</p> <ol style="list-style-type: none"> 1. All load-bearing walls shall be placed on continuous concrete footings bonded integrally with the exterior wall footings. 2. The minimum actual thickness of a load-bearing masonry wall shall not be not less than 4 inches (102 mm) nominal or 35/8 inches (92 mm) actual thickness, and shall be bonded integrally with piers spaced 6 feet (1829 mm) on center (o.c.). 3. Piers shall be constructed in accordance with Chapter 21 and the following: <ol style="list-style-type: none"> 3.1. The unsupported height of the masonry piers shall not exceed 10 times their least dimension. 3.2. Where structural clay tile or hollow concrete masonry units are used for piers supporting beams 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar.</p> <p>Exception: Unfilled hollow piers shall be permitted where the unsupported height of the pier is not more than four times its least dimension.</p> <p>3.3. Hollow piers shall be capped with 4 inches (102 mm) of solid masonry or concrete or the cavities of the top course shall be filled with concrete or grout.</p> <p>4. The maximum height of a 4-inch (102 mm) load-bearing masonry foundation wall supporting wood frame walls and floors shall not be more than 4 feet (1219 mm) in height.</p> <p>5. The unbalanced fill for 4-inch (102 mm) foundation walls shall not exceed 24 inches (610 mm) for solid masonry, nor 12 inches (305 mm) for hollow masonry.</p>		
	<p>1809.11 Steel grillage footings. Grillage footings of structural steel elements shall be separated with approved steel spacers and be entirely encased in concrete with at least not less than 6 inches (152 mm) on the bottom and at least not less than 4 inches (102 mm) at all other points. The spaces between the shapes shall be completely filled with concrete or cement grout.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1809.12 Timber footings. Timber footings shall be permitted for buildings of Type V construction and as otherwise approved by the building official. Such footings shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B). Treated timbers are not required where placed entirely below permanent water level, or where used as capping for wood piles that project above the water level over submerged or marsh lands. The compressive stresses perpendicular to grain in untreated timber footings supported upon treated piles shall not exceed 70 percent of the allowable stresses for the species and grade of timber as specified in the ANSI/AWC NDS.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1809.13 Footing seismic ties. Where a structure is assigned to Seismic Design Category D, E or F, individual spread footings founded on soil defined in defined in Section 1613.3-Chapter 20 of ASCE 7 as Site Class E or F shall be interconnected by ties. Unless it is demonstrated that equivalent restraint is provided by reinforced concrete beams within slabs on grade or reinforced concrete slabs on grade, ties shall be capable of carrying, in tension or compression, a force equal to the lesser of the product of the larger footing design gravity load times the seismic coefficient, SDS, divided by 10 and 25 percent of the smaller footing design gravity load.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	SECTION 1810 DEEP FOUNDATIONS		
	<p>1810.2.2 Stability. Deep foundation elements shall be braced to provide lateral stability in all directions. Three or more elements connected by a rigid cap shall be considered to be braced, provided that the elements are located in radial directions from the centroid of the group not less than 60 degrees (1 rad) apart. A two-element group in a rigid cap shall be considered to be braced along the axis connecting the two elements. Methods used to brace deep foundation elements shall be subject to the approval of the building official.</p> <p>Deep foundation elements supporting walls shall be placed alternately in lines spaced at least not less than 1 foot (305 mm) apart and located symmetrically under the center of gravity of the wall load carried, unless effective measures are taken to provide for eccentricity and lateral forces, or the foundation elements are adequately braced to provide for lateral stability.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Isolated cast-in-place deep foundation elements without lateral bracing shall be permitted where the least horizontal dimension is not less than 2 feet (610 mm), adequate lateral support in accordance with Section 1810.2.1 is provided for the entire height and the height does not exceed 12 times the least horizontal dimension. 2. A single row of deep foundation elements without lateral bracing is permitted for one- and two-family dwellings and lightweight construction not exceeding two stories above grade plane or 35 feet (10 668 mm) in building height, provided that the centers of the elements are located within the width of the supported wall. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.1.3 Mislocation. The foundation or superstructure shall be designed to resist the effects of the mislocation of any deep foundation element by no i less than 3 inches (76 mm). To resist the effects of mislocation, compressive overload of deep foundation elements to 110</p>		

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	<p>percent of the allowable design load shall be permitted.</p>		
	<p>1810.3.2.7 Increased allowable compressive stress for cased mandrell-driven cast-in-place elements. The allowable compressive stress in the concrete shall be permitted to be increased as specified in Table 1810.3.2.6 for those portions of permanently cased cast-in-place elements that satisfy all of the following conditions:</p> <ol style="list-style-type: none"> 1. The design shall not use the casing to resist any portion of the axial load imposed. 2. The casing shall have a sealed tip and be mandrel driven. 3. The thickness of the casing shall not be not less than manufacturer's standard gage No.14 (0.068 inch) (1.75 mm). 4. The casing shall be seamless or provided with seams of strength equal to the basic material and be of a configuration that will provide confinement to the cast-in-place concrete. 5. The ratio of steel yield strength (Fy) to specified compressive strength (f'c) shall not be not less than six. 6. The nominal diameter of the element shall not be greater than 16 inches (406 mm). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.3.1 Allowable axial load. The allowable axial load on a deep foundation element shall be determined in accordance with Sections 1810.3.3.1.1 through 1810.3.3.1.9.</p> <p>Exception: Where approved by the building official, load testing is not required.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.3.1.2 Load tests. Where design compressive loads are greater than those determined using the allowable stresses specified in Section 1810.3.2.6, where the design load for any deep foundation element is in doubt, or where cast-in-place deep foundation elements have an enlarged base formed either by compacting concrete or by driving a</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>precast base, control test elements shall be tested in accordance with ASTM D1143 or ASTM D4945. At least One element or more shall be load tested in each area of uniform subsoil conditions. Where required by the building official, additional elements shall be load tested where necessary to establish the safe design capacity. The resulting allowable loads shall not be more than one-half of the ultimate axial load capacity of the test element as assessed by one of the published methods listed in Section 1810.3.3.1.3 with consideration for the test type, duration and subsoil. The ultimate axial load capacity shall be determined by a registered design professional with consideration given to tolerable total and differential settlements at design load in accordance with Section 1810.2.3. In subsequent installation of the balance of deep foundation elements, all elements shall be deemed to have a supporting capacity equal to that of the control element where such elements are of the same type, size and relative length as the test element; are installed using the same or comparable methods and equipment as the test element; are installed in similar subsoil conditions as the test element; and, for driven elements, where the rate of penetration (for e.g. example, net displacement per blow) of such elements is equal to or less than that of the test element driven with the same hammer through a comparable driving distance.</p>		
	<p>1810.3.3.1.4 Allowable frictional shaft resistance. The assumed frictional shaft resistance developed by any uncased cast-in-place deep foundation element shall not exceed one-sixth of the bearing value of the soil material at minimum depth as set forth in Table 1806.2, up to a maximum of 500 psf (24 kPa), unless a greater value is allowed by the building official on the basis of a geotechnical investigation as specified in Section 1803 or a greater value is substantiated by a load test in accordance with Section 1810.3.3.1.2. frictional shaft resistance and end-bearing resistance shall not be assumed to act simultaneously unless</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	determined by a geotechnical investigation in accordance with Section 1803.		
	<p>1810.3.3.1.6 Uplift capacity Allowable uplift load of grouped deep foundation elements. For grouped deep foundation elements subjected to uplift, the allowable working uplift load for the group shall be calculated by a generally accepted method of analysis. Where the deep foundation elements in the group are placed at a center-to-center spacing less than three times the least horizontal dimension of the largest single element, the allowable working uplift load for the group is permitted to be calculated as the lesser of:</p> <ol style="list-style-type: none"> 1. The proposed individual allowable working uplift load times the number of elements in the group. 2. Two-thirds of the effective weight of the group and the soil contained within a block defined by the perimeter of the group and the length of the element, plus two-thirds of the ultimate shear resistance along the soil block. 		Edits made to clarify code, no major changes to code requirements.
	<p>1810.3.3.1.7 Load-bearing capacity. Deep foundation elements shall develop ultimate load capacities of at least not less than twice the design working loads in the designated load-bearing layers. Analysis shall show that no soil layers underlying the designated load-bearing layers do not causes the load-bearing capacity safety factor to be less than two.</p>		Edits made to clarify code, no major changes to code requirements.
	TABLE 1810.3.2.6 ALLOWABLE STRESSES FOR MATERIALS USED IN DEEP FOUNDATION ELEMENTS		
	<p>1810.3.3.1.9 Helical piles. The allowable axial design load, P_a, of <i>helical piles</i> shall be determined as follows:</p>		Edits made to clarify code, no major changes to code requirements.

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	<p style="text-align: center;">$P_a = 0.5 P_u$ (Equation 18-4)</p> <p>where P_u is the least value of:</p> <ol style="list-style-type: none"> 1. Base capacity plus shaft resistance of the helical pile. The base capacity is equal to the sum of the areas of the helical bearing plates times the ultimate bearing capacity of the soil or rock comprising the bearing stratum. The shaft resistance is equal to the area of the shaft above the uppermost helical bearing plate times the ultimate skin resistance. 2. Ultimate capacity determined from well-documented correlations with installation torque. 3. Ultimate capacity determined from load tests where required by Section 1810.3.3.1.2. 4. Ultimate axial capacity of pile shaft. 5. Ultimate axial capacity of pile shaft couplings. 6. Sum of the ultimate axial capacity of helical bearing plates affixed to pile. 		
	<p>1810.3.3.2 Allowable lateral load. Where required by the design, the lateral load capacity of a single deep foundation element or a group thereof shall be determined by an approved method of analysis or by lateral load tests to at least not less than twice the proposed design working load. The resulting allowable load shall not be more than one-half of the load that produces a gross lateral movement of 1 inch (25 mm) at the lower of the top of foundation element and the ground surface, unless it can be shown that the predicted lateral movement shall cause neither harmful distortion of, nor instability in, the structure, nor cause any element to be loaded beyond its capacity.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.4 Subsiding soils or strata. Where <i>deep foundation</i> elements are installed through subsiding fills soils or other subsiding strata and derive support from underlying firmer materials, consideration shall be given to the downward frictional forces that may be potentially imposed on the elements by the subsiding upper strata.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	Where the influence of subsiding fills soils or strata is considered as imposing <i>loads</i> on the element, the allowable stresses specified in this chapter shall be permitted to be increased where satisfactory substantiating data are submitted.		
	1810.3.5.2.1 Cased. Cast-in-place or grouted-in-place deep foundation elements with a permanent casing shall have a nominal outside diameter of not less than 8 inches (203 mm).		Edits made to clarify code, no major changes to code requirements.
	1810.3.5.2.2 Uncased. Cast-in-place or grouted-in-place deep foundation elements without a permanent casing shall have a specified diameter of not less than 12 inches (305 mm). The element length shall not exceed 30 times the average specified diameter. Exception: The length of the element is permitted to exceed 30 times the specified diameter, provided that the design and installation of the deep foundations are under the direct supervision of a registered design professional knowledgeable in the field of soil mechanics and deep foundations. The registered design professional shall submit a report to the building official stating that the elements were installed in compliance with the approved construction documents.		Edits made to clarify code, no major changes to code requirements.
	1810.3.5.2.3 Micropiles. Micropiles shall have an outside a nominal an outside a nominal diameter of 12 inches (305 mm) or less. The minimum diameter set forth elsewhere in Section 1810.3.5 shall not apply to micropiles.		Edits made to clarify code, no major changes to code requirements.
	1810.3.5.3.1 Structural steel H-piles. Sections of structural steel H-piles shall comply with the requirements for HP shapes in ASTM A6, of the following: 1. The flange projections shall not exceed 14 times the minimum thickness of metal in either the flange or the web and the flange widths shall not be not not be not less than 80 percent of the depth of the section.		Edits made to clarify code, no major changes to code requirements.

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	<p>2. The nominal depth in the direction of the web shall not be not less than 8 inches (203 mm).</p> <p>3. Flanges and web shall have a minimum nominal thickness of ³/₈ inch (9.5 mm).</p> <p>For structures assigned to <i>Seismic Design Category D, E or F, design and detailing of H-piles shall also conform to the requirements of AISC 341.</i></p>		
	<p>1810.3.5.3.2 Fully welded steel piles fabricated from plates. Sections of fully welded steel piles fabricated from plates shall comply with the following:</p> <p>1. The flange projections shall not exceed 14 times the minimum thickness of metal in either the flange or the web and the flange widths shall not be not less than 80 percent of the depth of the section.</p> <p>2. The nominal depth in the direction of the web shall not be not less than 8 inches (203 mm).</p> <p>3. Flanges and web shall have a minimum nominal thickness of 3/8 inch (9.5 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.5.3.4 Steel pipes and tubes. Steel pipes and tubes used as deep foundation elements shall have a nominal outside diameter of not less than 8 inches (203 mm). Where steel pipes or tubes are driven open ended, they shall have a minimum of not less than 0.34 square inch (219 mm²) of steel in cross section to resist each 1,000 foot-pounds (1356 Nm) of pile hammer energy, or shall have the equivalent strength for steels having a yield strength greater than 35,000 psi (241 MPa) or the wave equation analysis shall be permitted to be used to assess compression stresses induced by driving to evaluate if the pile section is appropriate for the selected hammer. Where a pipe or tube with wall thickness less than 0.179 inch (4.6 mm) is driven open ended, a suitable cutting shoe shall be provided. Concrete-filled steel pipes or tubes in structures assigned to Seismic Design Category C, D, E or F shall have a wall thickness of not less than 3/16 inch (5 mm). The pipe or tube casing for socketed drilled shafts shall have a nominal outside diameter of not less than 18 inches (457 mm), a</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>wall thickness of not less than 3/8 inch (9.5 mm) and a suitable steel driving shoe welded to the bottom; the diameter of the rock socket shall be approximately equal to the inside diameter of the casing.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. There is no minimum diameter for steel pipes or tubes used in micropiles. 2. For mandrel-driven pipes or tubes, the minimum wall thickness shall be 1/10 inch (2.5 mm). 		
	<p>1810.3.6 Splices. Splices shall be constructed so as to provide and maintain true alignment and position of the component parts of the <i>deep foundation</i> element during installation and subsequent thereto and shall be designed to resist the axial and shear forces and moments occurring at the location of the splice during driving and for design load combinations. Where <i>deep foundation</i> elements of the same type are being spliced, splices shall develop not less than 50 percent of the bending strength of the weaker section. Where <i>deep foundation</i> elements of different materials or different types are being spliced, splices shall develop the full compressive strength and not less than 50 percent of the tension and bending strength of the weaker section. Where structural steel cores are to be spliced, the ends shall be milled or ground to provide full contact and shall be full-depth welded.</p> <p><u>Exception: For buildings assigned to <i>Seismic Design Category A</i> or <i>B</i>, splices need not comply with the 50-percent tension and bending strength requirements where justified by supporting data.</u></p> <p>Splices occurring in the upper 10 feet (3048 mm) of the embedded portion of an element shall be designed to resist at allowable stresses the moment and shear that would result from an assumed eccentricity of the axial <i>load</i> of 3 inches (76 mm), or the element shall be braced in accordance with Section 1810.2.2 to other deep foundation elements that do not have splices in the upper 10 feet (3048 mm) of embedment.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.6.1 Seismic Design Categories C through F. For structures assigned to Seismic Design Category C, D, E or F splices of deep foundation elements shall develop the lesser of the following:</p> <ol style="list-style-type: none"> 1. The nominal strength of the deep foundation element. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. The axial and shear forces and moments from the seismic load effects including overstrength factor in accordance with Section 12.4.3 or 12.14.3.2-2.3.6 or 2.4.5 of ASCE 7.</p>		
	<p>1810.3.8 Precast concrete piles. Precast concrete piles shall be designed and detailed in accordance with Sections 1810.3.8.1 through 1810.3.8.3 ACI 318.</p> <p>Exceptions:</p> <p><u>1. For precast prestressed piles in <i>Seismic Design Category C</i>, the minimum volumetric ratio of spirals or circular hoops required by Section 18.13.5.10.4 of ACI 318 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7, Section 2.3.6 or Section 2.4.5 and the applicable overstrength factor, Ω_0. In such cases, minimum transverse reinforcement index shall be as specified in Section 13.4.5.6 of ACI 318.</u></p> <p><u>2. For precast prestressed piles in <i>Seismic Design Categories D through F</i>, the minimum volumetric ratio of spirals or circular hoops required by Section 18.13.5.13.5(c) of ACI 318 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7, Section 2.3.6 or Section 2.4.5 and the applicable overstrength factor, Ω_0. In such cases, minimum transverse reinforcement shall be as specified in Section 13.4.5.6 of ACI 318.</u></p>		<p>New exceptions for precast concrete piles.</p>
	<p>1810.3.8.1 Reinforcement. Longitudinal steel shall be arranged in a symmetrical pattern and be laterally tied with steel ties or wire spiral spaced center to center as follows:</p> <p>1. At not more than 1 inch (25 mm) for the first five ties or spirals at each end; then</p> <p>2. At not more than 4 inches (102 mm), for the remainder of the first 2 feet (610 mm) from each end; and then</p> <p>3. At not more than 6 inches (152 mm) elsewhere.</p> <p>The size of ties and spirals shall be as follows:</p> <p>1. For piles having a least horizontal dimension of 16 inches (406 mm) or less, wire shall not be smaller than 0.22 inch (5.6 mm) (No. 5 gage).</p> <p>2. For piles having a least horizontal dimension of more than 16 inches (406 mm) and less than 20</p>		

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	<p>inches (508 mm), wire shall not be smaller than 0.238 inch (6 mm) (No. 4 gage).</p> <p>3. For piles having a least horizontal dimension of 20 inches (508 mm) and larger, wire shall not be smaller than 1/4 inch (6.4 mm) round or 0.259 inch (6.6 mm) (No. 3 gage).</p>		
	<p>1810.3.8.2 Precast nonprestressed piles. Precast nonprestressed concrete piles shall comply with the requirements of Sections 1810.3.8.2.1 through 1810.3.8.2.3.</p>		
	<p>1810.3.8.2.1 Minimum reinforcement. Longitudinal reinforcement shall consist of not fewer than four bars with a minimum longitudinal reinforcement ratio of 0.008.</p>		
	<p>1810.3.8.2.2 Seismic reinforcement in Seismic Design Categories C through F. For structures assigned to Seismic Design Category C, D, E or F, precast nonprestressed piles shall be reinforced as specified in this section. The minimum longitudinal reinforcement ratio shall be 0.01 throughout the length. Transverse reinforcement shall consist of closed ties or spirals with a minimum 3/8 inch (9.5 mm) diameter. Spacing of transverse reinforcement shall not exceed the smaller of eight times the diameter of the smallest longitudinal bar or 6 inches (152 mm) within a distance of three times the least pile dimension from the bottom of the pile cap. Spacing of transverse reinforcement shall not exceed 6 inches (152 mm) throughout the remainder of the pile.</p>		
	<p>1810.3.8.2.3 Additional seismic reinforcement in Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F, transverse reinforcement shall be in accordance with Section 1810.3.9.4.2.</p>		

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	<p>1810.3.8.3 Precast prestressed piles. Precast prestressed concrete piles shall comply with the requirements of Sections 1810.3.8.3.1 through 1810.3.8.3.3.</p>		
	<p>1810.3.8.3.1 Effective prestress. The effective prestress in the pile shall be not less than 400 psi (2.76 MPa) for piles up to 30 feet (9144 mm) in length, 550 psi (3.79 MPa) for piles up to 50 feet (15 240 mm) in length and 700 psi (4.83 MPa) for piles greater than 50 feet (15 240 mm) in length.</p> <p>Effective prestress shall be based on an assumed loss of 30,000 psi (207 MPa) in the prestressing steel. The tensile stress in the prestressing steel shall not exceed the values specified in ACI 318.</p>		
	<p>1810.3.8.3.2 Seismic reinforcement in Seismic Design Category C. For structures assigned to Seismic Design Category C, precast prestressed piles shall have transverse reinforcement in accordance with this section. The volumetric ratio of spiral reinforcement shall not be less than the amount required by the following formula for the upper 20 feet (6096 mm) of the pile.</p> <p>where:</p> <ul style="list-style-type: none"> = Pile cross-sectional area square inches (mm²). = Specified compressive strength of concrete, psi (MPa). = Yield strength of spiral reinforcement \leq 85,000 psi (586 MPa). = Axial load on pile, pounds (kN), as determined from Equations 16-5 and 16-7. = Spiral reinforcement index or volumetric ratio (vol. spiral/vol. core). <p>Not less than one-half the volumetric ratio required by Equation 18-5 shall be provided below the upper 20 feet (6096 mm) of the pile.</p> <p>Exception: The minimum spiral reinforcement index required by Equation 18-5 shall not apply in cases where the design includes full consideration of load</p>		

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	<p>combinations specified in ASCE 7, Section 2.3.6 and the applicable overstrength factor, Ω_0. In such cases, minimum spiral reinforcement index shall be as specified in Section 1810.3.8.1.</p>		
	<p>1810.3.8.3.2 Seismic reinforcement in Seismic Design Category C. For structures assigned to Seismic Design Category C, precast prestressed piles shall have transverse reinforcement in accordance with this section. The volumetric ratio of spiral reinforcement shall not be less than the amount required by the following formula for the upper 20 feet (6096 mm) of the pile.</p> <p>where:</p> <ul style="list-style-type: none"> = Pile cross-sectional area square inches (mm²). = Specified compressive strength of concrete, psi (MPa). = Yield strength of spiral reinforcement \leq 85,000 psi (586 MPa). = Axial load on pile, pounds (kN), as determined from Equations 16-5 and 16-7. = Spiral reinforcement index or volumetric ratio (vol. spiral/vol. core). <p>Not less than one-half the volumetric ratio required by Equation 18-5 shall be provided below the upper 20 feet (6096 mm) of the pile.</p> <p>Exception: The minimum spiral reinforcement index required by Equation 18-5 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7,</p> <p>Section 2.3.6 and the applicable overstrength factor, Ω_0. In such cases, minimum spiral reinforcement index shall be as specified in Section 1810.3.8.1.</p> <p>$f_y h$</p> <p>P</p> <p>p_s</p> <p>$f_y h$</p>		

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~~h_c~~
~~s~~
~~Ash~~
~~f_c~~
~~(Equation 18-9)~~
~~(Equation 18-8)~~
~~(Equation 18-5)~~
~~= Yield strength of spiral reinforcement =~~
~~85,000 psi (586 MPa).~~
~~= Axial load on pile, pounds (kN), as~~
~~determined from Equations 16-5 and 16-7.~~
~~= Volumetric ratio (vol. spiral/vol. core).~~
~~This required amount of spiral~~
~~reinforcement is permitted to be obtained~~
~~by providing an inner and outer spiral.~~
~~Exception: The minimum spiral~~
~~reinforcement required by Equation 18-6~~
~~shall not apply in cases where the design~~
~~includes full consideration of load~~
~~combinations specified in~~
~~ASCE 7, Section 2.3.6 and the applicable~~
~~overstrength factor, Ω₀. In such cases,~~
~~minimum spiral reinforcement shall be as~~
~~specified in Section 1810.3.8.1.~~
~~6. Where transverse reinforcement~~
~~consists of rectangular hoops and cross~~
~~ties, the total cross-sectional area of lateral~~
~~transverse reinforcement in the ductile~~
~~region with spacing, s, and~~
~~perpendicular dimension, h_c, shall~~
~~conform to:~~
~~but not less than:~~
~~where:~~
~~= yield strength of transverse reinforcement~~
~~≤ 70,000 psi (483 MPa).~~
~~= Cross-sectional dimension of pile core~~
~~measured center to center of hoop~~
~~reinforcement, inch (mm).~~
~~= Spacing of transverse reinforcement~~
~~measured along length of pile, inch (mm).~~
~~= Cross-sectional area of transverse~~
~~reinforcement, square inches (mm²).~~

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	<p>= Specified compressive strength of concrete, psi (MPa).</p> <p>The hoops and cross ties shall be equivalent to deformed bars not less than No. 3 in size. Rectangular hoop ends shall terminate at a corner with seismic hooks.</p> <p>Outside of the length of the pile requiring transverse confinement reinforcing, the spiral or hoop reinforcing with a volumetric ratio not less than one half of that required for</p> <p>transverse confinement reinforcing shall be provided.</p>		
	<p>1810.3.8.3.4 Axial load limit in Seismic Design Categories C through F. For structures assigned to Seismic Design Category C, D, E, or F, the maximum factored axial load on precast</p> <p>prestressed piles subjected to a combination of seismic lateral force and axial load shall not exceed the following values:</p> <p>1. 0.2f'c Ag for square piles</p> <p>2. 0.4f'c Ag for circular or octagonal piles</p>		
	<p>1810.3.9.3 Placement of reinforcement. Reinforcement where required shall be assembled and tied together and shall be placed in the deep foundation element as a unit before the reinforced portion of the element is filled with concrete.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Steel dowels embedded 5 feet (1524 mm) or less shall be permitted to be placed after concreting, while the concrete is still in a semifluid state. 2. For deep foundation elements installed with a hollow-stem auger, tied reinforcement shall be placed after elements are concreted, while the concrete is still in a semifluid state. Longitudinal reinforcement without lateral ties shall be placed either through the hollow stem of the auger prior to concreting or after concreting, 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>while the concrete is still in a semifluid state.</p> <p>3. For Group R-3 and U occupancies not exceeding two stories of light-frame construction, reinforcement is permitted to be placed after concreting, while the concrete is still in a semifluid state, and the concrete cover requirement is permitted to be reduced to 2 inches (51 mm), provided that the construction method can be demonstrated to the satisfaction of the building official.</p>		
	<p>1810.3.9.4.1 Seismic reinforcement in Seismic Design Category C. For structures assigned to Seismic Design Category C, cast-in-place deep foundation elements shall be reinforced as specified in this section. Reinforcement shall be provided where required by analysis.</p> <p>A minimum of Not fewer than four longitudinal bars, with a minimum longitudinal reinforcement ratio of 0.0025, shall be provided throughout the minimum reinforced length of the element as defined below in this section starting at the top of the element. The minimum reinforced length of the element shall be taken as the greatest of the following:</p> <ol style="list-style-type: none"> 1. One-third of the element length. 2. A distance of 10 feet (3048 mm). 3. Three times the least element dimension. 4. The distance from the top of the element to the point where the design cracking moment determined in accordance with Section 1810.3.9.1 exceeds the required moment strength determined using the load combinations of Section 1605.2. <p>Transverse reinforcement shall consist of closed ties or spirals with a minimum 3/8 inch (9.5 mm) diameter. Spacing of transverse reinforcement shall not exceed the smaller of 6 inches (152 mm) or 8-longitudinal-bar diameters, within a distance of three times the least element dimension from the bottom of the pile cap. Spacing of transverse reinforcement shall not exceed 16 longitudinal bar diameters</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>throughout the remainder of the reinforced length.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The requirements of this section shall not apply to concrete cast in structural steel pipes or tubes. 2. A spiral-welded metal casing of a thickness not less than the manufacturer's standard No. 14 gage (0.068 inch) is permitted to provide concrete confinement in lieu of the closed ties or spirals. Where used as such, the metal casing shall be protected against possible deleterious action due to soil constituents, changing water levels or other factors indicated by boring records of site conditions. 		
	<p>1810.3.9.4.2 Seismic reinforcement in Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F, cast-in-place deep foundation elements shall be reinforced as specified in this section. Reinforcement shall be provided where required by analysis.</p> <p>A minimum of Not fewer than four longitudinal bars, with a minimum longitudinal reinforcement ratio of 0.005, shall be provided throughout the minimum reinforced length of the element as defined below in this section starting at the top of the element. The minimum reinforced length of the element shall be taken as the greatest of the following:</p> <ol style="list-style-type: none"> 1. One-half of the element length. 2. A distance of 10 feet (3048 mm). 3. Three times the least element dimension. 4. The distance from the top of the element to the point where the design cracking moment determined in accordance with Section 1810.3.9.1 exceeds the required 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>moment strength determined using the load combinations of Section 1605.2.</p> <p>Transverse reinforcement shall consist of closed ties or spirals not smaller than No. 3 bars for elements with a least dimension up to 20 inches (508 mm), and No. 4 bars for larger elements. Throughout the remainder of the reinforced length outside the regions with transverse confinement reinforcement, as specified in Section 1810.3.9.4.2.1 or 1810.3.9.4.2.2, the spacing of transverse reinforcement shall not exceed the least of the following:</p> <ol style="list-style-type: none"> 1. 12 longitudinal bar diameters; 2. One-half the least dimension of the element; and 3. 12 inches (305 mm). <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The requirements of this section shall not apply to concrete cast in structural steel pipes or tubes. 2. A spiral-welded metal casing of a thickness not less than manufacturer's standard No. 14 gage (0.068 inch) is permitted to provide concrete confinement in lieu of the closed ties or spirals. Where used as such, the metal casing shall be protected against possible deleterious action due to soil constituents, changing water levels or other factors indicated by boring records of site conditions. 		
	<p>1810.3.9.5 Belled drilled shafts. Where drilled shafts are belled at the bottom, the edge thickness of the bell shall not not be less than that required for the edge of footings. Where the sides of the bell slope at an angle less than 60 degrees (1 rad) from the horizontal, the effects of vertical shear shall be considered.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1810.3.9.6 Socketed drilled shafts. Socketed drilled shafts shall have a permanent pipe or tube casing that extends down to bedrock and an uncased socket drilled into the bedrock, both filled with concrete. Socketed drilled shafts shall have reinforcement or a structural steel core for the length as indicated by an approved method of analysis.</p> <p>The depth of the rock socket shall be sufficient to develop the full load-bearing capacity of the element with a minimum safety factor of two, but the depth shall not be not not less than the outside diameter of the pipe or tube casing. The design of the rock socket is permitted to be predicated on the sum of the allowable load-bearing pressure on the bottom of the socket plus bond along the sides of the socket.</p> <p>Where a structural steel core is used, the gross cross-sectional area of the core shall not exceed 25 percent of the gross area of the drilled shaft.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.10.1 Construction. Micropiles shall develop their load-carrying capacity by means of a bond zone in soil, bedrock or a combination of soil and bedrock. Micropiles shall be grouted and have either a steel pipe or tube or steel reinforcement at every section along the length. It shall be permitted to transition from deformed reinforcing bars to steel pipe or tube reinforcement by extending the bars into the pipe or tube section by at least not less than at least not less than their development length in tension in accordance with ACI 318.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.10.3 Reinforcement. For micropiles or portions thereof grouted inside a temporary or permanent casing or inside a hole drilled into bedrock or a hole drilled with grout, the steel pipe or tube or steel reinforcement shall be designed to carry at least not less than at least not less than 40 percent of the design compression load. Micropiles or portions thereof grouted in an open hole in soil without temporary or permanent casing and without suitable means of verifying the hole diameter during grouting shall be designed to carry the entire compression load in the reinforcing steel. Where a steel pipe or tube is used for reinforcement, the portion of the grout enclosed within the pipe is permitted to be included in the determination of the allowable stress in the grout.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1810.3.11 Pile caps. Pile caps shall conform with ACI 318 and this section. Pile caps shall be of reinforced concrete, and shall include all elements to which vertical <i>deep foundation</i> elements are connected, included grade beams and mats. The soil immediately below the pile cap shall not be considered as carrying any vertical load, with the exception of a <i>combined pile raft</i>. The tops of vertical <i>deep foundation</i> elements shall be embedded at least not less than 3 inches (76 mm) into pile caps and the caps shall extend not less than 4 inches (102 mm) beyond the edges of the elements. The tops of elements shall be cut or chipped back to sound material before capping.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.11.1 Seismic Design Categories C through F. For structures assigned to Seismic Design Category C, D, E or F, concrete deep foundation elements shall be connected to the pile cap by embedding the element reinforcement or field placed dowels anchored in the element into the pile cap for a distance equal to their development length in accordance with ACI 318. It shall be permitted to connect precast prestressed piles to the pile cap by developing the element prestressing strands into the pile cap provided that the connection is ductile. For deformed bars, the development length is the full development length for compression, or tension in the case of uplift, without reduction for excess reinforcement in accordance with Section 25.4.10 of ACI 318. Alternative measures for laterally confining concrete and maintaining toughness and ductile-like behavior at the top of the element shall be permitted provided that the design is such that any hinging occurs in the confined region. The minimum transverse steel ratio for confinement shall be not less than one-half of that required for columns. For resistance to uplift forces, anchorage of steel pipes, tubes or H-piles to the pile cap shall be made by means other than concrete bond to the bare steel section. Concrete-filled steel pipes or tubes shall have reinforcement of not less than 0.01 times the cross-sectional area of the concrete fill developed into the cap and extending into the fill a length equal to two times the required cap embedment, but not less than the development length in tension of the reinforcement.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.11.2 Seismic Design Categories D through F. For structures assigned to <i>Seismic Design Category</i> D, E or F, <i>deep foundation</i> element resistance to uplift forces or rotational restraint shall be provided by anchorage into the pile cap, designed considering the</p>		<p>Edits made to clarify code, changes to code and exceptions added.</p>

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combined effect of axial forces due to uplift and bending moments due to fixity to the pile cap. Anchorage shall develop ~~a minimum of not less than~~ 25 percent of the strength of the element in tension. Anchorage into the pile cap shall comply with the following:

1. In the case of uplift, the anchorage shall be capable of developing the least of the following:

1.1. The nominal tensile strength of the longitudinal reinforcement in a concrete element.

1.2. The nominal tensile strength of a steel element.

1.3. The frictional force developed between the element and the soil multiplied by 1.3.

Exception: The anchorage is permitted to be designed to resist the axial tension force resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.

2. In the case of rotational restraint, the anchorage shall be designed to resist the axial and shear forces, and moments resulting from the seismic *load effects* including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 or the anchorage shall be capable of developing the full axial, bending and shear nominal strength of the element.

3. The connection between the pile cap and the steel H-piles or unfilled steel pipe piles in structures assigned to *Seismic Design Category D, E or F* shall be designed for a tensile force of not less than 10 percent of the pile compression capacity.

Exceptions:

1. Connection tensile capacity need not exceed the strength required to resist seismic *load effects* including overstrength of ASCE 7 Section 12.4.3 or 12.14.3.2.

2. Connections need not be provided where the foundation or supported structure does not rely on the tensile capacity of the piles for stability under the design seismic force.

Where the vertical lateral-force-resisting elements are columns, the pile cap flexural strengths shall exceed the column flexural strength. The connection between batter piles and pile caps shall be designed to resist the

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	<p>nominal strength of the pile acting as a short column. Batter piles and their connection shall be designed to resist forces and moments that result from the application of seismic <i>load effects</i> including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.</p>		
	<p>1810.3.12 Grade beams. For structures assigned to Seismic Design Category D, E or F, grade Grade beams shall comply with the provisions in Section 18.13.3 of ACI 318. for grade beams, except where they are designed to resist the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.</p> <p>Exception: Grade beams designed to resist the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.3.13 Seismic ties. For structures assigned to Seismic Design Category C, D, E or F, individual deep foundations shall be interconnected by ties. Unless it can be demonstrated that equivalent restraint is provided by reinforced concrete beams within slabs on grade or reinforced concrete slabs on grade or confinement by competent rock, hard cohesive soils or very dense granular soils, ties shall be capable of carrying, in tension or compression, a force equal to the lesser of the product of the larger pile cap or column design gravity load times the seismic coefficient, SDS, divided by 10, and 25 percent of the smaller pile or column design gravity load. Seismic ties shall comply with the provisions of ACI 318.</p> <p>Exception: In Group R-3 and U occupancies of <i>light-frame construction, deep foundation</i> elements supporting foundation walls, isolated interior posts detailed so the element is not subject to lateral <i>loads</i> or exterior decks and patios are not subject to interconnection where the soils are of adequate stiffness, subject to the approval of the <i>building official</i>.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.4.1 Structural integrity. Deep foundation elements shall be installed in such a manner and sequence as to prevent distortion or damage that may would adversely affect the structural integrity of adjacent structures or of foundation elements being installed or already in place and as to avoid compacting the surrounding soil to the extent that other foundation elements cannot be installed properly.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.4.1.1 Compressive strength of precast concrete piles. A precast concrete pile shall not be driven before the concrete has attained a compressive strength of at least of not less than 75 percent of the specified compressive strength (f_c)</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>'c), but not less than the strength sufficient to withstand handling and driving forces.</p>		
	<p>1810.4.1.2 Casing. Shafts in unstable soils. Where cast-in-place deep foundation elements are formed through unstable soils and concrete is placed in an open drilled hole, a casing shall be inserted in the hole, the open hole shall be stabilized by a casing, slurry, or other approved method prior to placing the concrete. Where the casing is withdrawn during concreting, the level of concrete shall be maintained above the bottom of the casing at a sufficient height to offset any hydrostatic or lateral soil pressure. Driven casings shall be mandrel driven their full length in contact with the surrounding soil.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.4.1.3 Driving near uncased concrete. Deep foundation elements shall not be driven within six element diameters center to center in granular soils or within one-half the element length in cohesive soils of an uncased element filled with concrete less than 48 hours old unless <i>approved</i> by the <i>building official</i>. If driving near uncased concrete elements causes the concrete surface in any completed element rises or drops to rise or drop significantly or bleed additional water, the completed element shall be replaced. Driven uncased deep foundation elements shall not be installed in soils that could cause heave</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.4.1.5 Defective timber piles. Any substantial sudden increase change in rate of penetration of a timber pile shall be investigated for possible damage. If the sudden increase change in rate of penetration cannot be correlated to soil strata, the pile shall be removed for inspection or rejected.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.4.4 Preexcavation. The use of jetting, augering or other methods of preexcavation shall be subject to the approval of the building official. Where permitted, preexcavation shall be carried out in the same manner as used for deep foundation elements subject to load tests and in such a manner that will not impair the carrying capacity of the elements already in place or damage adjacent structures. Element tips shall be driven advanced below the preexcavated depth until the required resistance or penetration is obtained.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1810.4.5 Vibratory driving. Vibratory drivers shall only be used to install <i>deep foundation</i> elements where the element load capacity is verified by load tests in accordance with Section 1810.3.3.1.2. The installation of production elements shall be controlled according to power consumption, rate of penetration or other <i>approved</i> means that ensure element capacities equal or exceed those of the test elements.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The pile installation is completed by driving with an impact hammer in accordance with Section 1810.3.3.1.1. 2. The pile is to be used only for lateral resistance. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1810.4.10 Micropiles. Micropile deep foundation elements shall be permitted to be formed in holes advanced by rotary or percussive drilling methods, with or without casing. The elements shall be grouted with a fluid cement grout. The grout shall be pumped through a tremie pipe extending to the bottom of the element until grout of suitable quality returns at the top of the element. The following requirements apply to specific installation methods:</p> <ol style="list-style-type: none"> 1. For micropiles grouted inside a temporary casing, the reinforcing bars shall be inserted prior to withdrawal of the casing. The casing shall be withdrawn in a controlled manner with the grout level maintained at the top of the element to ensure that the grout completely fills the drill hole. During withdrawal of the casing, the grout level inside the casing shall be monitored to verify that the flow of grout inside the casing is not obstructed. 2. For a micropile or portion thereof grouted in an open drill hole in soil without temporary casing, the minimum design diameter of the drill hole shall be verified by a suitable device during grouting. 3. For micropiles designed for end bearing, a suitable means shall be employed to verify that the bearing surface is properly cleaned prior to grouting. 4. Subsequent micropiles shall not be drilled near elements that have been grouted until the grout has had sufficient time to harden. 5. Micropiles shall be grouted as soon as possible after drilling is completed. 6. For micropiles designed with a full-length casing, the casing shall be pulled back to the top of the bond zone and reinserted or some other suitable means employed to as ensure grout coverage outside the casing. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>1810.4.11 Helical piles. <i>Helical piles</i> shall be installed to specified embedment depth and torsional resistance criteria as determined by a <i>registered design professional</i>. The torque applied during installation shall not exceed the manufacturer's rated maximum allowable installation torque resistance of the <i>helical pile</i>.</p>		Edits made to clarify code, no major changes to code requirements.
2015 Houston IBC	2021 IBC – Chapter 19 Concrete	2021 Houston Amendments – Chapter 19	Code Analysis
	SECTION 1901 GENERAL		
	<p>1901.2 Plain and reinforced concrete. Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as amended in Section 1905 of this code. Except for the provisions of Sections 1904 and 1907, the design and construction of slabs on grade shall not be governed by this chapter unless they transmit vertical <i>loads</i> or lateral forces from other parts of the structure to the soil. Precast concrete diaphragms in buildings assigned to Seismic Design Category C, D, E or F shall be designed in accordance with the requirements of ASCE 7, Section 14.2.4.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1901.3 Anchoring to concrete. Anchoring to concrete shall be in accordance with ACI 318 as amended in Section 1905.8, and applies to cast-in (headed bolts, headed studs and hooked J- or L-bolts), post-installed expansion (torque-controlled and displacement-controlled), undercut, screw, and adhesive anchors.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>1901.7 Tolerances for structural concrete. Where not indicated in construction documents, structural tolerances for concrete structural elements shall be in accordance with this section.</p>		New requirement
	<p>1901.7.1 Cast-in-place concrete tolerances. Structural tolerances for cast-in-place concrete structural elements shall be in accordance with ACI 117.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Group R-3 detached one- and two-family dwellings are not required to comply with this section. 2. Shotcrete is not required to comply with this section. 		New requirement

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	<p><u>1901.7.2 Precast concrete tolerances.</u> Structural tolerances for precast concrete structural elements shall be in accordance with ACI ITG-7.</p> <p><u>Exception:</u> Group R-3 detached one- and two-family dwellings are not required to comply with this section.</p>		<p>New requirement</p>
	<p style="text-align: center;">SECTION 1902</p> <p style="text-align: center;">DEFINITIONS <u>COORDINATION OF TERMINOLOGY</u></p> <p>1902.1 General. The words and terms defined in ACI 318 shall, for the purposes of this chapter and as used elsewhere in this code for concrete construction, have the meanings shown in ACI 318 as modified by Section 1905.1.1 <u>Coordination of terminology used in ACI 318 and ASCE 7 shall be in accordance with Sections 1902.1.1 and 1902.1.2.</u></p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>1902.1.1 Design displacement.</u> Design displacement at each level shall be the total lateral deflection at the level calculated for the design earthquake using the procedures defined in Section 12.8.6 of ASCE 7.</p>		<p>New requirements</p>
	<p><u>1902.1.2 Special structural wall.</u> Special structural walls made of cast-in-place or precast concrete shall comply with the requirements of Sections 18.2.4 through 18.2.8, 18.10 and 18.11 of ACI 318, as applicable, in addition to the requirements for <i>ordinary reinforced concrete structural walls</i> or <i>ordinary precast structural walls</i>, as applicable. Where ASCE 7 refers to a "special reinforced concrete shear wall," it shall be deemed to mean a "special structural wall."</p>		<p>New requirements</p>
	<p style="text-align: center;">SECTION 1903</p> <p style="text-align: center;">SPECIFICATIONS FOR TESTS AND MATERIALS</p> <p>1903.1 General. Materials used to produce concrete, concrete itself and testing thereof shall comply with the applicable standards listed in ACI 318.</p> <p>Exception: The following standards as referenced in Chapter 35 shall be permitted to be used.</p> <ol style="list-style-type: none"> 1. ASTM C150 2. ASTM C595 3. ASTM C1157 		
	<p style="text-align: center;">SECTION 1904</p> <p style="text-align: center;">DURABILITY REQUIREMENTS</p>		

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	SECTION 1905 MODIFICATIONS TO ACI 318		
	<p>1905.1.1 ACI 318, Section 2.3. Modify existing definitions and add the following definitions to ACI 318, Section 2.3.</p> <p>DESIGN DISPLACEMENT. Total lateral displacement expected for the design basis earthquake, as specified by Section 12.8.6 of ASCE 7.</p> <p>DETAILED PLAIN CONCRETE STRUCTURAL WALL. A wall complying with the requirements of Chapter 14, including 14.6.2.</p> <p>ORDINARY PRECAST STRUCTURAL WALL. A precast wall complying with the requirements of Chapters 1 through 13, 15, 16 and 19 through 26.</p> <p>ORDINARY REINFORCED CONCRETE STRUCTURAL WALL. A cast-in-place wall complying with the requirements of Chapters 1 through 13, 15, 16 and 19 through 26.</p> <p>ORDINARY STRUCTURAL PLAIN CONCRETE WALL. A wall complying with the requirements of Chapter 14, excluding 14.6.2.</p> <p>SPECIAL STRUCTURAL WALL. A cast in place or precast wall complying with the requirements of 18.2.4 through 18.2.8, 18.10 and 18.11, as applicable, in addition to the requirements for ordinary reinforced concrete structural walls or ordinary precast structural walls, as applicable. Where ASCE 7 refers to a "special reinforced concrete structural wall," it shall be deemed to mean a "special structural wall."</p>		
	<p>1905.1.2 ACI 318, Section 18.2.1. Modify ACI 318 Sections 18.2.1.2 and 18.2.1.6 to read as follows:</p> <p style="padding-left: 40px;">18.2.1.2 - Structures assigned to Seismic Design Category A shall satisfy requirements of Chapters 1 through 17 and 19 through 26; Chapter 18 does not apply. Structures assigned to Seismic Design Category B, C, D, E or F also shall satisfy 18.2.1.3 through 18.2.1.7, as applicable. Except for structural elements of plain concrete complying with Section 1905.1.7 of the International Building Code, structural elements of plain concrete are prohibited in structures assigned to Seismic Design Category C, D, E or F.</p> <p style="padding-left: 40px;">18.2.1.6 - Structural systems designated as part of the seismic force-resisting system shall be restricted to those permitted by ASCE 7. Except for</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Seismic Design Category A, for which Chapter 18 does not apply, the following provisions shall be satisfied for each structural system designated as part of the seismic force-resisting system, regardless of the seismic design category:</p> <ul style="list-style-type: none"> (a) Ordinary moment frames shall satisfy 18.3. (b) Ordinary reinforced concrete structural walls and ordinary precast structural walls need not satisfy any provisions in Chapter 18. (c) Intermediate moment frames shall satisfy 18.4. (d) Intermediate precast structural walls shall satisfy 18.5. (e) Special moment frames shall satisfy 18.6 through 18.9. (f) Special structural walls shall satisfy 18.10. (g) Special structural walls constructed using precast concrete shall satisfy 18.11. <p>All Special moment frames and special structural walls shall also satisfy 18.2.4 through 18.2.8.</p>		
	<p>1905.1.3 ACI 318, Section 18.5. Modify ACI 318, Section 18.5, by adding new Section 18.5.2.2 and renumbering existing Sections 18.5.2.2 and 18.5.2.3 to become 18.5.2.3 and 18.5.2.4, respectively.</p> <p>18.5.2.2 - Connections that are designed to yield shall be capable of maintaining 80 percent of their design strength at the deformation induced by the design displacement or shall use Type 2 mechanical splices.</p> <p>18.5.2.3 - For Elements of the connection that are not designed to yield the required strength shall be based on develop at least 1.5 Sy of the yielding portion of the connection.</p> <p>18.5.2.4 - In structures assigned to SDC D, E or F, wall piers shall be designed in accordance with 18.10.8 or 18.14 in ACI 318.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1905.1.5 ACI 318, Section 18.13.1.1. Modify ACI 318, Section 18.13.1.1 to read as follows:</p> <p>18.13.1.1 - Foundations resisting earthquake-induced forces or transferring earthquake-induced forces between</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>a structure and ground shall comply with the requirements of 18.13 and other applicable provisions of ACI 318 unless modified by Chapter 18 of the International Building Code.</p>		
	<p>1905.1.6 ACI 318, Section 14.6. Modify ACI 318, Section 14.6 by adding new Section 14.6.2 to read as follows:</p> <p>14.6.2 - Detailed plain concrete structural walls.</p> <p>14.6.2.1 - Detailed plain concrete structural walls are walls conforming to the requirements of ordinary structural plain concrete walls and 14.6.2.2.</p> <p>14.6.2.2 - Reinforcement shall be provided as follows:</p> <p>(a) Vertical reinforcement of at least 0.20 square inch (129 mm²) in cross-sectional area shall be provided continuously from support to support at each corner, at each side of each opening and at the ends of walls. The continuous vertical bar required beside an opening is permitted to substitute for one of the two No. 5 bars required by 14.6.1.</p> <p>(b) Horizontal reinforcement at least 0.20 square inch (129 mm²) in cross-sectional area shall be provided:</p> <ol style="list-style-type: none"> 1. Continuously at structurally connected roof and floor levels and at the top of walls. 2. At the bottom of load-bearing walls or in the top of foundations where doweled to the wall, and 3. At a maximum spacing of 120 inches (3048 mm). <p>Reinforcement at the top and bottom of openings, where used in determining the maximum spacing specified in Item 3 above, shall be continuous in the wall.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1905.1.7 ACI 318, Section 14.1.4. Delete ACI 318, Section 14.1.4 and replace with the following:</p> <p>14.1.4 - Plain concrete in structures assigned to Seismic Design Category C, D, E or F.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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14.1.4.1 -Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

(a) Structural plain concrete basement, foundation or other walls below the base as defined in ASCE 7 are permitted in detached one- and two-family dwellings three stories or less in height constructed with stud-bearing walls. In dwellings assigned to Seismic Design Category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall be not less than 7 1/2 inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 14.6.1.

(b) Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

Exception: In detached one- and two-family dwellings three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.

(c) Plain concrete footings supporting walls are permitted, provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. For footings that exceed 8 inches (203 mm) in thickness, a minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exceptions:

1. In Seismic Design Categories A, B and C, detached one- and two-family dwellings three stories or less in height constructed with stud-bearing walls are permitted to have plain concrete footings without longitudinal reinforcement.

2. For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, a minimum of one bar shall be provided at the top of the stemwall and at the bottom of the footing.

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	<p>3. Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.</p>		
	<p align="center">SECTION 1906</p> <p align="center">STRUCTURAL PLAIN CONCRETE FOOTINGS FOR LIGHT-FRAME CONSTRUCTION</p> <p>1906.1 Scope Plain concrete footings. The design and construction of structural plain concrete, both cast-in-place and precast, shall comply with the minimum requirements of ACI 318, as modified in Section 1905. For Group R-3 occupancies and buildings of other occupancies less than two stories above grade plane of light-frame construction, the required thickness of plain concrete footings is permitted to be 6 inches (152 mm), provided that the footing does not extend more than 4 inches (102 mm) on either side of the supported wall.</p> <p>Exception: For Group R-3 occupancies and buildings of other occupancies less than two stories above grade plane of light-frame construction, the required footing thickness of ACI 318 is permitted to be reduced to 6 inches (152 mm), provided that the footing does not extend more than 4 inches (102 mm) on either side of the supported wall.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p align="center">SECTION 1907</p> <p align="center">MINIMUM SLAB PROVISIONS</p>		
	<p align="center">SECTION 1908</p> <p align="center">SHOTCRETE</p> <p>1908.1 General. Shotcrete is mortar or concrete that is pneumatically projected at high velocity onto a surface. Except as specified in this section, shotcrete shall conform to the requirements of this chapter for plain or reinforced concrete. shall be in accordance with the requirements of ACI 318.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>1908.2 Proportions and materials. Shotcrete proportions shall be selected that allow suitable placement procedures using the delivery equipment selected and shall result in finished in-place hardened shotcrete meeting the strength requirements of this code.</p>		
	<p>1908.3 Aggregate. Coarse aggregate, if used, shall not exceed 3/4 inch (19.1 mm).</p>		

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	1908.4 Reinforcement. Reinforcement used in shotcrete construction shall comply with the provisions of Sections 1908.4.1 through 1908.4.4.		
	1908.4.1 Size. The maximum size of reinforcement shall be No. 5 bars unless it is demonstrated by preconstruction tests that adequate encasement of larger bars will be achieved.		
	1908.4.2 Clearance. Where No. 5 or smaller bars are used, there shall be a minimum clearance between parallel reinforcement bars of 2 1/2 inches (64 mm). When bars larger than No. 5 are permitted, there shall be a minimum clearance between parallel bars equal to six diameters of the bars used. Where two curtains of steel are provided, the curtain nearer the nozzle shall have a minimum spacing equal to 12 bar diameters and the remaining curtain shall have a minimum spacing of six bar diameters. Exception: Subject to the approval of the building official, required clearances shall be reduced where it is demonstrated by preconstruction tests that adequate encasement of the bars used in the design will be achieved.		
	1908.4.3 Splices. Lap splices of reinforcing bars shall utilize the noncontact lap splice method with a minimum clearance of 2 inches (51 mm) between bars. The use of contact lap splices necessary for support of the reinforcing is permitted where approved by the building official, based on satisfactory preconstruction tests that show that adequate encasement of the bars will be achieved, and provided that the splice is oriented so that a plane through the center of the spliced bars is perpendicular to the surface of the shotcrete.		
	1908.4.4 Spirally tied columns. Shotcrete shall not be applied to spirally tied columns.		
	1908.5 Preconstruction tests. Where preconstruction tests are required by Section 1908.4, a test panel shall be shot, cured, cored or sawn, examined and tested prior to commencement of the project. The sample panel shall be representative of the project and simulate job conditions as closely as possible. The panel thickness and reinforcing shall reproduce the thickest and most congested area specified in the structural design. It shall be shot at the same angle, using the same nozzleman and with the same concrete mix design that will be used on the project. The equipment used in preconstruction testing shall be the same equipment used in the work requiring such testing, unless substitute equipment is approved by the building official. Reports of preconstruction tests		

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	shall be submitted to the building official as specified in Section 1704.5.		
	1908.6 Rebound. Any rebound or accumulated loose aggregate shall be removed from the surfaces to be covered prior to placing the initial or any succeeding layers of shotcrete. Rebound shall not be used as aggregate.		
	1908.7 Joints. Except where permitted herein, unfinished work shall not be allowed to stand for more than 30 minutes unless edges are sloped to a thin edge. For structural elements that will be under compression and for construction joints shown on the approved construction documents, square joints are permitted. Before placing additional material adjacent to previously applied work, sloping and square edges shall be cleaned and wetted.		
	1908.8 Damage. In-place shotcrete that exhibits sags, sloughs, segregation, honeycombing, sand pockets or other obvious defects shall be removed and replaced. Shotcrete above sags and sloughs shall be removed and replaced while still plastic.		
	1908.9 Curing. During the curing periods specified herein, shotcrete shall be maintained above 40°F (4°C) and in moist condition.		
	1908.9.1 Initial curing. Shotcrete shall be kept continuously moist for 24 hours after shotcreting is complete or shall be sealed with an approved curing compound.		
	1908.9.2 Final curing. Final curing shall continue for seven days after shotcreting, or for three days if high early strength cement is used, or until the specified strength is obtained. Final curing shall consist of the initial curing process or the shotcrete shall be covered with an approved moisture retaining cover.		
	1908.9.3 Natural curing. Natural curing shall not be used in lieu of that specified in this section unless the relative humidity remains at or above 85 percent, and is authorized by the registered design professional and approved by the building official.		
	1908.10 Strength tests. Strength tests for shotcrete shall be made by an approved agency on specimens that are representative of the work and that have been water soaked for not fewer than 24 hours prior to testing. Where the maximum size aggregate is larger than 3/8 inch (9.5 mm), specimens shall consist of not less than three 3-inch diameter (76 mm) cores or 3-inch (76 mm) cubes. Where the maximum size aggregate is 3/8 inch (9.5 mm) or smaller,		

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	specimens shall consist of not less than 2-inch diameter (51 mm) cores or 2-inch (51 mm) cubes.		
	1908.10.1 Sampling. Specimens shall be taken from the in-place work or from test panels, and shall be taken not less than once each shift, but not less than one for each 50 cubic yards (38.2 m³) of shotcrete.		
	1908.10.2 Panel criteria. Where the maximum size aggregate is larger than 3/8 inch (9.5 mm), the test panels shall have minimum dimensions of 18 inches by 18 inches (457 mm by 457 mm). Where the maximum size aggregate is 3/8 inch (9.5 mm) or smaller, the test panels shall have minimum dimensions of 12 inches by 12 inches (305 mm by 305 mm). Panels shall be shot in the same position as the work, during the course of the work and by the nozzle men doing the work. The conditions under which the panels are cured shall be the same as the work.		
	1908.10.3 Acceptance criteria. The average compressive strength of three cores from the in-place work or a single test panel shall equal or exceed 0.85 f'c with no single core less than 0.75 f'c. The average compressive strength of three cubes taken from the in-place work or a single test panel shall equal or exceed f'c with no individual cube less than 0.88 f'c. To check accuracy, locations represented by erratic core or cube strengths shall be retested.		
2015 Houston IBC	2021 IBC – Chapter 21 Masonry	2021 Houston Amendments – Chapter 21	Code Analysis
	SECTION 2101 GENERAL		
	2101.2 Design methods. Masonry shall comply with the provisions of TMS 402/ACI 530/ASCE 5 or TMS 403 or TMS 404 as well as applicable requirements of this chapter.		
	SECTION 2102 NOTATIONS		
	2102.1 General. The following terms are defined in Chapter 2: notations are used in the chapter: AAC MASONRY. ADOBE CONSTRUCTION.		

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~~Adobe, stabilized.~~
~~Adobe, unstabilized.~~
~~AREA.~~
~~Gross cross-sectional.~~
~~Net cross-sectional.~~
~~AUTOCLAVED AERATED CONCRETE (AAC).~~
~~BED JOINT.~~
~~BRICK.~~
~~Calcium silicate (sand lime brick).~~
~~Clay or shale.~~
~~Concrete.~~
~~CAST STONE.~~
~~CELL.~~
~~CHIMNEY.~~
~~CHIMNEY TYPES.~~
~~High-heat appliance type.~~
~~Low-heat appliance type.~~
~~Masonry type.~~
~~Medium-heat appliance type.~~
~~COLLAR JOINT.~~
~~DIMENSIONS.~~
~~Nominal.~~
~~Specified.~~
~~FIREPLACE.~~
~~FIREPLACE THROAT.~~
~~FOUNDATION PIER.~~
~~HEAD JOINT.~~
~~MASONRY.~~
~~Glass-unit masonry.~~
~~Plain masonry.~~
~~Reinforced masonry.~~
~~Solid masonry.~~
~~Unreinforced (plain) masonry.~~
~~MASONRY UNIT.~~

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~~Hollow.~~
~~Solid.~~
~~MORTAR.~~
~~MORTAR, SURFACE BONDING.~~
~~PRESTRESSED MASONRY.~~
~~RUNNING BOND.~~
~~SPECIFIED COMPRESSIVE STRENGTH OF MASONRY, f_m .~~
~~STONE MASONRY.~~
~~STRENGTH.~~
~~Design strength.~~
~~Nominal strength.~~
~~Required strength.~~
~~TIE, WALL.~~
~~TILE, STRUCTURAL CLAY.~~
~~WALL.~~
~~Cavity wall.~~
~~Dry stacked, surface bonded wall.~~
~~Parapet wall.~~
~~WYTHER.~~
NOTATIONS.
 d_b = Diameter of reinforcement, inches (mm).
 F_s = Allowable tensile or compressive stress in reinforcement, psi (MPa).
 f_r = Modulus of rupture, psi (MPa).
 f_{AAC} = Specified compressive strength of AAC masonry, the minimum compressive strength for a class of AAC masonry as specified in ASTM C1386, psi (MPa).
 f_m = Specified compressive strength of masonry at age of 28 days, psi (MPa).
 f_{mi} = Specified compressive strength of masonry at the time of prestress transfer, psi (MPa).
 K = The lesser of the masonry cover, clear spacing between adjacent reinforcement, or five times d_b , inches (mm).
 L_s = Distance between supports, inches (mm).
 l_d = Required development length or lap length of reinforcement, inches (mm).
 P = The applied load at failure, pounds (N).

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	<p>S_t = Thickness of the test specimen measured parallel to the direction of load, inches (mm).</p> <p>S_w = Width of the test specimen measured parallel to the loading cylinder, inches (mm).</p>		
	<p style="text-align: center;">SECTION 2103</p> <p style="text-align: center;">MASONRY CONSTRUCTION MATERIALS</p> <p>2103.1 Masonry units. Concrete masonry units, clay or shale masonry units, stone masonry units, glass unit masonry and AAC masonry units shall comply with Article 2.3 of TMS 602/ACI 503.1/ASCE 6. Architectural cast stone shall conform to ASTM C1364 and TMS 504. Adhered manufactured stone masonry veneer units shall conform to ASTM C1670.</p> <p>Exception: Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E119 or UL 263 and shall comply with the requirements of Table 705.5.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2103.2.1 Masonry mortar. Mortar for use in masonry construction shall conform to Articles 2.1 and 2.6 A of TMS 602/ACI 530.1/ASCE 6.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2103.3 Grout. Grout shall comply with Article 2.2 of TMS 602/ACI 530.1/ASCE 6.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2103.4 Metal reinforcement and accessories. Metal reinforcement and accessories shall conform to Article 2.4 of TMS 602/ACI 530.1/ASCE 6. Where unidentified reinforcement is approved for use, not less than three tension and three bending tests shall be made on representative specimens of the reinforcement from each shipment and grade of reinforcing steel proposed for use in the work.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 2104</p> <p style="text-align: center;">CONSTRUCTION</p> <p>2104.1 Masonry construction. Masonry construction shall comply with the requirements of Sections 2104.1.1 through 2104.1.3 and 2104.1.2 and with the requirements of either TMS 602 or TMS 604/602/ACI 530.1/ASCE 6.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p style="text-align: center;">SECTION 2105 QUALITY ASSURANCE</p> <p>2105.1 General. A quality assurance program shall be used to ensure that the constructed masonry is in compliance with the approved construction documents.</p> <p>The quality assurance program shall comply with the inspection and testing requirements of Chapter 17 and TMS 602/ACI 530.1/ASCE 5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2106 SEISMIC DESIGN</p> <p>2106.1 Seismic design requirements for masonry. Masonry structures and components shall comply with the requirements in Chapter 7 of TMS 402/ACI 530/ASCE 5 depending on the structure's seismic design category.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2107 ALLOWABLE STRESS DESIGN</p> <p>2107.1 General. The design of masonry structures using allowable stress design shall comply with Section 2106 and the requirements of Chapters 1 through 8 of TMS 402/ACI 530/ASCE 5 except as modified by Sections 2107.2 through 2107.4-2107.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2107.2 TMS 402/ACI 530/ASCE 5, Section 8.1.6.7.1.1-6.1.6.1.1, lap splices. As an alternative to Section 8.1.6.7.1.1-6.1.6.1.1, it shall be permitted to design lap splices in accordance with Section 2107.2.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2107.2.1 Lap splices. The minimum length of lap splices for reinforcing bars in tension or compression, l_d, shall be:</p> <p>(Equation 21-1)</p> <p>For SI:</p> <p>but not less than 12 inches (305 mm). In no case shall The length of the lapped splice shall be not less than 40 bar diameters.</p> <p>where:</p> <p>db = Diameter of reinforcement, inches (mm).</p> <p>f_s = Computed stress in reinforcement due to design loads, psi (MPa).</p> <p>In regions of moment where the design tensile stresses in the reinforcement are greater than 80 percent of the allowable steel tension stress, F_s, the lap length of splices shall be increased not less than 50 percent of the minimum required length, but need not be greater than 72 db. Other</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>equivalent means of stress transfer to accomplish the same 50 percent increase shall be permitted. Where epoxy coated bars are used, lap length shall be increased by 50 percent.</p>		
	<p>2107.3 TMS 402/ACI 530/ASCE 5, Section 8.1.6.76.1.6.1, splices of reinforcement. Modify Section 8.1.6.7 6.1.6.1 as follows:</p> <p>6.1.6.1 – Splices of reinforcement. Lap splices, welded splices or mechanical splices are permitted in accordance with the provisions of this section. Welding shall conform to AWS D1.4. Welded splices shall be of ASTM A706 steel reinforcement. Reinforcement larger than No. 9 (M #29) shall be spliced using mechanical connections in accordance with Section 6.1.6.1.3.</p>		<p>New requirement</p>
	<p>2107.4 TMS 402/ACI 530/ASCE 5, Section 8.3.6, maximum bar size. Add the following to Chapter 8:</p> <p>8.3.6 – Maximum bar size. The bar diameter shall not exceed one-eighth of the nominal wall thickness and shall not exceed one-quarter of the least dimension of the cell, course or collar joint in which it is placed.</p>		
	<p style="text-align: center;">SECTION 2108</p> <p style="text-align: center;">STRENGTH DESIGN OF MASONRY</p> <p>2108.1 General. The design of masonry structures using strength design shall comply with Section 2106 and the requirements of Chapters 1 through 7 and Chapter 9 of TMS 402/ACI 530/ASCE 5, except as modified by Sections 2108.2 through 2108.3.</p> <p style="padding-left: 40px;">Exception: AAC masonry shall comply with the requirements of Chapters 1 through 7 and Chapter 11 of TMS 402/ACI 530/ASCE 5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2108.2 TMS 402/ACI 530/ASCE 5, Section 9.3.3.3 6.1.5.1.1, development. Modify the second paragraph of Section 9.3.3.3 6.1.5.1.1 as follows:</p> <p>The required development length of reinforcement shall be determined by Equation (9-6-6-1), but shall be not be less than 12 inches (305 mm) and need not be greater than 72 d_b.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2108.3 TMS 402/ACI 530/ASCE 5, Section 9.3.3.4 6.1.6.1.1, splices. Modify items (c) and (d) of Section 9.3.3.4 6.1.6.1.2 and 6.1.6.1.3 as follows:</p> <p>9.3.3.4 (c) 6.1.6.1.2 – A welded splice shall have the bars butted and welded to develop at least not less than 125 percent of the yield strength, f_y, of the bar in tension or compression, as required. Welded splices shall be of ASTM A706 steel reinforcement. Welded</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>splices shall not be permitted in plastic hinge zones of intermediate or special reinforced walls.</p> <p>9.3.3.4 (d) 6.1.6.1.3- Mechanical splices shall be classified as Type 1 or 2 in accordance with Section 18.2.7.1 of ACI 318. Type 1 mechanical splices shall not be used within a plastic hinge zone or within a beam-column joint of intermediate or special reinforced masonry shear walls. Type 2 mechanical splices are permitted in any location within a member.</p>		
	<p style="text-align: center;">SECTION 2109</p> <p style="text-align: center;">EMPIRICAL DESIGN OF ADOBE MASONRY</p> <p>2109.1 General. Empirically designed adobe masonry shall conform to the requirements of Appendix A of TMS 402/ACI 530/ASCE 5, except where otherwise noted in this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2109.1.1 Limitations. The use of empirical design of adobe masonry shall be limited as noted in Section A.1.2 of TMS 402/ACI 530/ASCE 5. The use of dry stacked, surface bonded masonry shall be prohibited in Risk Category IV structures. In buildings that exceed one or more of the limitations of Section A.1.2 of TMS 402/ACI 530/ASCE 5, masonry shall be designed in accordance with the engineered design provisions of Section 2101.2 or the foundation wall provisions of Section 1807.1.5.</p> <p style="padding-left: 40px;">Section A.1.2.2 of TMS 402/ACI 530/ASCE 5 shall be modified as follows:</p> <p style="padding-left: 40px;">A.1.2.2- Wind. Empirical requirements shall not apply to the design or construction of masonry for buildings, parts of buildings, or other structures to be located in areas where Vasd as determined in accordance with Section 1609.3.1 of the International Building Code exceeds 110 mph.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2109.2 Surface bonded walls. Dry stacked, surface bonded concrete masonry walls shall comply with the requirements of Appendix A of TMS 402/ACI 530/ASCE 5, except where otherwise noted in this section.</p>		
	<p>2109.2.1 Strength. Dry stacked, surface bonded concrete masonry walls shall be of adequate strength and proportions to support all superimposed loads without exceeding the allowable stresses listed in Table 2109.2.1. Allowable stresses not specified in Table 2109.2.1 shall comply with the requirements of TMS 402/ACI 530/ASCE 5.</p>		

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	TABLE 2109.2.1 ALLOWABLE STRESS-GROSS CROSS-SECTIONAL AREA FOR DRY-STACKED, SURFACE-BONDED CONCRETE MASONRY WALLS		
	2109.2.2 Construction. Construction of dry stacked, surface-bonded masonry walls, including stacking and leveling of units, mixing and application of mortar and curing and protection shall comply with ASTM C946.		
	2109.3-2109.2 Adobe construction. Adobe construction shall comply with this section and shall be subject to the requirements of this code for Type V construction, Appendix A of TMS 402/ACI 530/ASCE 5, and this section.		
	2109.3.1-2109.2.1 Unstabilized adobe.		
	2109.3.1-2109.2.1.1 Compressive strength. Adobe units shall have an average compressive strength of 300 psi (2068 kPa) when tested in accordance with ASTM C67. Five samples shall be tested and no individual units is are not permitted to have a compressive strength of less than 250 psi (1724 kPa).		Edits made to clarify code, no major changes to code requirements.
	2109.3.1.2-2109.2.1.2 Modulus of rupture. Adobe units shall have an average modulus of rupture of 50 psi (345 kPa) when tested in accordance with the following procedure. Five samples shall be tested and no individual unit shall not have a modulus of rupture of less than 35 psi (241 kPa).		Edits made to clarify code, no major changes to code requirements.
	2109.3.1.2.1-2109.2.1.2.1 Support conditions.		
	2109.3.1.2.2-2109.2.1.2.2 Loading conditions.		

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	2109.3.1.2.3 2109.2.1.2.3 Testing procedure.		
	2109.3.1.2.4 2109.2.1.2.4 Modulus of rupture determination.		
	2109.3.1.3 2109.2.1.3 Moisture content requirements.		
	2109.3.1.4 2109.2.1.4 Shrinkage cracks.		
	2109.3.2 2109.2.2 Stabilized adobe.		
	2109.3.2.1 2109.2.2.1 Soil requirements.		
	2109.3.2.2 2109.2.2.2 Absorption requirements. A 4-inch (102 mm) cube, cut from a stabilized adobe unit dried to a constant weight in a ventilated oven at 212°F to 239°F (100°C to 115°C), shall not absorb more than 2 1/2 percent moisture by weight when placed upon a constantly water-saturated, porous surface for seven days. A minimum Not fewer than five specimens shall be tested and each specimen shall be cut from a separate unit.		Edits made to clarify code, no major changes to code requirements.
	2109.3.3 2109.32.3 Allowable stress.		
	2109.3.3.1 2109.2.3.1 Bolts.		

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	2109.3.4-2109.2.4 Detailed requirements.		
	2109.3.4.1-2109.2.4.1 Number of stories. Adobe construction shall be limited to buildings not exceeding one story, except that two-story construction is allowed When Where designed by a registered design professional.		
	2109.3.4.2-2109.2.4.2 Mortar		
	2109.3.4.2.1-2109.2.4.2.1 General. Mortar for stabilized adobe units shall comply be in accordance with this Section chapter 2103.2.1, or be composed of adobe soil. Adobe soil used as mortar shall comply with material requirements for stabilized adobe. Mortar for unstabilized adobe shall be Portland cement mortar, of the same composition and stabilization as the adobe brick units. Unstabilized adobe soil mortar is permitted in conjunction with unstabilized adobe brick units.		Edits made to clarify code, no major changes to code requirements.
	2109.3.4.2.2-2109.2.4.2.2 Mortar joints.		
	2109.3.4.3-2109.2.4.3 Parapet walls.		
	2109.3.4.4-2109.2.4.4 Wall thickness. The minimum thickness of exterior walls in one-story buildings shall be 10 inches (254 mm). The walls shall be laterally supported at intervals not exceeding 24 feet (7315 mm). The minimum thickness of interior load-bearing walls shall be 8 inches (203 mm). In no case shall The unsupported height of any wall constructed of adobe units shall not exceed 10 times the thickness of such wall.		Edits made to clarify code, no major changes to code requirements.

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	2109.3.4.5 2109.2.4.5 Foundations.		
	2109.3.4.5.1 2109.2.4.5.1 Foundation support.		
	2109.3.4.5.2 2109.2.4.5.2 Lower course requirements.		
	2109.3.4.6 2109.2.4.6 Isolated piers or columns. Adobe units shall not be used for isolated piers or columns in a load-bearing capacity. Walls less than 24 inches (610 mm) in length shall be considered to be isolated piers or columns.		Edits made to clarify code, no major changes to code requirements.
	2109.3.4.7 2109.2.4.7 Tie beams.		
	2109.3.4.7.1 2109.2.4.7.1 Concrete tie beams. Concrete tie beams shall be a minimum depth of 6 inches (152 mm) and a minimum width of or more in depth and 10 inches (254 mm) or more in width. Concrete tie beams shall be continuously reinforced with a minimum of not fewer than two No. 4 reinforcing bars. The specified compressive strength of concrete shall be at least not less than 2,500 psi (17.2 MPa).		Edits made to clarify code, no major changes to code requirements.
	2109.3.4.7.2 2109.2.4.7.2 Wood tie beams. Wood tie beams shall be solid or built up of lumber having a minimum nominal thickness of not less than 1 inch (25 mm), and shall have a minimum depth of not less than 6 inches (152 mm) and a minimum width of not less than 10 inches (254 mm). Joints in wood tie beams shall be spliced a minimum not less than 6 inches (152 mm). No Splices shall not be allowed within 12 inches (305 mm) of an opening. Wood used in tie beams shall be approved naturally decay-resistant or preservative-treated wood.		Edits made to clarify code, no major changes to code requirements.

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	<p>2109.3.4.8 2109.2.4.8 Exterior finish. Exterior finishes applied to adobe masonry walls shall be of any type permitted by this section of Chapter 14, except where stated otherwise in this section. Exterior walls constructed of unstabilized adobe units shall have their exterior surface covered with not fewer than two coats of Portland cement plaster having a minimum thickness of 3/4 inch (19.1 mm) and conforming to ASTM C926. Lathing shall comply with ASTM C1063. Fasteners shall be spaced at 16 inches (406 mm) on center maximum. Exposed wood surfaces shall be treated with an approved wood preservative or other protective coating prior to lath application.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2109.2.4.8.1 Where required. Unstabilized adobe masonry walls shall receive a weather protective exterior finish in accordance with Section 2109.2.4.8.</p>		<p>New requirement</p>
	<p>2109.2.4.8.2 Vapor permeance. Plaster and finish assemblies shall have a vapor permeance of not less than 5 perms.</p> <p>Exception: Insulation products applied to the exterior of stabilized adobe masonry walls in Climate Zones 2B, 3B, 4B and 5B shall not have a vapor permeance requirement.</p>		<p>New requirement</p>
	<p>2109.2.4.8.3 Plaster thickness and coats. Plaster applied to adobe masonry shall be not less than 7/8 inch (22 mm) and not greater than 2 inches (51 mm) thick. Plaster shall be applied in not less than two coats.</p>		<p>New requirement</p>
	<p>2109.2.4.8.4 Plaster application. Where plaster is applied directly to adobe masonry walls, no intermediate membrane shall be used.</p>		<p>New requirement</p>
	<p>2109.2.4.8.5 Lath for plaster. Lath shall be provided for all plasters, except where not required elsewhere in Section 2109.2.4.8. Fasteners shall be corrosion resistant and spaced at a maximum of 16 inches (406 mm) on center with a minimum 1½-inch (38 mm) penetration into the adobe wall. Metal lath shall comply with ASTM C1063, as modified by this section, and shall be corrosion resistant. Plastic lath shall comply with ASTM C1788, as modified by this section. Wood substrates shall be protected with No. 15 asphalt felt, an approved</p>		<p>New requirement</p>

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	<u>wood preservative or other protective coating prior to lath application.</u>		
	<u>2109.2.4.8.6 Cement plaster. <i>Cement plaster</i> shall conform to ASTM C926 and shall comply with Chapter 25, except that the proportion of lime in plaster coats shall be not less than 1 part lime to 4 parts cement. The combined thickness of <i>cement plaster</i> coats shall not exceed 1 inch (25 mm).</u>		New requirement
	<u>2109.2.4.8.7 Lime plaster. Lime plaster is any plaster with a binder composed of calcium hydroxide, including Type N or S hydrated lime, hydraulic lime, natural hydraulic lime, or slaked quicklime. Hydrated lime shall comply with ASTM C206. Hydraulic lime shall comply with ASTM C1707. Natural hydraulic lime shall comply with ASTM C141 and EN 459. Quicklime shall comply with ASTM C5.</u>		New requirement
	<u>2109.2.4.8.8 Cement-lime plaster. Cement-lime plaster shall be any plaster mix type CL, F or FL, as described in ASTM C926.</u>		New requirement
	<u>2109.2.4.8.9 Clay plaster. Clay plaster shall comply with this section.</u>		New requirement
	<u>2109.2.4.8.9.1 General. Clay plaster shall be any plaster having a clay or clay subsoil binder. Such plaster shall contain sufficient clay to fully bind the aggregate and shall be permitted to contain reinforcing fibers. Acceptable reinforcing fibers include chopped straw, sisal, and animal hair.</u>		New requirement
	<u>2109.2.4.8.9.2 Clay subsoil requirements. The suitability of clay subsoil shall be determined in accordance with the Figure 2 Ribbon Test and the Figure 3 Ball Test in the appendix of ASTM E2392/E2392M.</u>		New requirement
	<u>2109.2.4.8.9.3 Weather-exposed locations. Clay plaster exposed to water from direct or wind-driven rain or snow shall be finished with an approved erosion-resistant finish. The use</u>		New requirement

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	<u>of clay plasters shall not be permitted on weather-exposed parapets.</u>		
	2109.2.4.8.9.4 Prohibited finish coat. Plaster containing Portland cement shall not be permitted as a finish over clay plaster.		New requirement
	2109.2.4.8.9.5 Conditions where lathing is not required. For <i>unstabilized adobe walls finished with unstabilized clay plaster</i> , lathing shall not be required.		New requirement
	2109.3.4.8 2109.2.4.8 Exterior finish. Exterior walls constructed of unstabilized adobe units shall have their exterior surface covered with a minimum not fewer than two coats of Portland cement plaster having a minimum thickness of 3/4 inch (19.1 mm) and conforming to ASTM C926. Lathing shall comply with ASTM C1063. Fasteners shall be spaced at 16 inches (406 mm) on center maximum. Exposed wood surfaces shall be treated with an approved wood preservative or other protective coating prior to lath application.		Edits made to clarify code, no major changes to code requirements.
	2109.3.4.9 2109.2.4.9 Lintels. Lintels shall be considered to be structural members and shall be designed in accordance with the applicable provisions of Chapter 16.		Edits made to clarify code, no major changes to code requirements.
	SECTION 2110 GLASS UNIT MASONRY 2110.1 General. Glass unit masonry construction shall comply with Chapter 13 of TMS 402/ ACI 530/ASCE 5 and this section.		Edits made to clarify code, no major changes to code requirements.
	SECTION 2111 MASONRY FIREPLACES		
	2111.3 Footings and foundations. Footings for masonry fireplaces and their chimneys shall be constructed of concrete or solid masonry at least not less than 12 inches (305 mm) thick and shall extend at least not less than 6 inches (153 mm) beyond the face of the fireplace or foundation wall on all sides. Footings shall be founded on natural undisturbed earth or engineered fill below		Edits made to clarify code, no major changes to code requirements.

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	<p>frost depth. In areas not subjected to freezing, footings shall be at least not less than 12 inches (305 mm) below finished grade.</p>		
	<p>2111.3.1 Ash dump cleanout. Cleanout openings, located within foundation walls below fireboxes, when Where provided, shall be equipped with ferrous metal or masonry doors and frames constructed to remain tightly closed, except when in use. Clean outs shall be accessible and located so that ash removal will not create a hazard to combustible materials.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.4.2 Horizontal reinforcing. Vertical reinforcement shall be placed enclosed within 1/4-inch (6.4 mm) ties or other reinforcing of equivalent net cross-sectional area, spaced not to exceed 18 inches (457 mm) on center in concrete; or placed in the bed joints of unit masonry at a minimum not less than every 18 inches (457 mm) of vertical height. Two such ties shall be provided at each bend in the vertical bars.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.5 Seismic anchorage. Masonry fireplaces and foundations shall be anchored at each floor, ceiling or roof line more than 6 feet (1829 mm) above grade with two 3/16-inch by 1-inch (4.8 mm by 25 mm) straps embedded a minimum not less than 12 inches (305 mm) into the chimney. Straps shall be hooked around the outer bars and extend 6 inches (152 mm) beyond the bend. Each strap shall be fastened to a minimum not fewer than four floor joists with two 1/2-inch (12.7 mm) bolts.</p> <p>Exception: Seismic anchorage is not required for the following:</p> <ol style="list-style-type: none"> 1. In structures assigned to Seismic Design Category A or B. 2. Where the masonry fireplace is constructed completely within the exterior walls. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.6 Firebox walls. Masonry fireboxes shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. When Where a lining of firebrick at least not less than 2 inches (51 mm) in thickness or other approved lining is provided, the minimum thickness of back and sidewalls shall each be 8 inches (203 mm) of solid masonry, including the lining. The width of joints between firebricks shall be not greater than 1/4 inch (6.4 mm). When no Where a lining is not not provided, the total minimum thickness of back and sidewalls shall be 10 inches (254 mm) of solid masonry. Firebrick shall conform to ASTM C27 or ASTM C1261 and shall be laid with medium-duty refractory mortar conforming to ASTM C199.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2111.6.1 Steel fireplace units. Steel fireplace units are permitted to be installed with solid masonry to form a masonry fireplace provided that they are installed according to either the requirements of their listing or the requirements of this section. Steel fireplace units incorporating a steel firebox lining shall be constructed with steel not less than 1/4 inch (6.4 mm) in thickness, and an air-circulating chamber which that is ducted to the interior of the building. The firebox lining shall be encased with solid masonry to provide a total thickness at the back and sides of not less than 8 inches (203 mm), of which not less than 4 inches (102 mm) shall be of solid masonry or concrete. Circulating air ducts employed with steel fireplace units shall be constructed of metal or masonry.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.7 Firebox dimensions. The firebox of a concrete or masonry fireplace shall have a minimum depth of 20 inches (508 mm). The throat shall be not less than 8 inches (203 mm) above the fireplace opening. The throat opening shall not be not not less than 4 inches (102 mm) in depth. The cross-sectional area of the passageway above the firebox, including the throat, damper and smoke chamber, shall be not less than the cross-sectional area of the flue.</p> <p>Exception: Rumford fireplaces shall be permitted provided that the depth of the fireplace is not less than 12 inches (305 mm) and at least not less one-third of the width of the fireplace opening, and the throat is not less than 12 inches (305 mm) above the lintel, and at least not less 1/20 the cross-sectional area of the fireplace opening.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.9 Smoke chamber walls. Smoke chamber walls shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. The total minimum thickness of front, back and sidewalls shall be 8 inches (203 mm) of solid masonry. The inside surface shall be parged smooth with refractory mortar conforming to ASTM C199. When Where When Where a lining of firebrick not less than 2 inches (51 mm) thick, or a lining of vitrified clay not less than 5/8 inch (15.9 mm) thick, is provided, the total minimum thickness of front, back and sidewalls shall be 6 inches (152 mm) of solid masonry, including the lining. Firebrick shall conform to ASTM C1261 and shall be laid with refractory mortar conforming to ASTM C199. Vitrified clay linings shall conform to ASTM C315.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.9.1 Smoke chamber dimensions. The inside height of the smoke chamber from the fireplace throat to the beginning of the flue shall be not greater than the inside width of the fireplace opening. The inside surface of the smoke chamber shall not be inclined more than 45 degrees (0.76 rad) from vertical When Where When Where prefabricated smoke chamber linings are used or When Where When Where the smoke chamber walls are rolled or sloped rather than corbeled. When Where the inside surface of the smoke chamber is</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>formed by corbeled masonry, the walls shall not be corbeled more than 30 degrees (0.52 rad) from vertical.</p>		
	<p>2111.10 Hearth and hearth extension. Masonry fireplace hearths and hearth extensions shall be constructed of concrete or masonry, supported by noncombustible materials, and reinforced to carry their own weight and all imposed loads. No Combustible material shall not remain against the underside of hearths or hearth extensions after construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.10.2 Hearth extension thickness. The minimum thickness of hearth extensions shall be 2 inches (51 mm).</p> <p>Exception: When Where the bottom of the firebox opening is raised not less than 8 inches (203 mm) above the top of the hearth extension, a hearth extension of not less than 3/8-inch-thick (9.5 mm) brick, concrete, stone, tile or other approved noncombustible material is permitted.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2111.12 Fireplace clearance. Any portion of a masonry fireplace located in the interior of a building or within the exterior wall of a building shall have a clearance to combustibles of not less than 2 inches (51 mm) from the front faces and sides of masonry fireplaces and not less than 4 inches (102 mm) from the back faces of masonry fireplaces. The airspace shall not be filled, except to provide fireblocking in accordance with Section 2111.13.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Masonry fireplaces listed and labeled for use in contact with combustibles in accordance with UL 127 and installed in accordance with the manufacturer's instructions are permitted to have combustible material in contact with their exterior surfaces. 2. When Where masonry fireplaces are constructed as part of masonry or concrete walls, combustible materials shall not be in contact with the masonry or concrete walls less than 12 inches (306 mm) from the inside surface of the nearest firebox lining. 3. Exposed combustible trim and the edges of sheathing materials, such as wood siding, flooring and drywall, are permitted to abut the masonry fireplace sidewalls and hearth extension, in accordance with Figure 2111.12, provided that such combustible trim or sheathing is not less than 12 inches (306 mm) from the inside surface of the nearest firebox lining. 4. Exposed combustible mantels or trim is permitted to be placed directly on the masonry fireplace front surrounding the fireplace opening, provided that such combustible materials shall not be placed within 6 inches (153 mm) of a fireplace opening. Combustible material directly above and within 12 inches (305 mm) of the fireplace opening shall not project more than 1/8 inch (3.2 mm) for each 1-inch (25 mm) distance from such opening. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Combustible materials located along the sides of the fireplace opening that project more than 1 1/2 inches (38 mm) from the face of the fireplace shall have an additional clearance equal to the projection.</p>		
	<p style="text-align: center;">SECTION 2112 MASONRY HEATERS</p> <p>2112.1 Definition. A masonry heater is a heating appliance constructed of concrete or solid masonry, hereinafter referred to as "masonry," which is designed to absorb and store heat from a solid fuel fire built in the firebox by routing the exhaust gases through internal heat exchange channels in which the flow path downstream of the firebox may includes flow in either a horizontal or downward direction before entering the chimney and which delivers heat by radiation from the masonry surface of the heater.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2112.5 Masonry heater clearance. Combustible materials shall not be placed within 36 inches (914 mm) or the distance of the allowed reduction method from the outside surface of a masonry heater in accordance with NFPA 211, Section 12.6, and the required space between the heater and combustible material shall be fully vented to permit the free flow of air around all heater surfaces.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> Where the masonry heater wall thickness is at least not less 8 inches (203 mm) of solid masonry and the wall thickness of the heat exchange channels is not less than 5 inches (127 mm) of solid masonry, combustible materials shall not be placed within 4 inches (102 mm) of the outside surface of a masonry heater. A clearance of not less than 8 inches (203 mm) shall be provided between the gas-tight capping slab of the heater and a combustible ceiling. Masonry heaters listed and labeled in accordance with UL 1482 or EN 15250 and installed in accordance with the manufacturer's instructions. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2113 MASONRY CHIMNEYS</p>		
	<p>2113.2 Footings and foundations. Footings for masonry chimneys shall be constructed of concrete or solid masonry not less than 12 inches (305 mm) thick and shall extend at least not less 6 inches (152 mm) beyond the face of the foundation or support wall on all sides. Footings shall be founded on natural undisturbed earth or engineered fill below frost depth. In areas not subjected to freezing, footings shall be not less than 12 inches (305 mm) below finished grade.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2113.9 Termination. Chimneys shall extend not less than 2 feet (610 mm) higher than any portion of the building within 10 feet (3048 mm), but shall not be not less than 3 feet (914 mm) above the highest point where the chimney passes through the roof.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2113.11.1.1 Flue linings for specific appliances. Flue linings other than those covered in Section 2113.11.1 intended for use with specific appliances shall comply with Sections 2113.11.1.2 through 2113.11.1.4 and Sections, 2113.11.2 and 2113.11.3.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2113.11.2 Concrete and masonry chimneys for medium-heat appliances. Concrete and masonry chimneys for medium-heat appliances shall comply with Sections 2113.11.2.1 through 2113.11.2.5.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2113.11.2.1 General. Concrete and masonry chimneys for medium-heat appliances shall comply with Sections 2113.1 through 2113.5.</p>		
	<p>2113.11.2.2 2113.11.2.1 Construction.</p>		
	<p>2113.11.2.3 2113.11.2.2 Lining.</p>		
	<p>2113.11.2.4 2113.11.2.3 Multiple passageway.</p>		
	<p>2113.11.2.5 2113.11.2.4 Termination height.</p>		
	<p>2113.11.2.6 2113.11.2.5 Clearance.</p>		

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	<p>2113.11.3 Concrete and masonry chimneys for high-heat appliances. Concrete and masonry chimneys for high-heat appliances shall comply with 2113.1 through 2113.5.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2113.11.3.1 General. Concrete and masonry chimneys for high-heat appliances shall comply with 2113.11.3.1 through 2113.11.3.4.</p>		
	<p>2113.11.3.2 2113.11.3.1 Construction.</p>		
	<p>2113.11.3.3 2113.11.3.2 Lining.</p>		
	<p>2113.11.3.4 2113.11.3.3 Termination height.</p>		
	<p>2113.11.3.5 2113.11.3.4 Clearance.</p>		
	<p>2113.12 Clay flue lining (installation). Clay flue liners shall be installed in accordance with ASTM C1283 and extend from a point not less than 8 inches (203 mm) below the lowest inlet or, in the case of fireplaces, from the top of the smoke chamber to a point above the enclosing walls. The lining shall be carried up vertically, with a maximum slope not greater than 30 degrees (0.52 rad) from the vertical.</p> <p>Clay flue liners shall be laid in medium-duty nonwater-soluble refractory mortar conforming to ASTM C199 with tight mortar joints left smooth on the inside and installed to maintain an airspace or insulation not to exceed the thickness of the flue liner separating the flue liners from the interior face of the chimney masonry walls. Flue lining shall be supported on all sides. Only enough mortar shall be placed to make the joint and hold the liners in position.</p>		
	<p>2113.14 Multiple flues. When Where two or more flues are located in the same chimney, masonry wythes shall be built between adjacent flue linings. The masonry wythes shall be at least not less 4 inches (102 mm) thick and bonded into the walls of the chimney.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>Exception: When Where venting only one appliance, two flues are permitted to adjoin each other in the same chimney with only the flue lining separation between them. The joints of the adjacent flue linings shall be staggered not less than 4 inches (102 mm).</p>		
	<p>2113.19 Chimney clearances. Any portion of a masonry chimney located in the interior of the building or within the exterior wall of the building shall have a minimum airspace clearance to combustibles of 2 inches (51 mm). Chimneys located entirely outside the exterior walls of the building, including chimneys that pass through the soffit or cornice, shall have a minimum airspace clearance of 1 inch (25 mm). The airspace shall not be filled, except to provide fireblocking in accordance with Section 2113.20.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Masonry chimneys equipped with a chimney lining system listed and labeled for use in chimneys in contact with combustibles in accordance with UL 1777, and installed in accordance with the manufacturer's instructions, are permitted to have combustible material in contact with their exterior surfaces. 2. Where masonry chimneys are constructed as part of masonry or concrete walls, combustible materials shall not be in contact with the masonry or concrete wall less than 12 inches (305 mm) from the inside surface of the nearest flue lining. 3. Exposed combustible trim and the edges of sheathing materials, such as wood siding, are permitted to abut the masonry chimney sidewalls, in accordance with Figure 2113.19, provided that such combustible trim or sheathing is not less than 12 inches (305 mm) from the inside surface of the nearest flue lining. Combustible material and trim shall not overlap the corners of the chimney by more than 1 inch (25 mm). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2114 DRY-STACK MASONRY</p> <p>2114.1 General. The design of dry-stack masonry structures shall comply with the requirements of Chapters 1 through 8 of TMS 402 except as modified by Sections 2114.2 through 2114.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2114.2 Limitations. Dry-stack masonry shall be prohibited in Risk Category IV structures.</p>		
	<p>2114.3 Materials. Concrete masonry units complying with ASTM C90 shall be used.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>2114.4 Strength. Dry-stack masonry shall be of adequate strength and proportions to support all superimposed loads without exceeding the allowable stresses listed in Table 2114.4. Allowable stresses not specified in Table 2114.4 shall comply with the requirements of Chapter 8 of TMS 402.</p>		New requirements
	<p>TABLE 2114.4 GROSS CROSS-SECTIONAL AREA ALLOWABLE STRESS FOR DRY-STACK MASONRY</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2114.5 Construction. Construction of dry-stack masonry shall comply with ASTM C946.</p>		Edits made to clarify code, no major changes to code requirements.
2015 Houston IBC	2021 IBC – Chapter 22 Steel	2021 Houston Amendments	Code Analysis
	SECTION 2201 GENERAL		
	<p style="text-align: center;">SECTION 2202 DEFINITIONS IDENTIFICATION OF STEEL FOR STRUCTURAL PURPOSES</p> <p>2202.1 Definitions. General. The following terms are defined in Chapter 2: Identification of structural steel elements shall be in accordance with AISC 360. Identification of cold-formed steel members shall be in accordance with AISI S100. Identification of cold-formed steel light-frame construction shall also comply with the requirements contained in AISI S240 or AISI S220, as applicable. Other steel furnished for structural load-carrying purposes shall be properly identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Where the steel grade is not readily identifiable from marking and test records, the steel shall be tested to verify conformity to such standards.</p> <p>STEEL CONSTRUCTION, COLD-FORMED. STEEL JOIST. STEEL ELEMENT, STRUCTURAL.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p style="text-align: center;">SECTION 2203</p> <p style="text-align: center;">IDENTIFICATION AND PROTECTION OF STEEL FOR STRUCTURAL PURPOSES</p> <p>2203.1 Identification. Identification of structural steel elements shall be in accordance with AISC 360. Identification of cold-formed steel members shall be in accordance with AISI S100. Identification of cold-formed steel light-frame construction shall also comply with the requirements contained in AISI S200 or AISI S220, as applicable. Other steel furnished for structural load-carrying purposes shall be properly identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Steel that is not readily identifiable as to grade from marking and test records shall be tested to determine conformity to such standards.</p>		
	<p>2203.2 2203.1 Protection. General. Painting of structural steel elements shall be in accordance with AISC 360. Painting of open-web steel joists and joist girders shall be in accordance with SJI CJ, SJI JG, SJI K and SJI LH/DLH100. Individual structural members and assembled panels of cold-formed steel construction shall be protected against corrosion in accordance with the requirements contained in AISI S100. Protection of cold-formed steel light-frame construction shall be in accordance with AISI S240-200 or AISI S220, as applicable.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2204</p> <p style="text-align: center;">CONNECTIONS</p>		
	<p style="text-align: center;">SECTION 2205</p> <p style="text-align: center;">STRUCTURAL STEEL</p>		
	<p>2205.2.1.1 Seismic Design Category B or C. Structures assigned to <i>Seismic Design Category B</i> or <i>C</i> shall be of any construction permitted in Section 2205. Where a response modification coefficient, <i>R</i>, in accordance with ASCE 7, Table 12.2-1, is used for the design of structures assigned to <i>Seismic Design Category B</i> or <i>C</i>, the structures shall be designed and detailed in accordance with the requirements of AISC 341. <u>Beam-to-column moment connections in special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358.</u></p> <p>Exception: The response modification coefficient, <i>R</i>, designated for "Steel systems not specifically detailed</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, shall be permitted for systems designed and detailed in accordance with AISC 360, and need not be designed and detailed in accordance with AISC 341.		
	2205.2.1.2 Seismic Design Category D, E or F. Structures assigned to <i>Seismic Design Category D, E or F</i> shall be designed and detailed in accordance with AISC 341, except as permitted in ASCE 7, Table 15.4-1. Beam-to-column moment connections in special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358.		Edits made to clarify code, no major changes to code requirements.
	SECTION 2206 COMPOSITE STRUCTURAL STEEL AND CONCRETE STRUCTURES		
	SECTION 2207 STEEL JOISTS 2207.1 General. The design, manufacture and use of open-web steel joists and joist girders shall be in accordance with one of the following Steel Joist Institute (SJI) specifications: either SJI CJ or SJI 100, as applicable. 1. SJI CJ 2. SJI K 3. SJI LH/DLH 4. SJI JG		Edits made to clarify code, no major changes to code requirements.
	2207.1.1 Seismic design. Where required, the seismic design of buildings shall be in accordance with the additional provisions of Section 2205.2 or 2211.6-2211.1.1.		Edits made to clarify code, no major changes to code requirements.
	SECTION 2208 STEEL CABLE STRUCTURES		
	2208.2 Seismic requirements for steel cable. The design strength of steel cables shall be determined by the provisions of ASCE 19 except as modified by these provisions. 1. A load factor of 1.1 shall be applied to the prestress force included in T3 and T4 as defined in Section 3.12.		

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	<p>2. In Section 3.2.1, Item (c) shall be replaced with "1.5 T3" and Item (d) shall be replaced with "1.5 T4."</p>		
	<p align="center">SECTION 2209 STEEL STORAGE RACKS</p> <p>2209.1 Storage Steel storage racks. The design, testing and utilization of steel storage racks made of cold-formed or hot-rolled steel structural members shall be in accordance with RMI ANSI/MH 16.1. Where required by ASCE 7, the seismic design of steel storage racks shall be in accordance with Section 15.5.3 of ASCE 7.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2209.2 Cantilevered steel Steel cantilevered storage racks. The design, testing and utilization of steel cantilevered storage racks made of cold-formed or hot-rolled steel structural members shall be in accordance with RMI ANSI/MH 16.3. Where required by ASCE 7, the seismic design of steel cantilevered steel storage racks shall be in accordance with Section 15.5.3 of ASCE 7.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2209.3 Certification. For rack storage structures that are 8 feet (2438 mm) in height or greater to the top load level and assigned to <u>Seismic Design Category D, E, or F</u> at completion of the <u>storage rack installation, a certificate of compliance shall be submitted to the owner or the owner's authorized agent stating that the work was performed in accordance with approved construction documents.</u></p>		New requirement
	<p align="center">SECTION 2210 COLD-FORMED STEEL</p> <p>2210.1 General. The design of cold-formed carbon and low-alloy steel structural members shall be in accordance with AISI S100. The design of cold-formed stainless-steel structural members shall be in accordance with ASCE 8. Cold-formed steel light-frame construction shall also comply with Section 2211. Where required, the seismic design of cold-formed steel structures shall be in accordance with the additional provisions of Section 2210.2.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2210.2 Seismic requirements for cold-formed steel structures. Where a response modification coefficient, R, in accordance with ASCE 7, Table 12.2-1, is used for the design of cold-formed steel structures, the structures shall be designed and detailed in accordance with the requirements of AISI S100, ASCE 8, or, for cold-formed steel special-bolted moment frames, AISI S110-400.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p style="text-align: center;">SECTION 2211</p> <p style="text-align: center;">COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION</p> <p>2211.1 General. Structural framing. The design and installation of structural and nonstructural members utilized in cold formed steel light frame construction where the specified minimum base steel thickness is not greater than 0.1180 inches (2.997 mm) shall be in accordance with AISI S200 and Sections 2211.2 through 2211.7, or AISI S220, as applicable. For cold-formed steel light-frame construction, the design and installation of the following structural framing systems, including their members and connections, shall be in accordance with AISI S240, and Sections 2211.1.1 through 2211.1.3, as applicable:</p> <ol style="list-style-type: none"> 1. Floor and roof systems. 2. Structural walls. 3. Shear walls, strap-braced walls and diaphragms that resist in-plane lateral loads. 4. Trusses. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2211.1.1 Seismic requirements for cold-formed steel structural systems. The design of cold-formed steel light-frame construction to resist seismic forces shall be in accordance with the provisions of Section 2211.1.1.1 or 2211.1.1.2, as applicable.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2211.1.1.1 Seismic Design Categories B and C. Where a response modification coefficient, R, in accordance with ASCE 7, Table 12.2-1 is used for the design of cold-formed steel light-frame construction assigned to Seismic Design Category B or C, the seismic force-resisting system shall be designed and detailed in accordance with the requirements of AISI S400.</p> <p>Exception: The response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, shall be permitted for systems designed and detailed in accordance with AISI S240 and need not be designed and detailed in accordance with AISI S400</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2211.1.1.2 Seismic Design Categories D through F. In cold-formed steel light-frame construction assigned to Seismic Design Category D, E or F, the seismic force-resisting system shall be designed and detailed in accordance with AISI S400.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2211.1.2 Header design Prescriptive framing. Headers, including box and back-to-back headers, and double and single L headers shall be designed in accordance with AISI S212 or AISI S400. Detached one- and two-family dwellings and townhouses, less than or equal to three stories above grade plane, shall be permitted to be constructed in accordance with AISI S230 subject to the limitations therein.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2211.1.3 Truss design. Cold-formed steel trusses shall be designed in accordance with AISI S214, Sections 2211.3.1 through 2211.3.4 and accepted engineering practice comply with the additional provisions of Sections 2211.1.3.1. through 2211.1.3.3.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2211.1.3.1 Truss design drawings. The truss design drawings shall conform to the requirements of Section B2.3.1 of AISI S24402 and shall be provided with the shipment of trusses delivered to the job site. The truss design drawings shall include the details of permanent individual truss member restraint/bracing in accordance with Section 1.6 B6(a) or B-6(e) of AISI S24402 where these methods are utilized to provide restraint/bracing.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2211.3.2 Deferred submittals. AISI S214 Section B4.2 shall be deleted.</p>		
	<p>2211.3.4-2211.1.3.2 Trusses spanning 60 feet or greater.</p>		
	<p>2211.3.4-2211.1.3 Truss quality assurance. Trusses not part of a manufacturing process that provides requirements for quality control done under the supervision of a third-party quality control agency, in accordance with AISI S240 Chapter D shall be manufactured fabricated in compliance with Sections 1704.2.5 and 1705.2, as applicable.</p>		Edits made to clarify code, no major changes to code requirements.

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>2211.2 Nonstructural members. For cold-formed steel light-frame construction, the design and installation of nonstructural members and connections shall be in accordance with AISI S220</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2211.4 Structural wall stud design. Structural wall studs shall be designed in accordance with either AISI S211 or AISI S100.</p>		
	<p>2211.5 Floor and roof system design. Framing for floor and roof systems in buildings shall be designed in accordance with either AISI S210 or AISI S100.</p>		
	<p>2211.6 Lateral design. Light frame shear walls, diagonal strap bracing that is part of a structural wall and diaphragms used to resist wind, seismic and other in-plane lateral loads shall be designed in accordance with AISI S213.</p>		
	<p>2211.7 Prescriptive framing. Detached one and two family dwellings and townhouses, less than or equal to three stories above grade plane, shall be permitted to be constructed in accordance with AISI S230 subject to the limitations therein.</p>		
<p>2015 Houston IBC – Chapter 23 Wood</p>	<p>2021 IBC – Chapter 23 Wood</p>	<p>2021 Houston Amendments – Chapter 23</p>	<p>Code Analysis</p>
	<p>SECTION 2301 GENERAL</p>		
	<p>2301.2 General design requirements. The design of structural elements or systems, constructed partially or wholly of wood or wood-based products, shall be in accordance with one of the following methods:</p> <ol style="list-style-type: none"> 1. Allowable stress design in accordance with Sections 2304, 2305 and 2306. 2. Load and resistance factor design in accordance with Sections 2304, 2305 and 2307. 3. Conventional light frame construction in accordance with Sections 2304 and 2308. 4. AWC WFCM in accordance with Section 2309. 5. The design and construction of log structures in accordance with the provisions of ICC 400. 		

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SECTION 2302

DEFINITIONS DESIGN REQUIREMENTS

2302.1 Definitions. General. The design of structural elements or systems, constructed partially or wholly of wood or wood-based products, shall be in accordance with one of the following methods:

1. Allowable stress design in accordance with Sections 2304, 2305 and 2306.
2. Load and resistance factor design in accordance with Sections 2304, 2305 and 2307.
3. Conventional light-frame construction in accordance with Sections 2304 and 2308.
4. AWC WFCM in accordance with Section 2309.
5. The design and construction of log structures in accordance with the provisions of ICC 400.

~~The following terms are defined in Chapter 2:~~

~~ACCREDITATION BODY.~~

~~BRACED WALL LINE.~~

~~BRACED WALL PANEL.~~

~~COLLECTOR.~~

~~CONVENTIONAL LIGHT-FRAME CONSTRUCTION.~~

~~CRIPPLE WALL.~~

~~CROSS LAMINATED TIMBER.~~

~~DIAPHRAGM, UNBLOCKED.~~

~~DRAG STRUT.~~

~~ENGINEERED WOOD RIM BOARD.~~

~~FIBERBOARD.~~

~~GABLE.~~

~~GRADE (LUMBER).~~

~~HARDBOARD.~~

~~NAILING, BOUNDARY.~~

~~NAILING, EDGE.~~

~~NAILING, FIELD.~~

~~NOMINAL SIZE (LUMBER).~~

~~PARTICLEBOARD.~~

~~PERFORMANCE CATEGORY.~~

~~PREFABRICATED WOOD I JOIST.~~

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	<p>SHEAR WALL.</p> <p>Shear wall, perforated.</p> <p>Shear wall segment, perforated.</p> <p>STRUCTURAL COMPOSITE LUMBER.</p> <p>Laminated strand lumber (LSL).</p> <p>Laminated veneer lumber (LVL).</p> <p>Oriented strand lumber (OSL).</p> <p>Parallel strand lumber (PSL).</p> <p>STRUCTURAL GLUED-LAMINATED TIMBER.</p> <p>TIE-DOWN (HOLD-DOWN).</p> <p>TREATED WOOD.</p> <p>Fire-retardant-treated wood.</p> <p>Preservative-treated wood.</p> <p>WOOD SHEAR PANEL.</p> <p>WOOD STRUCTURAL PANEL.</p> <p>Composite panels.</p> <p>Oriented strand board (OSB).</p> <p>Plywood.</p>		
	<p style="text-align: center;">SECTION 2303</p> <p style="text-align: center;">MINIMUM STANDARDS AND QUALITY</p> <p>2303.1 General. Structural sawn lumber; end-jointed lumber; prefabricated wood I-joists; structural glued-laminated timber; wood structural panels; fiberboard sheathing (when where used structurally); hardboard siding (when where used structurally); particleboard; preservative-treated wood; structural log members; structural composite lumber; round timber poles and piles; fire-retardant-treated wood; hardwood plywood; wood trusses; joist hangers; nails; and staples shall conform to the applicable provisions of this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.1.5 Wood structural panels. Wood structural panels, when where used structurally (including those used for siding, roof and wall sheathing, subflooring, diaphragms and built-up members), shall conform to the requirements for their type in DOC PS 1, DOC PS 2 or ANSI/APA PRP 210. Each panel or member shall be identified for grade, bond classification, and Performance Category by the trademarks of an approved testing and grading agency. The Performance Category value shall be used as the "nominal panel thickness" or "panel thickness" whenever referenced in this code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Wood structural panel components shall be designed and fabricated in accordance with the applicable standards listed in Section 2306.1 and identified by the trademarks of an approved testing and inspection agency indicating conformance to the applicable standard. In addition, wood structural panels when where permanently exposed in outdoor applications shall be of exterior type, except that wood structural panel roof sheathing exposed to the outdoors on the underside is permitted to be Exposure 1 type.</p>		
	<p>2303.1.6 Fiberboard. Fiberboard for its various uses shall conform to ASTM C208. Fiberboard sheathing, when where used structurally, shall be identified by an approved agency as conforming to ASTM C208.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.1.7 Hardboard. Hardboard siding shall conform to the requirements of ANSI A135.6 and, where where used structurally, shall be identified by the label of an approved agency conforming to CPA/ANSI A135.6. Hardboard underlayment shall meet the strength requirements of 7/32-inch(5.6 mm) or 1/4-inch (6.4 mm) service class hardboard planed or sanded on one side to a uniform thickness of not less than 0.200 inch (5.1 mm). Prefinished hardboard paneling shall meet the requirements of CPA/ANSI A135.5. Other basic hardboard products shall meet the requirements of CPA/ANSI A135.4. Hardboard products shall be installed in accordance with manufacturer's recommendations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.1.8.1 Floor underlayment. Particleboard floor underlayment shall conform to Type PBU of ANSI A208.1. Type PBU underlayment shall not be not less than 1/4-inch (6.4 mm) thick and shall be installed in accordance with the instructions of the Composite Panel Association.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.1.9 Preservative-treated wood. Lumber, timber, plywood, piles and poles supporting permanent structures required by Section 2304.12 to be preservative treated shall conform to the requirements of the applicable AWPA Standard U1 and M4 for the species, product, preservative and end use. Preservatives shall be listed in Section 4 of AWPA U1. Lumber and plywood used in permanent wood foundation systems shall conform to Chapter 18.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.2 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which that, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E84 or UL 723, a listed flame spread index of 25 or less, and show no evidence of significant progressive combustion when the test is continued. Additionally, the ASTM E84 or UL 723 test shall be continued for a 20-minute period. Additionally and the flame front shall not progress more than 10½ feet (3200 mm) beyond the centerline of the burners at any time during the test.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2303.2.2 Other means during manufacture. For wood products produced impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces of the wood product. The use of paints, coating, stains or other surface treatments is not an approved method of protection as required in this section.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.2.3 Testing. Fire testing of wood structural panels. For wood products produced by other means during manufacture, other than a pressure process, all sides of the wood product shall be tested in accordance with and produce the results required in Section 2303.2. Wood structural panels shall be permitted to test only the front and back faces. Wood structural panels shall be tested with a ripped or cut longitudinal gap of 1/8 inch (3.2 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.2.4 Labeling. In addition to the labels required in Section 2303.1.1 for sawn lumber and Section 2303.1.5 for wood structural panels, each piece of fire-retardant-treated lumber and wood structural panels shall be labeled. The label shall contain the following items:</p> <ol style="list-style-type: none"> 1. The identification mark of an approved agency in accordance with Section 1703.5. 2. Identification of the treating manufacturer. 3. The name of the fire-retardant treatment. 4. The species of wood treated. 5. Flame spread and smoke-developed index. 6. Method of drying after treatment. 7. Conformance with appropriate standards in accordance with Sections 2303.2.5 through 2303.2.8. 8. For fire-retardant-treated wood exposed to weather, damp or wet locations, include the words "No increase in the listed classification when subjected to the Standard Rain Test" (ASTM D2898). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.4.1.1 Truss design drawings. The written, graphic and pictorial depiction of each individual truss shall be provided to the building official for approval prior to installation. Truss design drawings shall also be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the following information specified below:</p> <ol style="list-style-type: none"> 1. Slope or depth, span and spacing; 2. Location of all joints and support locations; 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<ol style="list-style-type: none"> 3. Number of plies if greater than one. 4. Required bearing widths. 5. Design loads as applicable, including: <ol style="list-style-type: none"> 5.1. Top chord live load. 5.2. Top chord dead load. 5.3. Bottom chord live load. 5.4. Bottom chord dead load. 5.5. Additional loads and locations. 5.6. Environmental design criteria and loads (such as wind, rain, snow, seismic, etc.). 6. Other lateral loads, including drag strut loads. 7. Adjustments to wood member and metal connector plate design value for conditions of use. 8. Maximum reaction force and direction, including maximum uplift reaction forces where applicable. 9. Metal connector plate type, Joint connection type and description, such as size and thickness or gage, and the dimensioned location of each metal joint connector plate except where symmetrically located relative to the joint interface. 10. Size, species and grade for each wood member. 11. Truss-to-truss connections and truss field assembly requirements. 12. Calculated span-to-deflection ratio and maximum vertical and horizontal deflection for live and total load as applicable. 13. Maximum axial tension and compression forces in the truss members. 14. Required permanent individual truss member restraint location and the method and details of restraint/bracing to be used in accordance with Section 2303.4.1.2. 		
	<p>2303.4.1.2 Permanent individual truss member restraint (PITMR) and permanent individual truss member diagonal bracing (PITMDB). Where permanent restraint of truss members is required on the truss design drawings designate the need for permanent individual truss member restraint, it shall be accomplished by one of the following methods:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. Permanent individual truss member restraint/bracing shall be PITMR and PITMDB installed using standard industry lateral restraint and diagonal bracing details in accordance with generally TPI 1, Section 2.3.3.1.1, accepted engineering practice, or Figures 2303.4.1.2(1), (3) and (5). Locations for lateral restraint shall be identified on the truss design drawing.</p> <p>2. Individual truss member reinforcement in place of the specified lateral restraints (i.e., buckling reinforcement such as T-reinforcement, L-reinforcement, proprietary reinforcement, etc.) such The trusses shall be designed so that the buckling of any individual truss member is resisted internally by the individual truss through suitable means (for example, buckling reinforcement by T reinforcement or L reinforcement, proprietary reinforcement). The buckling reinforcement of individual truss members shall be installed as shown on the truss design drawing, on supplemental truss member buckling reinforcement details provided by the truss designer or in accordance with Figures 2303.4.1.2 (2) and (4).</p> <p>3. A project-specific permanent individual truss member restraint/bracing design shall be permitted to be specified PITMR and PITMDB design provided by any registered design professional.</p>		
	<p>FIGURE 2303.4.1.2(1) PITMR AND PITMDB FOR TRUSS WEB MEMBERS REQUIRED ONE ROW OF PITMR</p>		<p>New figure</p>
	<p>FIGURE 2303.4.1.2(2) ALTERNATIVE INSTALLATION USING BUCKLING REINFORCEMENT FOR TRUSS WEB MEMBERS IN LIEU OF ONE ROW OF PITMR</p>		<p>New figure</p>
	<p>FIGURE 2303.4.1.2(3) PITMR AND PITMDB FOR TRUSS WEB MEMBERS REQUIRING TWO ROWS OF PITMR</p>		<p>New figure</p>
	<p>FIGURE 2303.4.1.2(4) ALTERNATIVE INSTALLATION USING BUCKLING REINFORCEMENT FOR TRUSS WEB MEMBERS IN LIEU OF TWO ROWS OF PITMR</p>		<p>New figure</p>

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	<p>FIGURE 2303.4.1.2(5) PITMR AND PITMDB FOR FLAT PORTION OF TOP CHORD IN A PIGGYBACK ASSEMBLY</p>		<p>New figure</p>
	<p>2303.4.1.2.1 Trusses installed without a diaphragm. <u>Trusses installed without a diaphragm on the top or bottom chord shall require a project specific PITMR and PITMDB design prepared by a registered design professional.</u> Exception: Group U occupancies.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.4.1.3 Trusses spanning 60 feet or greater. The owner of the owner's authorized agent shall contract with any qualified <i>registered design professional</i> for the design of the temporary installation restraint and diagonal bracing and the permanent individual truss member restraint/bracing PITMR and PITMDB for all trusses with clear spans 60 feet (18 288 mm) or greater.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.4.1.4.1 Truss design drawings. Where required by the registered design professional, the building official or the statutes of the jurisdiction in which the project is to be constructed, each individual truss design drawing shall bear the seal and signature of the truss designer.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where a cover sheet and truss index sheet are combined into a single sheet and attached to the set of truss design drawings, the single cover/truss index sheet is the only document required to be signed and sealed by the truss designer. 2. When Where a cover sheet and a truss index sheet are separately provided and attached to the set of truss design drawings, the cover sheet and the truss index sheet are the only documents required to be signed and sealed by the truss designer. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2303.4.5 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (for example e.g., HVAC equipment, piping, additional roofing or insulation, etc.) shall not be permitted without verification that the truss is capable of supporting such additional loading.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.6 Nails and staples. Nails and staples shall conform to requirements of ASTM F1667, including Supplement 1. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as follows: 80 kips per square inch (ksi) (551 MPa) for shank diameters larger than 0.177 inch (4.50 mm) but not larger than 0.254 inch (6.45 mm), 90 ksi (620 MPa) for shank diameters larger than 0.142 inch (3.61 mm) but not larger than 0.177 inch (4.50 mm) and 100 ksi (689 MPa) for shank diameters of at least not less than 0.099 inch (2.51 mm) but not larger than 0.142 inch (3.61 mm). Staples used for framing and sheathing connections shall have minimum average bending moments as follows: 3.6 in.-lbs (0.41 N-m) for No. 16 gage staples, 4.0 in.-lbs (0.45 N-m) for No. 15 gage staples, and 4.3 in.-lbs (0.49 N-m) for No. 14 gage staples.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2303.7 Shrinkage. Consideration shall be given in design to for the possible effect effects of wood cross-grain dimensional changes considered vertically which that may occur in lumber fabricated in a green condition as a result of changes in the wood moisture content after installation.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2304</p> <p style="text-align: center;">GENERAL CONSTRUCTION REQUIREMENTS</p> <p>2304.1 General. The provisions of this section apply to design methods specified in Section 2304.2-2302.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.3.1 Bottom plates. Studs shall have full bearing on a 2-inch-thick (actual 1 1/2-inch, 38 mm) or larger plate or sill having a width at least not less than equal to the width of the studs.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.3.3 Shrinkage. Wood walls and bearing partitions shall not support more than two floors and a roof unless an analysis satisfactory to the building official shows that shrinkage of the wood framing will not have adverse effects on the structure or any plumbing, electrical or mechanical systems or other equipment installed therein due to excessive shrinkage or differential movements caused by shrinkage. The analysis shall also show that the roof drainage system and the foregoing systems or equipment</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	will not be adversely affected or, as an alternate, such systems shall be designed to accommodate the differential shrinkage or movements.		
	2304.5 Framing around flues and chimneys. Combustible framing shall be a minimum of not less than 2 inches (51 mm), but shall not be not less than the distance specified in Sections 2111 and 2113 and the International Mechanical Code, from flues, chimneys and fireplaces, and 6 inches (152 mm) away from flue openings.		Edits made to clarify code, no major changes to code requirements.
	2304.7 Interior paneling. Softwood wood structural panels used for interior paneling shall conform to the provisions of Chapter 8 and shall be installed in accordance with Table 2304.10.1. Panels shall comply with DOC PS 1, DOC PS 2 or ANSI/APA PRP 210. Prefinished hardboard paneling shall meet the requirements of CPA ANSI A135.5. Hardwood plywood shall conform to HPVA HP-1.		Edits made to clarify code, no major changes to code requirements.
	2304.8.1 Structural floor sheathing. Structural floor sheathing shall be designed in accordance with the general provisions of this code and the special provisions in this section.		Edits made to clarify code, no major changes to code requirements.
	2304.8.2 Structural roof sheathing. Structural roof sheathing shall be designed in accordance with the general provisions of this code and the special provisions in this section. Roof sheathing conforming to the provisions of Table 2304.8(1), 2304.8(2), 2304.8(3) or 2304.8(5) shall be deemed to meet the requirements of this section. Wood structural panel roof sheathing shall be of a type manufactured with exterior glue (Exposure 1 or Exterior).		Edits made to clarify code, no major changes to code requirements.
	2304.9 Lumber decking. Lumber decking shall be designed and installed in accordance with the general provisions of this code and Sections 2304.9.1 through 2304.9.5.3. Other lumber decking patterns and connection designs shall be substantiated through engineering analysis. Other patterns are permitted to be used provided that they are substantiated through engineering analysis.		Edits made to clarify code, no major changes to code requirements.
	2304.9.1 General. Each piece of lumber decking shall be square-end trimmed. When Where random lengths are furnished, each piece shall be square end trimmed across the face so that at least not less than 90 percent of the pieces are within 0.5 degrees (0.00873 rad) of square. The ends of the pieces shall be permitted to be beveled up to 2 degrees (0.0349 rad) from the vertical with the exposed face of the piece slightly longer than the opposite face of the piece. Tongue-and-groove decking shall be installed		Edits made to clarify code, no major changes to code requirements.

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	<p>with the tongues up on sloped or pitched roofs with pattern faces down.</p>		
	<p>2304.9.2 Layup patterns. Lumber decking is permitted to be laid up following one of five standard patterns as defined in Sections 2304.9.2.1 through 2304.9.2.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.9.2.1 Simple span pattern. All pieces shall be supported on their ends (i.e., in other words, by two supports).</p>		
	<p>2304.9.2.4 Cantilevered pieces intermixed pattern. The decking shall extend across a minimum of not fewer than three spans. Pieces in each starter course and every third course shall be simple span pattern. Pieces in other courses shall be cantilevered over the supports with end joints at alternating quarter or third points of the spans. Each piece shall bear on at least one support or more.</p>		
	<p>2304.9.2.5 Controlled random pattern. The decking shall extend across a minimum of not fewer than three spans. End joints of pieces within 6 inches (152 mm) of the end joints of the adjacent pieces in either direction shall be separated by at least not fewer than two intervening courses. In the end bays, each piece shall bear on at least one support or more. Where an end joint occurs in an end bay, the next piece in the same course shall continue over the first inner support for at least not less than 24 inches (610 mm). The details of the controlled random pattern shall be as specified for each decking material in Section 2304.9.3.3, 2304.9.4.3 or 2304.9.5.3.</p> <p>Decking that cantilevers beyond a support for a horizontal distance greater than 18 inches (457 mm), 24 inches (610 mm) or 36 inches (914 mm) for 2-inch (51 mm), 3-inch (76 mm) and 4-inch (102 mm) nominal thickness decking, respectively, shall comply with the following:</p> <ol style="list-style-type: none"> 1. The maximum cantilevered length shall be 30 percent of the length of the first adjacent interior span. 2. A structural fascia shall be fastened to each decking piece to maintain a continuous, straight line. 3. There End joints shall not be no end joints in the decking between the cantilevered end of the decking and the centerline of the first adjacent interior span. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2304.9.3.2 Nailing. The length of nails connecting laminations shall be not less than two and one-half times the net thickness of each lamination. Where decking supports are 48 inches (1219 mm) on center or less, side nails shall be installed not more than 30 inches (762 mm) on center alternating between top and bottom edges, and staggered one-third of the spacing in adjacent laminations. Where supports are spaced more than 48 inches (1219 mm) on center, side nails shall be installed not more than 18 inches (457 mm) on center alternating between top and bottom edges and staggered one-third of the spacing in adjacent laminations. For mechanically laminated decking constructed with laminations of 2-inch (51 mm) nominal thickness, nailing in accordance with Table 2304.9.3.2 shall be permitted. Two side nails shall be installed at each end of butt-jointed pieces.</p> <p>Laminations shall be toenailed to supports with 20d or larger common nails. Where the supports are 48 inches (1219 mm) on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches (1219 mm) on center, alternate laminations shall be toenailed to every support. For mechanically laminated decking constructed with laminations of 2-inch (51 mm) nominal thickness, toenailing in accordance with Table 2304.9.3.2 shall be permitted.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">TABLE 2304.9.3.2 FASTENING SCHEDULE FOR MECHANICALLY LAMINATED DECKING USING LAMINATIONS OF 2-INCH NOMINAL THICKNESS</p>		
	<p>2304.9.3.3 Controlled random pattern. There shall be a minimum distance of 24 inches (610 mm) between end joints in adjacent courses. The pieces in the first and second courses shall bear on at least not fewer than two supports with end joints in these two courses occurring on alternate supports. A maximum of Not more than seven intervening courses shall be permitted before this pattern is repeated.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.9.4.3 Controlled random pattern. There shall be a minimum distance of 24 inches (610 mm) between end joints in adjacent courses. The pieces in the first and second courses shall bear on at least not fewer than two supports with end joints in</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>these two courses occurring on alternate supports. A maximum of Not more than seven intervening courses shall be permitted before this pattern is repeated.</p>		
	<p>2304.9.5.3 Controlled random pattern. There shall be a minimum distance of 48 inches (1219 mm) between end joints in adjacent courses. Pieces not bearing on a support are permitted to be located in interior bays provided that the adjacent pieces in the same course continue over the support for at least not less than 24 inches (610 mm). This condition shall not occur more than once in every six courses in each interior bay.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p><u>2304.10.1 Connection fire-resistance rating. <i>Fire-resistance ratings for connections in Type IV-A, IV-B or IV-C construction shall be determined by one of the following:</i></u></p> <ol style="list-style-type: none"> <u>1. Testing in accordance with Section 703.2 where the connection is part of the <i>fire-resistance</i> test.</u> <u>2. Engineering analysis that demonstrates that the temperature rise at any portion of the connection is limited to an average temperature rise of 250°F (139°C), and a maximum temperature rise of 325°F (181°C), for a time corresponding to the required <i>fireresistance</i> rating of the structural element being connected. For the purposes of this analysis, the connection includes connectors, fasteners and portions of wood members included in the structural design of the connection.</u> 		<p>New requirements</p>
	<p>2304.10.1 2304.10.2 Fastener requirements Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2304-2302.1. The number and size of fasteners connecting wood members shall not be not less than that set forth in Table 2304.10.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 2304.10.1 TABLE 2304.10.2 FASTENING SCHEDULE</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.10.2 2304.10.3 Sheathing fasteners.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2304.10.3 2304.10.4 Joist hangers and framing anchors.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.10.4 2304.10.5 Other fasteners.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.10.5 2304.10.6 Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood. Fasteners, including nuts and washers, and connectors in contact with preservative-treated and fire-retardant-treated wood shall be in accordance with Sections 2304.10.5.1 through 2304.10.5.4. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153. Stainless steel driven fasteners shall be in accordance with the material requirements of ASTM F1667.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.10.5.1 2304.10.6.1 Fasteners and connectors for preservative-treated wood. Fasteners, including nuts and washers, in contact with preservative-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Fasteners other than nails, staples, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum. Connectors that are used in exterior applications and in contact with preservative-treated wood shall have coating types and weights in accordance with the treated wood or connector manufacturer's recommendations. In the absence of manufacturer's recommendations, a minimum of not less than ASTM A653, Type G185 zinc-coated galvanized steel, or equivalent, shall be used.</p> <p style="padding-left: 40px;">Exception: Plain carbon steel fasteners, including nuts and washers, in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall be permitted.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.10.5.2 2304.10.6.2 Fastenings for wood foundations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2304.10.5.3 2304.10.6.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners, including nuts and washers, for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Fasteners other than nails, staples, timber rivets, wood screws and lag screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B695, Class 55 minimum.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2304.10.5.4 2304.10.6.4 Fasteners for fire-retardant-treated wood used in interior applications.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2304.10.6 2304.10.7 Load path.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2304.10.7 2304.10.8 Framing requirements.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2304.11 Heavy timber construction. Where a structure or portion thereof or individual structural elements are required to be of Type IV construction by other provisions of this code to be of heavy timber, the building elements therein shall comply with the applicable provisions of Sections 2304.11.1 through 2304.11.4. Minimum dimensions of heavy timber shall comply with the applicable requirements in Table 2304.11 based on roofs or floors supported and the configuration of each structural element, or in Sections 2304.11.2 through 2304.11.4. Lumber decking shall be in accordance with Section 2304.9.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">TABLE 2304.11 MINIMUM DIMENSIONS OF HEAVY TIMBER STRUCTURAL MEMBERS</p>		New table
	<p>2304.11.1 Columns. Columns shall be continuous or superimposed throughout all stories by means of reinforced concrete or metal caps with brackets, or shall be connected by properly designed steel or iron caps, with pintles and base plates, or by timber splice plates affixed to the</p>		

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	columns by metal connectors housed within the contact faces, or by other approved methods.		
	2304.11.1.1 Column connections. Girders and beams shall be closely fitted around columns and adjoining ends shall be cross tied to each other, or intertied by caps or ties, to transfer horizontal loads across joints. Wood bolsters shall not be placed on tops of columns unless the columns support roof loads only.		
	2304.11.2 Floor framing. Approved wall plate boxes or hangers shall be provided where wood beams, girders or trusses rest on masonry or concrete walls. Where intermediate beams are used to support a floor, they shall rest on top of girders, or shall be supported by ledgers or blocks securely fastened to the sides of the girders, or they shall be supported by an approved metal hanger into which the ends of the beams shall be closely fitted.		
	2304.11.3 Roof framing. Every roof girder and at least every alternate roof beam shall be anchored to its supporting member; and every monitor and every sawtooth construction shall be anchored to the main roof construction. Such anchors shall consist of steel or iron bolts of sufficient strength to resist vertical uplift of the roof.		
	2304.11.4 Floor decks. Floor decks and covering shall not extend closer than 1/2 inch (12.7 mm) to walls. Such 1/2-inch (12.7 mm) spaces shall be covered by a molding fastened to the wall either above or below the floor and arranged such that the molding will not obstruct the expansion or contraction movements of the floor. Corbeling of masonry walls under floors is permitted in place of such molding.		
	2304.11.5 Roof decks. Where supported by a wall, roof decks shall be anchored to walls to resist uplift forces determined in accordance with Chapter 16. Such anchors shall consist of steel or iron bolts of sufficient strength to resist vertical uplift of the roof.		
	2304.11.1 Details of heavy timber structural members. Heavy timber structural members shall be detailed and constructed in accordance with Sections 2304.11.1 through 2304.11.1.3.		Edits made to clarify code, no major changes to code requirements.

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	<p>2304.11.1.1 Columns. Minimum dimensions of columns shall be in accordance with Table 2304.11. Columns shall be continuous or superimposed throughout all stories and connected in an approved manner. Girders and beams at column connections shall be closely fitted around columns and adjoining ends shall be cross tied to each other, or intertied by caps or ties, to transfer horizontal loads across joints. Wood bolsters shall not be placed on tops of columns unless the columns support roof loads only. Where traditional heavy timber detailing is used, connections shall be by means of reinforced concrete or metal caps with brackets, by properly designed steel or iron caps, with pintles and base plates, by timber splice plates affixed to the columns by metal connectors housed within the contact faces, or by other approved methods.</p>		<p>New requirements</p>
	<p>2304.11.1.2 Floor framing. Minimum dimensions of floor framing shall be in accordance with Table 2304.11. Approved wall plate boxes or hangers shall be provided where wood beams, girders or trusses rest on masonry or concrete walls. Where intermediate beams are used to support a floor, they shall rest on top of girders, or shall be supported by an approved metal hanger into which the ends of the beams shall be closely fitted. Where traditional heavy timber detailing is used, these connections shall be permitted to be supported by ledgers or blocks securely fastened to the sides of the girders.</p>		<p>New requirements</p>
	<p>2304.11.1.3 Roof framing. Minimum dimensions of roof framing shall be in accordance with Table 2304.11. Every roof girder and not less than every alternate roof beam shall be anchored to its supporting member to resist forces as required in Chapter 16.</p>		<p>New requirements</p>
	<p>2304.11.2 Partitions and walls. Partitions and walls shall comply with Section 2304.11.2.1 or 2304.11.2.2.</p>		<p>New requirements</p>
	<p>2304.11.2.1 Exterior walls. Exterior walls shall be permitted to be cross-laminated timber meeting the requirements of Section 2303.1.4.</p>		<p>New requirements</p>

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	<p>2304.11.2.2 Interior walls and partitions. Interior walls and partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction 4 inches (102 mm) thick, or of 1-hour fire-resistance-rated construction.</p>		<p>New requirements</p>
	<p>2304.11.3 Floors. Floors shall be without concealed spaces or with concealed spaces complying with Section 602.4.4.3. Wood floors shall be constructed in accordance with Section 2304.11.3.1 or 2304.11.3.2.</p>		<p>New requirements</p>
	<p>2304.11.3.1 Cross-laminated timber floors. Cross-laminated timber shall be not less than 4 inches (102 mm) in actual thickness. Cross-laminated timber shall be continuous from support to support and mechanically fastened to one another. Cross-laminated timber shall be permitted to be connected to walls without a shrinkage gap providing swelling or shrinking is considered in the design. Corbelling of masonry walls under the floor shall be permitted to be used.</p>		<p>New requirements</p>
	<p>2304.11.3.2 Sawn or glued-laminated plank floors. Sawn or glued-laminated plank floors shall be one of the following:</p> <ol style="list-style-type: none"> 1. Sawn or glued-laminated planks, splined or tongue-and-groove, of not less than 3 inches (76 mm) nominal in thickness covered with 1-inch (25 mm) nominal dimension tongue-and-groove flooring, laid crosswise or diagonally, 15/32-inch (12 mm) wood structural panel or 1/2-inch (12.7 mm) particleboard. 2. Planks not less than 4 inches (102 mm) nominal in width set on edge close together and well spiked and covered with 1-inch (25 mm) nominal dimension flooring or 15/32-inch (12 mm) wood structural panel or 1/2-inch (12.7 mm) particleboard. <p>The lumber shall be laid so that continuous lines of joints will occur only at points of support. Floors shall not extend closer than 1/2 inch (12.7 mm) to walls. Such 1/2-inch (12.7 mm) space shall be covered by a molding fastened to the wall and so arranged that it will not obstruct the swelling or shrinkage movements of the floor. Corbelling of masonry walls under the floor shall be permitted to be used in place of molding.</p>		<p>New requirements</p>

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	<p>2304.11.4 Roof decks. Roofs shall be without concealed spaces and roof or with concealed spaces complying with Section 602.4.4.3. Roof decks shall be constructed in accordance with Section 2304.11.4.1 or 2304.11.4.2. Other types of decking shall be an alternative that provides equivalent <i>fire resistance</i> and structural properties. Where supported by a wall, <i>roof decks</i> shall be anchored to walls to resist forces determined in accordance with Chapter 16. Such anchors shall consist of steel bolts, lags, screws or <i>approved hardware</i> of sufficient strength to resist prescribed forces.</p>		<p>New requirements</p>
	<p>2304.11.4.1 Cross-laminated timber roofs. Cross-laminated timber roofs shall be not less than 3 inches (76 mm) nominal in thickness and shall be continuous from support to support and mechanically fastened to one another.</p>		<p>New requirements</p>
	<p>2304.11.4.2 Sawn, wood structural panel, or glued-laminated plank roofs. Sawn, wood structural panel, or glued-laminated plank roofs shall be one of the following:</p> <ol style="list-style-type: none"> 1. Sawn or glued laminated, splined or tongue-and-groove plank, not less than 2 inches (51 mm) nominal in thickness. 2. 1 1/8-inch-thick (32 mm) wood structural panel (exterior glue). 3. Planks not less than 3 inches (76 mm) nominal in width, set on edge close together and laid as required for floors. 		<p>New requirements</p>
	<p>2304.12.1.5 Wood siding. Clearance between wood siding and earth on the exterior of a building shall not be not less than 6 inches (152 mm) or less than 2 inches (51 mm) vertical from concrete steps, porch slabs, patio slabs and similar horizontal surfaces exposed to the weather except where siding, sheathing and wall framing are of naturally durable or preservative-treated wood.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.12.2 Other locations. Wood used in the locations specified in Sections 2304.12.2.1 through 2304.12.2.5 2304.12.2.8 shall be naturally durable wood or preservative-treated wood in accordance with AWPA U1. Preservative-treated wood used in interior locations shall be protected with two coats of urethane, shellac, latex epoxy or varnish unless waterborne preservatives are used. Prior to application of the protective finish, the wood shall be dried in accordance with the manufacturer's recommendations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2304.12.2.2 Posts or columns. Posts or columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth shall be of naturally durable or preservative-treated wood.</p> <p>Exception: Posts or columns that are not exposed to the weather, are supported by concrete piers or metal pedestals projected at least 1 inch (25 mm) above the slab or deck and 8 inches (203 mm) above exposed earth and are separated by an impervious moisture barrier. meet all of the following:</p> <ol style="list-style-type: none"> 1. Are not exposed to the weather, or are protected by a roof, eave, overhang, or other covering if exposed to the weather. 2. Are supported by concrete piers or metal pedestals projected not less than 1 inch (25 mm) above the slab or deck and are separated from the concrete pier by an impervious moisture barrier. 3. Are located not less than 8 inches (203 mm) above exposed earth. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.12.2.3 Supporting member for permanent appurtenances. Naturally durable or <i>preservative-treated wood</i> shall be utilized for those portions of wood members that form the structural supports of buildings, balconies, porches or similar permanent building appurtenances where such members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering to prevent moisture of water accumulation on the surface or at joints between members.</p> <p>Exception: When a Building Sawn lumber in buildings located in a geographical region where experience has demonstrated that climatic conditions preclude the need to use durable materials where the structure is exposed to the weather.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.12.2.4 Laminated timbers. The portions of glued-laminated timbers that form the structural supports of a building or other structure and are exposed to weather and not fully protected from moisture by a roof, eave or similar covering shall be pressure treated with preservative or be manufactured from naturally durable or preservative-treated wood.</p>		

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	<p>2304.12.2.5 2304.12.2.4 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.12.2.6 2304.12.2.5 Ventilation beneath balcony or elevated walking surfaces. Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow or drainage from irrigation have weather-exposed surfaces shall be provided with openings that provide a net free cross-ventilation area not less than $\frac{1}{150}$ of the area of each separate space.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2304.12.3 2304.12.2.6 Wood in contact with the ground or fresh water.</p>		
	<p>2304.12.3.1 2304.12.2.6.1 Posts or columns.</p>		
	<p>2304.12.4 2304.12.2.7 Termite protection.</p>		
	<p>2304.12.5 2304.12.2.8 Wood used in retaining walls and cribs.</p>		
	<p>2304.12.6 2304.12.3 Attic ventilation.</p>		
	<p>2304.12.7 2304.12.4 Under-floor ventilation (crawl space).</p>		
	<p style="text-align: center;">SECTION 2306 ALLOWABLE STRESS DESIGN</p> <p>2306.1 Allowable stress design. The design and construction of wood elements in structures using allowable stress design shall be in accordance with the following applicable standards:</p> <p>American Wood Council.</p>		<p>Additional standards provided in base code.</p>

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American Wood Council.
ANSI/AWC NDS National Design Specification for
 Wood Construction
 SDPWS Special Design Provisions for Wind
 and Seismic
American Institute of Timber Construction.
AITC 104 Typical Construction Details
AITC 110 Standard Appearance Grades for Structural Glued
 Laminated
 Timber
AITC 113 Standard for Dimensions of Structural
 Glued Laminated Timber
AITC 117 Standard Specifications for Structural
 Glued Laminated Timber of Softwood
 Species
AITC 119 Standard Specifications for Structural
 Glued Laminated Timber of Hardwood
 Species
ANSI/AITC A190.1 Structural Glued Laminated Timber
AITC 200 Inspection Manual
 American Society of Agricultural and Biological
 Engineers.
 ASABE EP 484.2 Diaphragm Design of Metal-clad, Post-Frame
 Rectangular
 Buildings
 ASABE EP 486.2 Shallow Post Foundation Design
 ASABE 559.1 Design Requirements and Bending
 Properties for Mechanically Laminated
 Columns
 APA-The Engineered Wood Association.
ANSI 117 Standard Specifications for Structural Glued Laminated
 Timber of
 Softwood Species
ANSI A190.1 Structural Glued Laminated Timber
 Panel Design Specification

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AITC 104 Typical Construction Details
AITC 110 Standard Appearance Grades for Structural Glued Laminated Timber
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	AITC 200 Inspection Manual		
	<p>2306.1.3 Treated wood stress adjustments. The allowable unit stresses for preservative-treated wood need not be adjusted for treatment, but are subject to other adjustments.</p> <p>The allowable unit stresses for fire-retardant-treated wood, including fastener values, shall be developed from an approved method of investigation that considers the effects of anticipated temperature and humidity to which the fire-retardant-treated wood will be subjected, the type of treatment and the redrying process. Other adjustments are applicable except that the impact load duration shall not apply.</p>		
	<p>TABLE 2306.1</p> <p>STANDARDS FOR DESIGN AND CONSTRUCTION OF WOOD ELEMENTS IN STRUCTURES USING ALLOWABLE STRESS DESIGN</p>		New table
	<p>2306.1.4 Lumber decking. The capacity of lumber decking arranged according to the patterns described in Section 2304.9.2 shall be the lesser of the capacities determined for flexure moment and deflection according to the formulas in Table 2306.1.4.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 2306.1.4</p> <p>ALLOWABLE LOADS FOR LUMBER DECKING</p>		Edits made to clarify code, no major changes to code requirements.
	<p>TABLE 2306.2(1)</p> <p>ALLOWABLE SHEAR VALUES (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL DIAPHRAGMS UTILIZING STAPLES WITH FRAMING OF DOUGLAS FIR-LARCH, OR SOUTHERN PINE^a FOR WIND OR SEISMIC LOADING^f</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2306.2.1 Gypsum board diaphragm ceilings. Gypsum board diaphragm ceilings shall be in accordance with Section 2508.5-2508.6.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>SECTION 2307 LOAD AND RESISTANCE FACTOR DESIGN</p>		
	<p style="text-align: center;">SECTION 2308 CONVENTIONAL LIGHT-FRAME CONSTRUCTION</p> <p>2308.1 General. The requirements of this section are intended for conventional light-frame construction. Other construction methods are permitted to be used, provided that a satisfactory design is submitted showing compliance with other provisions of this code. Interior nonload-bearing partitions, ceilings and curtain walls of conventional light-frame construction are not subject to the limitations of Section 2308.2. Detached one- and two-family dwellings and multiple single family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress and their accessory structures shall comply with the International Residential Code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.1.1 Portions exceeding limitations of conventional light-frame construction. When Where portions of a building of otherwise conventional light-frame construction exceed the limits of Section 2308.2, those portions and the supporting load path shall be designed in accordance with accepted engineering practice and the provisions of this code. For the purposes of this section, the term "portions" shall mean parts of buildings containing volume and area such as a room or a series of rooms. The extent of such design need only demonstrate compliance of the nonconventional light-framed elements with other applicable provisions of this code and shall be compatible with the performance of the conventional light-framed system.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.2.3 Allowable loads. Loads shall be in accordance with Chapter 16 and shall not exceed the following:</p> <p>1. Average dead loads shall not exceed 15 psf (718 N/m²) for combined roof and ceiling, exterior walls, floors and partitions.</p> <p style="padding-left: 40px;">Exceptions:</p> <p style="padding-left: 80px;">1. Subject to the limitations of Section 2308.6.10, stone or masonry veneer up to the lesser of 5 inches (127 mm) thick or 50 psf (2395 N/m²) and installed in accordance with Chapter 14 is permitted to a height of 30 feet (9144 mm) above a noncombustible foundation, with an additional 8 feet (2438 mm) permitted for gable ends.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Concrete or masonry fireplaces, heaters and chimneys shall be permitted in accordance with the provisions of this code.</p> <p>2. Live loads shall not exceed 40 psf (1916 N/m²) for floors.</p> <p>Exception: Live loads for concrete slab-on-ground floors in Risk Categories I and II shall be not more than 125 psf.</p> <p>3. Ground snow loads shall not exceed 50 psf (2395 N/ m²).</p>		
<p>2308.2.4 Ultimate wind speed. V_{ult} shall not exceed 130 miles per hour (57 m/s) (3-second gust).</p> <p>Exceptions:</p> <p>1. V_{ult} shall not exceed 140 mph (61.6 m/s) (3-second gust) for buildings in Exposure Category B that are not located in a hurricane-prone region.</p> <p>2. Where V_{ult} exceeds 130 mph (3-second gust), the provisions of either Appendix K, AWC WFCM or ICC 600 are permitted to be used.</p>	<p>2308.2.4 Ultimate-Basic wind speed. V shall not exceed 130 miles per hour (57 m/s) (3-second gust).</p> <p>Exceptions:</p> <p>1. V shall not exceed 140 mph (63 m/s) (3-second gust) for buildings in Exposure Category B that are not located in a hurricane-prone region.</p> <p>2. Where V exceeds 130 mph (3-second gust), the provisions of either AWC WFCM or ICC 600 are permitted to be used.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment removed, no longer needed due to removal of Appendix K in IBC.</p>
	<p>2308.3.1 Foundation plates or sills. Foundation plates or sills resting on concrete or masonry foundations shall comply with Section 2304.3.1. Foundation plates or sills shall be bolted or anchored to the foundation with not less than 1/2-inch-diameter (12.7 mm) steel bolts or approved anchors spaced to provide equivalent anchorage as the steel bolts. Bolts shall be embedded at least not less than 7 inches (178 mm) into concrete or masonry. The bolts shall be located in the middle third of the width of the plate. Bolts shall be spaced not more than 6 feet (1829 mm) on center and there shall be not less than two bolts or anchor straps per piece with one bolt or anchor strap located not more than 12 inches (305 mm) or less than 4 inches (102 mm) from each end of each piece. Bolts in sill plates of braced wall lines in structures over two stories above grade shall be spaced not more than 4 feet (1219 mm) on center. A properly sized nut and washer shall be tightened on each bolt to the plate.</p> <p>Exceptions:</p> <p>1. Along braced wall lines in structures assigned to Seismic Design Category E, steel bolts with a minimum nominal diameter of 5/8 inch (15.9 mm) or approved anchor straps load rated in accordance with Section 2304.10.3 and spaced to provide equivalent anchorage shall be used.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Bolts in braced wall lines in structures over two stories above grade shall be spaced not more than 4 feet (1219 mm) on center.</p>		
	<p>2308.3.2 2308.3.1.1 Braced wall line sill plate anchorage in Seismic Design Categories D and E. Sill plates along braced wall lines in buildings assigned to Seismic Design Category D or E shall be anchored with not less than 1/2-inch (12.7 mm) diameter anchor bolts with steel plate washers between the foundation sill plate and the nut, or approved anchor straps load-rated in accordance with Section 2304.10.3. Such washers shall be a minimum of and spaced to provide equivalent anchorage. Plate washers shall be not less than 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch (4.76 mm) larger than the bolt diameter and a slot length not to exceed 1 3/4 inches (44 mm), provided that a standard cut washer is placed between the plate washer and the nut.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.3.1.2 Braced wall line sill plate anchorage in Seismic Design Category E. Sill plates along braced wall lines in buildings assigned to Seismic Design Category E shall be anchored with not less than 5/8-inch diameter (15.9 mm) anchor bolts with steel plate washers between the foundation sill plate and the nut, or approved anchor straps load-rated in accordance with Section 2304.10.3 and spaced to provide equivalent anchorage. Plate washers shall be not less than 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch (4.76 mm) larger than the bolt diameter and a slot length not to exceed 1 3/4 inches (44 mm), provided that a standard cut washer is placed between the plate washer and the nut.</p>		<p>New requirement</p>
	<p>2308.4.2.3 Framing details. Joists shall be supported laterally at the ends and at each support by solid blocking except where the ends of the joists are nailed to a header, band or rim joist or to an adjoining stud or by other means. Solid blocking shall be not less than 2 inches (51 mm) in thickness and the full depth of the joist. Joist framing from opposite sides of a beam, girder or partition shall be lapped at least not less than 3 inches (76 mm) or the opposing joists shall be tied together in an approved manner. Joists framing into the side of a wood girder shall be supported by framing anchors or on ledger strips not less than 2 inches by 2 inches (51 mm by 51 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2308.4.6 Lateral support. Floor and ceiling framing with a nominal depth-to-thickness ratio not less than 5 to 1 shall have one edge held in line for the entire span. Where the nominal depth-to-thickness ratio of the framing member exceeds 6 to 1, there shall be one line of bridging for each 8 feet (2438 mm) of span, unless both edges of the member are held in line. The bridging shall consist of not less than 1-inch by 3-inch (25 mm by 76 mm) lumber, double nailed at each end, or equivalent metal bracing of equal rigidity, full-depth solid blocking or other approved means. A line of bridging shall also be required at supports where equivalent lateral support is not otherwise provided.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.5.5.1 Openings in exterior bearing walls. Headers shall be provided over each opening in exterior bearing walls. The size and spans in Table 2308.4.1.1(1) are permitted to be used for one- and two-family dwellings. Headers for other buildings shall be designed in accordance with Section 2301.2, Item 1 or 2. Headers shall be of two or more pieces of nominal 2-inch (51 mm) framing lumber set on edge as shall be permitted by in accordance with Table 2308.4.1.1(1) and nailed together in accordance with Table 2304.10.1 or of solid lumber of equivalent size.</p> <p>Single-member headers of nominal 2-inch (51 mm) thickness shall be framed with a single flat 2-inch-nominal (51 mm) member or wall plate not less in width than the wall studs on the top and bottom of the header in accordance with Figures 2308.5.5.1(1) and 2308.5.5.1(2) and face nailed to the top and bottom of the header with 10d box nails [3 inches × 0.128 inches (76 mm × 3.3 mm)] spaced 12 inches (305 mm) on center.</p> <p>Wall studs shall support the ends of the header in accordance with Table 2308.4.1.1(1). Each end of a lintel or header shall have a bearing length of not less than 1 1/2 inches (38 mm) for the full width of the lintel.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.5.6 Cripple Walls. Foundation <i>cripple walls</i> shall be framed of studs that are not less than the size of the studding above. Exterior cripple wall studs shall be not less than 14 inches (356 mm) in length, or shall be framed of solid blocking. Where exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size required for an additional <i>story</i>. See Section 2308.6.6 for <i>cripple wall</i> bracing.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2308.5.7 Bridging. Unless covered by interior or exterior wall coverings or sheathing meeting the minimum requirements of this code, stud partitions or walls with studs having a height-to-least-thickness ratio exceeding 50 shall have bridging that is not less than 2 inches (51 mm) in thickness and of the same width as the studs fitted snugly and nailed thereto to provide adequate lateral support. Bridging shall be placed in every stud cavity and at a frequency such that no studs so braced shall not have a height-to-least-thickness ratio exceeding 50 with the height of the stud measured between horizontal framing and bridging or between bridging, whichever is greater.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.5.9 Cutting and notching. In exterior walls and bearing partitions, a wood studs are permitted to stud shall not be cut or notched to a depth not exceeding 25 percent of the width of the stud. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonbearing partitions not supporting in excess of 25 percent of its depth. In nonbearing partitions that do not support loads other than the weight of the partition, a stud shall not be cut or notched in excess of 40 percent of its depth.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.5.10 Bored holes. Bored holes not greater than The diameter of bored holes in wood studs shall not exceed 40 percent of the stud width are permitted to be bored in any wood stud. Bored holes not greater than depth. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud width are permitted in nonbearing partitions or depth in nonbearing partitions. The diameter of bored in wood studs shall not exceed 60 percent of the stud depth in any wall where each bored stud is doubled, provided that not more than two such successive doubled studs are so bored. In no case shall The edge of a the bored hole shall not be nearer closer than ⁵/₈ inch (15.9 mm) to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">TABLE 2308.6.3(1) BRACING METHODS</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.6.5.2 Portal frame with hold-downs (PFH). A PFH shall be constructed in accordance with this section and Figure 2308.6.5.2. The adjacent door or window opening shall have a full-length header.</p> <p>In one-story buildings, each panel shall have a length of not less than 16 inches (406 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with a single layer of 3/8-inch (9.5 mm) minimum-thickness wood structural panel sheathing nailed with 8d</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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common or galvanized box nails in accordance with Figure 2308.6.5.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure 2308.6.5.2. A built-up header consisting of ~~at least not fewer~~ than two 2-inch by 12-inch (51 mm by 305 mm) boards, fastened in accordance with Item 24 of Table 2304.10.1 shall be permitted to be used. A spacer, if used, shall be placed on the side of the built-up beam opposite the wood structural panel sheathing. The header shall extend between the inside faces of the first full-length outer studs of each panel. The clear span of the header between the inner studs of each panel shall be not less than 6 feet (1829 mm) and not more than 18 feet (5486 mm) in length. A strap with an uplift capacity of not less than 1,000 pounds (4,400 N) shall fasten the header to the inner studs opposite the sheathing. One anchor bolt not less than 5/8 inch (15.9 mm) diameter and installed in accordance with Section 2308.3.1 shall be provided in the center of each sill plate. The studs at each end of the panel shall have a hold-down device fastened to the foundation with an uplift capacity of not less than 3,500 pounds (15 570 N).

Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than 1,000 pounds (4400 N) shall fasten the header to the bearing studs. The bearing studs shall ~~also~~ have a hold-down device fastened to the foundation with an uplift capacity of not less than 1,000 pounds (4400 N). The hold-down devices shall be an embedded strap type, installed in accordance with the manufacturer's recommendations. The PFH panels shall be supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned-down slab edge is permitted at door openings in the braced wall line. This continuous footing or turned-down slab edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped not less than 15 inches (381 mm) with the

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	<p>reinforcement required in the continuous foundation located directly under the braced wall line.</p> <p>Where a PFH is installed at the first story of two-story buildings, each panel shall have a length of not less than 24 inches (610 mm).</p>		
	<p>2308.6.6.1 Cripple wall bracing in Seismic Design Categories A, B and C. For the purposes of this section, cripple walls in Seismic Design Categories A, B and C having a stud height exceeding 14 inches (356 mm) shall be considered to be a story and shall be braced in accordance with Table 2308.6.1. Spacing of edge nailing for required cripple wall bracing shall not exceed 6 inches (152 mm) on center along the foundation plate and the top plate of the cripple wall. Nail size, nail spacing for field nailing and more restrictive boundary nailing requirements shall be as required elsewhere in the code for the specific bracing material used.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2308.6.6.2 Cripple wall bracing in Seismic Design Categories D and E. For the purposes of this section, cripple walls in Seismic Design Categories D and E having shall not have a stud height exceeding 14 inches (356 mm) shall be considered to be a story and, and studs shall be braced solid blocked in accordance with TABLE 2308.6.1. Where interior braced wall lines occur without a continuous foundation below, the length of parallel exterior cripple wall bracing shall be one and one-half times the lengths required by TABLE 2308.6.1. Where the cripple wall sheathing type used is Method WSP or DWB and this additional length of bracing cannot be provided, the capacity of WSP or DWB sheathing shall be increased by reducing the spacing of fasteners along the perimeter of each piece of sheathing to 4 inches (102 mm) on center. Section 2308.5.6 for the full dwelling perimeter and for the full length of interior braced walls lines supported on foundations, excepting ventilation and access openings.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>TABLE 2308.7.2(7) RAFTER SPAN ADJUSTMENT FACTOR</p>		<p>New table</p>
	<p>TABLE 2308.7.3.1 RAFTER TIE CONNECTIONS</p>		<p>New table</p>

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	<p>TABLE 2308.7.3.1(1)</p> <p>HEEL JOINT CONNECTION ADJUSTMENT FACTORS</p>		New table
	<p>2308.7.7 Purlins. Purlins to support roof loads are permitted to be installed to reduce the span of rafters within allowable limits and shall be supported by struts to bearing walls. The maximum span of 2-inch by 4-inch (51 mm by 102 mm) purlins shall be 4 feet (1219 mm). The maximum span of the 2-inch by 6-inch (51 mm by 152 mm) purlin shall be 6 feet (1829 mm), but in no case shall the purlin shall not be smaller than the supported rafter. Struts shall be not less than 2-inch by 4-inch (51 mm by 102 mm) members. The unbraced length of struts shall not exceed 8 feet (2438 mm) and the slope of the struts shall be not less than 45 degrees (0.79 rad) from the horizontal.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2308.7.11 Joints. Joints in lumber sheathing shall occur over supports unless approved end-matched lumber is used, in which case each piece shall bear on at least not fewer than two supports.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2308.7.12 Roof planking. Planking shall be designed in accordance with the general provisions of this code. In lieu of such design, 2-inch (51 mm) tongue-and groove planking is permitted in accordance with Table 2308.7.12. Joints in such planking are permitted to be randomly spaced, provided that the system is applied to not less than three continuous spans, planks are center matched and end matched or splined, each plank bears on at least one support or more, and joints are separated by not less than 24 inches (610 mm) in adjacent pieces.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 2309</p> <p>WOOD FRAME CONSTRUCTION MANUAL</p>		
2015 Houston IBC	2021 IBC – Chapter 24 Glass and Glazing	2021 Houston Amendments – Chapter 24	Code Analysis
	<p style="text-align: center;">SECTION 2401</p> <p style="text-align: center;">GENERAL</p> <p>2401.1 Scope. The provisions of this chapter shall govern the materials, design, construction and quality of glass, light-transmitting ceramic and light-transmitting plastic panels for exterior and interior use in both vertical and sloped applications in building</p>		Edits made to clarify code, no major changes to code requirements.

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	and structures. Light-transmitting plastic glazing shall also meet the applicable requirements of Chapter 26.		
	2401.2 Glazing replacement. The installation of replacement glass shall be as required for new installations.		
	<p style="text-align: center;">SECTION 2402</p> <p style="text-align: center;">DEFINITIONS GLAZING REPLACEMENT</p> <p>2402.1 Definitions General. The following terms are defined in Chapter 2: The installation of replacement glass shall be as required for new installations.</p> <p>DALLE GLASS.</p> <p>DECORATIVE GLASS.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 2403</p> <p style="text-align: center;">GENERAL REQUIREMENTS FOR GLASS</p>		
	<p>2403.3 Glass framing. To be considered firmly supported, the framing members for each individual pane of glass shall be designed so <u>that</u> the deflection of the edge of the glass perpendicular to the glass pane does shall not exceed $1/175$ of the glass edge length or $3/4$ inch (19.1 mm), whichever is less where the glass edge length is not more than 13 feet 6 inches (4115 mm), or $1/240$ of the glass edge length + $1/4$ inch (6.4 mm) where the glass edge length is greater than 13 feet 6 inches (4115 mm). when subjected to the larger of the positive or negative load where loads are combined as specified in Section 1605.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2403.5 Louvered windows or jalousies. Float, wired and patterned glass in louvered windows and jalousies shall be not thinner than nominal $3/16$ inch (4.8 mm) and not longer than 48 inches (1219 mm). Exposed glass edges shall be smooth.</p> <p>Wired glass with wire exposed on longitudinal edges shall not be used in louvered windows or jalousies.</p> <p>Where other glass types are used, the design shall be submitted to the building official for approval.</p>		
	<p style="text-align: center;">SECTION 2404</p> <p style="text-align: center;">WIND, SNOW, SEISMIC AND DEAD LOADS ON GLASS</p> <p>2404.1 Vertical glass. Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>exterior applications shall be designed to resist the wind loads due to ultimate basic design wind speed, V_{ult}, in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E1300.</p> <p>The design of vertical glazing shall be based on Equation 24-1.</p> $0.6F_{gw} \leq F_{ga} \text{ (Equation 24-1)}$ <p>where:</p> <p>F_{gw} = Wind load on the glass due to ultimate basic design wind speed, V_{ult}, computed in accordance with Section 1609.</p> <p>F_{ga} = Short duration load on the glass as determined in accordance with ASTM E1300.</p>		
	<p>2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical combinations of loads determined by Equations 24-2, 24-3 and 24-4.</p> <p>(Equation 24-2)</p> <p>(Equation 24-3)</p> <p>(Equation 24-4)</p> <p>where:</p> <p>D = Glass dead load psf (kN/m²). For glass sloped 30 degrees (0.52 rad) or less from horizontal,</p> <p>= 13 t_g (For SI: 0.0245 t_g). For glass sloped more than 30 degrees (0.52 rad) from horizontal,</p> <p>= 13 $t_g \cos \theta$ (For SI: 0.0245 $t_g \cos \theta$).</p> <p>F_g = Total load, psf (kN/m²) on glass.</p> <p>S = Snow load, psf (kN/m²) as determined in Section 1608.</p> <p>t_g = Total glass thickness, inches (mm) of glass panes and plies.</p> <p>W_i = Inward wind force, psf (kN/m²) due to ultimate basic design wind speed, V_{ult}, as calculated in Section 1609.</p> <p>W_o = Outward wind force, psf (kN/m²) due to ultimate basic design wind speed, V_{ult}, as calculated in Section 1609.</p> <p>θ = Angle of slope from horizontal.</p> <p>Exception: The performance grade rating of unit skylights and tubular daylighting devices shall be determined in accordance with Section 2405.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2404.3.1 Vertical wired glass. Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation: (Equation 24-6) where: F_{gw} = Wind load on the glass due to ultimate basic design wind speed, V_{ult}, computed in accordance with Section 1609. computed in accordance with Section 1609. F_{ge} = Nonfactored load from ASTM E1300 using a thickness designation for monolithic glass that is not greater than the thickness of wired glass.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2404.3.3 Vertical patterned glass. Patterned glass sloped 15degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to Equation 24-9. (Equation 24-9) where: F_{gw} = Wind load on the glass due to ultimate basic design wind speed, V_{ult}, computed in accordance with Section 1609 computed in accordance with Section 1609. F_{ge} = Nonfactored load in accordance with ASTM E1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored load charts in ASTM E1300 shall be permitted.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2404.3.5 Vertical sandblasted glass. Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in Section1609 for components and cladding according to Equation 24-12. (Equation 24-12) where: F_g = Wind load on the glass due to ultimate basic design wind speed, V_{ult}, computed in accordance with Section 1609.computed in accordance with Section 1609. F_{ge} = Nonfactored load in accordance with ASTM E1300. The value for sandblasted glass is for moderate levels of sandblasting.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	SECTION 2405 SLOPED GLAZING AND SKYLIGHTS		
	<p>2405.2 Allowable glazing materials and limitations. Sloped glazing shall be any of the following materials, subject to the listed limitations.</p> <ol style="list-style-type: none"> 1. For monolithic glazing systems, the glazing material of the single light or layer shall be laminated glass with a minimum 30-mil (0.76 mm) polyvinyl butyral (or equivalent) interlayer, wired glass, light-transmitting plastic materials meeting the requirements of Section 2607, heat-strengthened glass or fully tempered glass. 2. For multiple-layer glazing systems, each light or layer shall consist of any of the glazing materials specified in Item 1 above. <p>Annealed glass is permitted to be used as specified in Exceptions 2 and 3 of Section 2405.3.</p> <p>Laminated glass and plastic materials described in Items 1 and 2 shall not require the screening or height restrictions provided in Section 2405.3.</p> <p>For additional requirements for plastic skylights, see Section 2610. Glass-block construction shall conform to the requirements of Section 2110.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2405.3 Screening. Where used in monolithic glazing systems, annealed, heat-strengthened, fully tempered and wired glass shall have broken glass retention screens installed below the glazing material. The screens and their fastenings shall: (1) be capable of supporting twice the weight of the glazing; (2) be firmly and substantially fastened to the framing members; and (3) be installed within 4 inches (102 mm) of the glass. The screens shall be constructed of a noncombustible material not thinner than No. 12 B&S gage (0.0808 inch) with mesh not larger than 1 inch by 1 inch (25 mm by 25 mm). In a corrosive atmosphere, structurally equivalent noncorrosive screen materials shall be used. Annealed, heat-strengthened, fully tempered and wired glass, when where used in multiple-layer glazing systems as the bottom glass layer over the walking surface, shall be equipped with screening that conforms to the requirements for monolithic glazing systems.</p> <p>Exception: In monolithic and multiple-layer sloped glazing systems, the following applies:</p> <ol style="list-style-type: none"> 1. Fully tempered glass installed without protective screens where glazed between intervening floors at a slope of 30 degrees (0.52 rad) or less from the vertical plane shall have the highest point of the glass 10 feet (3048 mm) or less above the walking surface. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Screens are not required below any glazing material, including annealed glass, where the walking surface below the glazing material is permanently protected from the risk of falling glass or the area below the glazing material is not a walking surface.</p> <p>3. Any glazing material, including annealed glass, is permitted to be installed without screens in the sloped glazing systems of commercial or detached noncombustible <i>greenhouses</i> used exclusively for growing plants and not open to the public, provided that the height of the <i>greenhouse</i> at the ridge does not exceed 30 feet (9144 mm) above grade.</p> <p>4. Screens shall not be required in individual <i>dwelling units</i> in Groups R-2, R-3 and R-4 where fully tempered glass is used as single glazing or as both panes in an insulating glass unit, and the following conditions are met:</p> <p style="padding-left: 40px;">4.1. Each pane of the glass is 16 square feet (1.5 m²) or less in area.</p> <p style="padding-left: 40px;">4.2. The highest point of the glass is 12 feet (3658 mm) or less above any walking surface or other accessible area.</p> <p style="padding-left: 40px;">4.3. The glass thickness is ³/₁₆ inch (4.8) or less.</p> <p>5. Screens shall not be required for laminated glass with a 15-mil (0.38 mm) polyvinyl butyral (or equivalent) interlayer used in individual <i>dwelling units</i> in Groups R-2, R-3 and R-4 within the following limits:</p> <p style="padding-left: 40px;">5.1. Each pane of glass is 16 square feet (1.5 m²) or less in area.</p> <p style="padding-left: 40px;">5.2. The highest point of the glass is 12 feet (3658 mm) or less above a walking surface or other accessible area.</p>		
	<p>2405.4 Framing. In Type I and II construction, sloped glazing and skylight frames shall be constructed of noncombustible materials. In structures where acid fumes deleterious to metal are incidental to the use of the buildings, approved pressure-treated wood or other approved noncorrosive materials are permitted to be used for sash and frames. Framing supporting sloped glazing and skylights shall be designed to resist the tributary roof loads in Chapter 16. Skylights set at an angle of less than 45 degrees (0.79 rad) from the horizontal plane shall be mounted at least not less than 4 inches (102 mm) above the plane of the roof on a curb constructed as required for the frame. Skylights shall not be installed in the plane of the roof where the roof pitch is less than 45 degrees (0.79 rad) from the horizontal.</p> <p style="padding-left: 40px;">Exception: Installation of a skylight without a curb shall be permitted on roofs with a minimum slope of 14 degrees (three units vertical in 12 units horizontal) in Group R-3</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	occupancies. All Unit skylights installed in a roof with a pitch flatter than 14 degrees (0.25 rad) shall be mounted at least not less than 4 inches (102 mm) above the plane of the roof on a curb constructed as required for the frame unless otherwise specified in the manufacturer's installation instructions.		
	SECTION 2406 SAFETY GLAZING		
	2406.1.3 Glass block. Glass-block walls shall comply with Section 2401.2.5-2110 .		Edits made to clarify code, no major changes to code requirements.
	2406.3 Identification of safety glazing. Except as indicated in Section 2406.3.1, each pane of safety glazing installed in hazardous locations shall be identified by a manufacturer's designation specifying who applied the designation, the manufacturer or installer and the safety glazing standard with which it complies, as well as the information specified in Section 2403.1. The designation shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that once applied, cannot be removed without being destroyed. A label meeting the requirements of this section shall be permitted in lieu of the manufacturer's designation. Exceptions: 1. For other than tempered glass, manufacturer's designations are not required, provided that the building official approves the use of a certificate, affidavit or other evidence confirming compliance with this code. 2. Tempered spandrel glass is permitted to be identified by the manufacturer with a removable paper designation.		Edits made to clarify code, no major changes to code requirements.
	2406.3.1 Multipane assemblies. Multipane glazed assemblies having individual panes not exceeding 1 square foot (0.09 m ²) in exposed areas shall have at least or more in the assembly marked as indicated in Section 2406.3. Other panes in the assembly shall be marked "CPSC 16 CFR Part 1201" or "ANSI Z97.1," as appropriate.		Edits made to clarify code, no major changes to code requirements.
	2406.4 Hazardous locations. The locations specified in Sections 2406.4.1 through 2406.4.7 shall be considered to be specific hazardous locations requiring safety glazing materials.		Edits made to clarify code, no major changes to code requirements.

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	<p>2406.4.1 Glazing in doors. Glazing in all fixed and operable panels of swinging, sliding and bifold doors shall be considered to be a hazardous location.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Glazed openings of a size through which a 3-inch-diameter (76 mm) sphere is unable to pass. 2. Decorative glazing. 3. Glazing materials used as curved glazed panels in revolving doors. 4. Commercial refrigerated cabinet glazed doors. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2406.4.2 Glazing adjacent to doors. Glazing in an individual fixed or operable panel adjacent to a door where the nearest vertical edge of the glazing is within a 24-inch (610 mm) arc of either vertical edge of the door in a closed position and where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above the walking surface shall be considered to be a hazardous location.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Decorative glazing. 2. Where there is an intervening wall or other permanent barrier between the door and glazing. 3. Where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in this application shall comply with Section 2406.4.3. 4. Glazing in walls on the latch side of and perpendicular to the plane of the door in a closed position in one- and two-family dwellings or within dwelling units in Group R-2. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2406.4.3 Glazing in windows. Glazing in an individual fixed or operable panel that meets all of the following conditions shall be considered to be a hazardous location:</p> <ol style="list-style-type: none"> 1. The exposed area of an individual pane is greater than 9 square feet (0.84 m²). 2. The bottom edge of the glazing is less than 18 inches (457 mm) above the floor. 3. The top edge of the glazing is greater than 36 inches (914 mm) above the floor. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>4. One or more walking surface(s) are within 36 inches (914 mm), measured horizontally and in a straight line, of the plane of the glazing.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Decorative glazing. 2. Where a horizontal rail is installed on the accessible side(s) of the glazing 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and be a minimum not less than 1 1/2 inches (38 mm) in cross-sectional height. 3. Outboard panes in insulating glass units or multiple glazing where the bottom exposed edge of the glass is 25 feet (7620 mm) or more above any grade, roof, walking surface or other horizontal or sloped (within 45 degrees of horizontal) (0.79 rad) surface adjacent to the glass exterior. 		
	<p>2406.4.4 Glazing in guards and railings. Glazing in guards and railings, including structural baluster panels and nonstructural in-fill panels, regardless of area or height above a walking surface shall be considered to be a hazardous location.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2406.4.5 Glazing and wet surfaces. Glazing in walls, enclosures or fences containing or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface shall be considered to be a hazardous location. This shall apply to single glazing and all panes in multiple glazing.</p> <p>Exception: Glazing that is more than 60 inches (1524 mm), measured horizontally and in a straight line, from the water's edge of a bathtub, hot tub, spa, whirlpool or swimming pool.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2406.4.6 Glazing adjacent to stairways and ramps. Glazing where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above the plane of the adjacent walking surface of stairways, landings between flights of stairs and ramps shall be considered to be a hazardous location.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The side of a stairway, landing or ramp that has a guard complying with the provisions of Sections 1015 and 1607.8, and the plane of the glass is greater than 18 inches (457 mm) from the railing. 2. Glazing 36 inches (914 mm) or more measured horizontally from the walking surface. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2406.4.7 Glazing adjacent to the bottom stairway landing. Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 60 inches (1524 mm) above the landing and within a 60-inch (1524 mm) horizontal arc that is less than 180 degrees (3.14 rad) from the bottom tread nosing shall be considered to be a hazardous location.</p> <p>Exception: Glazing that is protected by a guard complying with Sections 1015 and 1607.8 where the plane of the glass is greater than 18 inches (457 mm) from the guard.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2407</p> <p style="text-align: center;">GLASS IN HANDRAILS AND GUARDS</p> <p>2407.1 Materials. Glass used in a <i>handrail</i>, <i>guardrail</i> or a <i>guard section</i> shall be laminated glass constructed of fully tempered or heat-strengthened glass and shall comply with Category II or of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1. Glazing in railing in-fill panels a handrail or a guard shall be of an approved safety glazing material that conforms to the provisions of Section 2406.1.1. For all glazing types, the minimum nominal thickness shall be ¼ inch (6.4 mm).</p> <p>Exception: Single fully tempered glass complying with Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1 shall be permitted to be used in <i>handrails</i> and <i>guardrails</i> guards where there is no walking surface beneath them or the walking surface is permanently protected from the risk of failing glass.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2407.1.1 Loads. The panels Glass handrails and guards and their support systems shall be designed to withstand the loads specified in Section 1607.9. A design factor of four shall be used for safety. Glass-guard elements handrails and guards shall be designed using a factor of safety of four.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2407.1.2 Support Structural Guards with structural glass balusters panels. Each handrail or guard section shall be supported by a minimum of three glass balusters or shall be otherwise supported to remain in place should one baluster panel fail. Glass balusters shall not be installed without an attached handrail or guard. Guards with structural glass baluster panels balusters, whether vertical posts, columns or panels, shall be installed with an attached top rail or <i>handrail</i>. The top rail or <i>handrail</i> shall be supported by not fewer than three glass baluster panels balusters, or shall be otherwise supported to remain in place should one glass baluster-panel fail.</p> <p>Exception: An attached top rail shall or handrail is not be required where the glass baluster panels are laminated glass with two or more glass plies of equal thickness and of the same glass type when approved by the building official. The panel balusters shall be designed to withstand the loads specified in Section 1607.8 tested to remain in place as a barrier following impact or glass breakage in accordance with ASTM E2353.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2407.1.4 Glazing in windborne debris regions. Glazing installed in exterior handrails or guards in windborne debris regions shall be laminated glass complying with Category II of CPSC 16 CFR 1201 or Class A of ANSI Z97.1. Where the top rail is supported by glass, the assembly shall be tested according to the impact requirements of Section 1609.2 and the top rail shall remain in place after impact.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2407.1.4.1 Balusters and in-fill panels. Glass installed in exterior railing in-fill panels or balusters shall be laminated glass complying with Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1.</p>		
	<p>2407.1.4.2 Glass supporting top rail. Where the top rail is supported by glass, the assembly shall be tested according to the impact requirements of Section 1609.2. The top rail shall remain in place after impact.</p>		
	<p style="text-align: center;">SECTION 2408 GLAZING IN ATHLETIC FACILITIES</p>		

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	<p align="center">SECTION 2409</p> <p align="center">GLASS IN WALKWAYS, ELEVATOR HOISTWAYS AND ELEVATOR CARS</p> <p>2409.1 Glass walkways. Glass installed as a part of a floor/ ceiling assembly as a walking surface and constructed with laminated glass shall comply with ASTM E2751 or with the load requirements specified in Chapter 16. Such assemblies shall comply with the fire-resistance rating and marking requirements of this code where applicable.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2409.2.1 Fire-resistance-rated hoistways. Glass installed in hoistways and hoistway doors where the hoistway is required to have a fire-resistance rating shall also comply with Section 716.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2409.4.1 Glass types. Glass in elevator car enclosures, glass elevator car doors and glass used for lining walls and ceilings of elevator cars shall be laminated glass conforming to Class A in accordance with ANSI Z97.1 or Category II in accordance with CPSC 16 CFR Part 1201.</p> <p>Exception: Tempered glass shall be permitted to be used for lining walls and ceilings of elevator cars provided that:</p> <ol style="list-style-type: none"> 1. The glass is bonded to a nonpolymeric coating, sheeting or film backing having a physical integrity to hold the fragments when the glass breaks. 2. The glass is not subjected to further treatment such as sandblasting; etching; heat treatment or painting that could alter the original properties of the glass. 3. The glass is tested to the acceptance criteria for laminated glass as specified for Class A in accordance with ANSI Z97.1 or Category II in accordance with CPSC 16 CFR Part 1201. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p align="center">2015 Houston IBC</p>	<p align="center">2021 IBC – Chapter 25 Gypsum Board, Gypsum Panel Products and Plaster</p>	<p align="center">2021 Houston Amendments – Chapter 25</p>	<p align="center">Code Analysis</p>
	<p align="center">SECTION 2501</p> <p align="center">GENERAL</p>		

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	<p>2501.2 Performance. Lathing, plastering, gypsum board and gypsum panel product construction shall be done in the manner and with the materials specified in this chapter and, when required for fire protection, shall also comply with the provisions of Chapter 7.</p>		
	<p>2501.3-2501.2 Other materials.</p>		
	<p style="text-align: center;">SECTION 2502</p> <p style="text-align: center;">DEFINITIONS PERFORMANCE</p> <p>2502.1 Definitions. General. The following terms are defined in Chapter 2: Lathing, plastering and gypsum board and gypsum panel product construction shall be done in the manner and with the materials specified in this chapter and, where required for fire protection, shall comply with the provisions of Chapter 7.</p> <p>CEMENT PLASTER.</p> <p>EXTERIOR SURFACES.</p> <p>GYPSUM BOARD.</p> <p>GYPSUM PANEL PRODUCTS.</p> <p>GYPSUM PLASTER.</p> <p>GYPSUM VENEER PLASTER.</p> <p>INTERIOR SURFACES.</p> <p>WEATHER-EXPOSED SURFACES.</p> <p>WIRE BACKING.</p>		
	<p style="text-align: center;">SECTION 2505</p> <p style="text-align: center;">SHEAR WALL CONSTRUCTION</p>		
	<p>2505.2 Resistance to shear (steel framing). Cold-formed steel-frame shear walls sheathed with gypsum board or gypsum panel products and constructed in accordance with the materials and provisions of Section 2211.6-2211.1.1 are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 12.2.1 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2507</p> <p style="text-align: center;">LATHING AND PLASTERING</p>		

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	<p>2507.2 Standards. Lathing and plastering materials shall conform to the standards listed in Table 2507.2 and Chapter 35 and, where required for fire protection, shall also conform to the provisions of Chapter 7.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 2508 GYPSUM CONSTRUCTION</p>		
	<p>2508.4 Adhesives. Gypsum board and gypsum panel products secured to framing with adhesives in ceiling assemblies shall be attached using an approved fastening schedule. Expandable foam adhesives for fastening gypsum wallboard shall conform to ASTM D6464. Other adhesives for the installation of gypsum wallboard shall conform to ASTM C557.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2508.5 Joint treatment.</p>		
	<p>2508.5–2508.6 Horizontal gypsum board or gypsum panel product diaphragm ceilings.</p>		
	<p>2508.5.1–2508.6.1 Diaphragm proportions.</p>		
	<p>2508.5.2–2508.6.2 Installation.</p>		
	<p>2508.5.3–2508.6.3 Blocking of perimeter edges.</p>		
	<p>2508.5.4–2508.6.4 Fasteners.</p>		
	<p>2508.5.5–2508.6.5 Lateral force restrictions.</p>		
	<p>SECTION 2510 LATHING AND FURRING FOR CEMENT PLASTER (STUCCO)</p>		

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	<p>2510.6 Water-resistive barriers. <i>Water-resistive barriers</i> shall be installed as required in Section 1403.2 and, where applied over wood-based sheathing, shall comply with Section 2510.6.1 or 2510.6.2 include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of water-resistive barrier complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section 1404.4) intended to drain to the water-resistive barrier is directed between the layers.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where the water-resistive barrier that is applied over wood-based sheathing has a water resistance equal to or greater than that of a water-resistive barrier complying with ASTM E2556, Type II and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or drainage space. 2. Where the water-resistive barrier is applied over wood-based sheathing in Climate Zone 1A, 2A or 3A, a ventilated air space shall be provided between the stucco and water-resistive barrier. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2510.6.1 Dry climates. One of the following shall apply for dry (B) climate zones:</p> <ol style="list-style-type: none"> 1. The water-resistive barrier shall be two layers of 10-minute Grade D paper or have a water resistance equal to or greater than two layers of water-resistive barrier complying with ASTM E2556, Type I. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing, installed in accordance with Section 1404.4 and intended to drain to the water-resistive barrier, is directed between the layers. 2. The water-resistive barrier shall be 60-minute Grade D paper or have a water resistance equal to or greater than one layer of water-resistive barrier complying with ASTM E2556, Type II. The water-resistive barrier shall be separated from the stucco by a layer of foam plastic insulating sheathing or other nonwatery absorbing layer, or a drainage space. 		<p>New requirements</p>
	<p>2510.6.2 Moist or marine climates. In moist (A) or marine (C) climate zones, <i>water-resistive barrier</i> shall comply with one of the following:</p> <ol style="list-style-type: none"> 1. In addition to complying with Item 1 or 2 of Section 2510.6.1, a space or drainage material not less than ³/₁₆ 		<p>New requirements</p>

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	<p><u>inch (4.8 mm) in depth shall be applied to the exterior side of the water-resistive barrier.</u></p> <p><u>2. In addition to complying with Item 2 of Section 2510.6.1, drainage on the exterior side of the water-resistive barrier shall have a minimum drainage efficiency of 90 percent as measured in accordance with ASTM E2273 or Annex A2 of ASTM E2925.</u></p>		
	<p>SECTION 2511 INTERIOR PLASTER</p>		
	<p>2511.5 Wet areas. Showers and public toilet walls shall conform to Sections 1210.2 and 1210.3 1209.2 and 1209.3. When Where wood frame walls and partitions are covered on the interior with cement plaster or tile of similar material and are subject to water splash, the framing shall be protected with an approved moisture barrier.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION 2512 EXTERIOR PLASTER</p> <p>2512.1 General. Plastering with cement plaster shall be not less than three coats When Where applied over metal lath or wire fabric lath or gypsum board backing as specified in Section 2510.5 and shall be not less than two coats When Where applied over masonry or concrete. If the plaster surface is to be completely covered by veneer or other facing material, or is completely concealed by another wall, plaster application need only be two coats, provided that the total thickness is as set forth in ASTM C926.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2512.1.2 Weep screeds. A minimum 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C926. The weep screed shall be placed a minimum not less than 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and be of a type that will allow trapped water to drain to the exterior of the building. The water-resistive barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2512.2 Plasticity agents. Only approved plasticity agents and approved amounts thereof shall be added to Portland cement or blended cements. When Where plastic cement or masonry cement is used, no additional lime or plasticizers shall not be added. Hydrated lime or the equivalent amount of lime putty used as a plasticizer is permitted to be added to cement plaster or cement and lime plaster in an amount not to exceed that set forth in ASTM C926.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>2512.5 Second-coat application. The second coat shall be brought out to proper thickness, rodded and floated sufficiently rough to provide adequate bond for the finish coat. The second coat shall not have no variations greater than 1/4 inch (6.4 mm) in any direction under a 5-foot (1524 mm) straight edge.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2512.8.1 Admixtures. When Where using this method of application, calcium aluminate cement up to 15 percent of the weight of the Portland cement is permitted to be added to the mix.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 2513 EXPOSED AGGREGATE PLASTER</p>		
	<p>2513.3 Bedding coat proportions. The bedding coat for interior or exterior surfaces shall be composed of one part Portland cement and one part Type S lime; or one part blended cement and one part Type S lime; or masonry cement; or plastic cement and a maximum of not more than three parts of graded white or natural sand by volume. The bedding coat for interior surfaces shall be composed of 100 pounds (45.4 kg) of neat gypsum plaster and a maximum of not more than 200 pounds (90.8 kg) of graded white sand. A factory-prepared bedding coat for interior or exterior use is permitted. The bedding coat for exterior surfaces shall have a minimum compressive strength of 1,000 pounds per square inch (psi) (6895 kPa).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2513.4 Application. The bedding coat is permitted to be applied directly over the first (scratch) coat of plaster, provided that the ultimate overall thickness is a minimum of not less than 7/8 inch (22 mm), including lath. Over concrete or masonry surfaces, the overall thickness shall be a minimum of not less than 1/2 inch (12.7 mm).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 2514 REINFORCED GYPSUM CONCRETE</p>		
	<p>2514.2 Minimum thickness. The minimum thickness of reinforced gypsum concrete shall be 2 inches (51 mm) except the minimum required thickness shall be reduced to 1 1/2 inches (38 mm), provided that the following conditions are satisfied:</p> <ol style="list-style-type: none"> 1. The overall thickness, including the formboard, is not less than 2 inches (51 mm). 2. The clear span of the gypsum concrete between supports does not exceed 33 inches (838 mm). 3. Diaphragm action is not required. 4. The design live load does not exceed 40 pounds per square foot (psf) (1915 Pa). 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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2015 Houston IBC	2021 IBC – Chapter 26 Plastic	2021 Houston Amendments – Chapter 26	Code Analysis
	<p style="text-align: center;">SECTION 2601 GENERAL</p> <p>2601.1 Scope. These provisions shall govern the materials, design, application, construction and installation of foam plastic, foam plastic insulation, plastic veneer, interior plastic finish and trim, light-transmitting plastics and plastic composites, including plastic lumber. See Chapter 14 for requirements for exterior wall finish and trim.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 2602 DEFINITIONS-FINISH AND TRIM</p> <p>2602.1 Definitions—Exterior finish wall covering and architectural trim. The following terms are defined in Chapter 2:See Chapter 14 for requirements for exterior wall finish covering and architectural trim.</p> <p>FIBER-REINFORCED POLYMER.</p> <p>FOAM PLASTIC INSULATION.</p> <p>LIGHT DIFFUSING SYSTEM.</p> <p>LIGHT TRANSMITTING PLASTIC ROOF PANELS.</p> <p>LIGHT TRANSMITTING PLASTIC WALL PANELS.</p> <p>PLASTIC, APPROVED.</p> <p>PLASTIC COMPOSITE.</p> <p>PLASTIC GLAZING.</p> <p>PLASTIC LUMBER.</p> <p>THERMOPLASTIC MATERIAL.</p> <p>THERMOSETTING MATERIAL.</p> <p>WOOD/PLASTIC COMPOSITE.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2602.2 Interior finish and trim. See Section 2604 for requirements for interior finish and trim.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 2603 FOAM PLASTIC INSULATION</p>		

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	<p>2603.1.1 Spray-applied foam plastic. Single- and multiple-component spray-applied foam plastic insulation shall comply with the provisions of Section 2603 and ICC 1100-2018.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.3 Surface-burning characteristics. Unless otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread and smoke-developed indexes indices.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Smoke-developed index for interior trim as provided for in Section 2604.2. 2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved automatic sprinkler system shall be provided in both the room and that part of the building in which the room is located. 3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided that the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256. The smoke-developed index shall not be limited for roof applications. 4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided that the end use is approved in accordance with Section 2603.9 using the maximum thickness and density intended for use. 5. Flame spread and smoke-developed indexes indices for foam plastic interior signs in covered and open mall buildings provided that the signs comply with Section 402.6.4. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2603.4 Thermal barrier. Except as provided for in Sections 2603.4.1 and 2603.9, foam plastic shall be separated from the interior of a building by an approved thermal barrier of 1/2-inch (12.7 mm) gypsum wallboard, heavy timber in accordance with Section 602.4 or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275. Combustible concealed spaces shall comply with Section 718.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.4.1.9 Garage doors. Where garage doors are permitted without a fire-resistance rating and foam plastic is used as a core material, the door facing shall be metal having a minimum thickness of 0.032-inch (0.8 mm) aluminum or 0.010-inch (0.25 mm) steel or the facing shall be minimum 0.125-inch-thick (3.2 mm) wood. Garage doors having facings other than those described above in this section shall be tested in accordance with, and meet the acceptance criteria of, DASMA 107.</p> <p>Exception: Garage doors using foam plastic insulation complying with Section 2603.3 in detached and attached garages associated with one- and two-family dwellings need not be provided with a thermal barrier.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.4.1.10 Siding backer board. Foam plastic insulation of not more than 2,000 British thermal units per square feet (Btu/sq. ft.) (22.7 mJ/m²) as determined by NFPA 259 shall be permitted as a siding backer board with a maximum thickness of 1/2 inch (12.7 mm), provided that it is separated from the interior of the building by not less than 2 inches (51 mm) of mineral fiber insulation or equivalent or where applied as insulation with re-siding over existing wall construction.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.4.1.14 Floors. The thermal barrier specified in Section 2603.4 is not required to be installed on the walking surface of a structural floor system that contains foam plastic insulation when where the foam plastic is covered by a minimum nominal 1/2-inch-thick (12.7 mm) wood structural panel or approved equivalent. The thermal barrier specified in Section 2603.4 is required on the underside of the structural floor system that contains foam plastic insulation when where the underside of the structural floor system is exposed to the interior of the building.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Exception: Foam plastic used as part of an interior floor finish.</p>		
	<p>2603.5 Exterior walls of buildings of any height. Exterior walls of buildings of Type I, II, III or IV construction of any height shall comply with Sections 2603.5.1 through 2603.5.7. Exterior walls of cold storage buildings required to be constructed of noncombustible materials, where the building is more than one story in height, shall comply with the provisions of Sections 2603.5.1 through 2603.5.7. Exterior walls of buildings of Type V construction shall comply with Sections 2603.2, 2603.3 and 2603.4. Fireblocking shall be in accordance with Section 718.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.5.4 Flame spread and smoke-developed indexes indices.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.5.7 Ignition. Exterior walls shall not exhibit sustained flaming where tested in accordance with NFPA 268. Where a material is intended to be installed in more than one thickness, tests of the minimum and maximum thickness intended for use shall be performed.</p> <p>Exception: Assemblies protected on the outside with one of the following:</p> <ol style="list-style-type: none"> 1. A thermal barrier complying with Section 2603.4. 2. A minimum 1-inch (25 mm) thickness of concrete or masonry. 3. Glass-fiber-reinforced concrete panels of a minimum thickness of 3/8 inch (9.5 mm). 4. Metal-faced panels having minimum 0.019-inch-thick (0.48 mm) aluminum or 0.016-inch-thick (0.41 mm) corrosion-resistant steel outer facings. 5. A minimum 7/8-inch (22.2 mm) thickness of stucco complying with Section 2510. 6. A minimum 1/4-inch (6.4 mm) thickness of fiber-cement lap, panel or shingle siding complying with Sections 1405.16-1404.16 and Section 1405.16.1 or 1405.16.2 1404.16.1 or 1404.16.2. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2603.6 Roofing. Foam plastic insulation meeting the requirements of Sections 2603.2, 2603.3 and 2603.4 shall be permitted as part of a roof-covering assembly, provided that the assembly with the foam plastic insulation is a Class A, B or C roofing assembly where tested in accordance with ASTM E108 or UL 790.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.7 Foam plastic insulation used in plenums as interior finish or interior trim in plenums. Foam plastic insulation used in plenums shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 and shall comply with one or more of Sections 2603.7.1, 2603.7.2 and 2607.3 at the maximum thickness and density intended for use, and shall be tested in accordance with NFPA 286 and meet the acceptance criteria of Section 803.1.1. As an alternative to testing to NFPA 286, the foam plastic shall be approved based on tests conducted in accordance with Section 2603.9.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim, shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by a thermal barrier complying with Section 2603.4. 2. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim, shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm). 3. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim, shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by not less than a 1-inch (25 mm) thickness of masonry or concrete. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2603.7.1 Separation required. The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 and shall exhibit a flame spread index of 75 or less and a smoke-developed index of</p>		

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	450 or less when tested in accordance with ASTM E84 or UL 723 at the thickness and density intended for use.		
	2603.7.2 Approval. The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke developed index of 50 or less when tested in accordance with ASTM E84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria of Section 803.1.2 when tested in accordance with NFPA 286. The foam plastic insulation shall be approved based on tests conducted in accordance with Section 2603.9.		
	2603.7.3 Covering. The foam plastic insulation shall be covered by corrosion resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) and shall exhibit a flame spread index of 75 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the thickness and density intended for use.		
	2603.9 Special approval. Foam plastic shall not be required to comply with the requirements of Section 2603.4 or those of Section 2603.6 where specifically approved based on large-scale tests such as, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.1.2.1 803.1.1.1), FM 4880, UL 1040 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall also conform to the flame spread and smoke-developed requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.		Edits made to clarify code, no major changes to code requirements.
	2603.12 Cladding attachment over foam sheathing to cold-formed steel framing. Cladding shall be specified and installed in accordance with Chapter 14 and the cladding manufacturer's approved installation instructions, including any limitations for use over foam plastic sheathing, or an approved design. Where used, furring and furring attachments shall be designed to resist design loads determined in accordance with Chapter 16. In addition, the cladding or furring attachments through foam sheathing to cold-formed steel framing shall meet or exceed the minimum fastening requirements of Sections 2603.12.1 and 2603.12.2, or an approved design for support of cladding weight. Exceptions: 1. Where the cladding manufacturer has provided approved installation instructions for application		Edits made to clarify code, no major changes to code requirements.

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	<p>over foam sheathing, those requirements shall apply.</p> <p>2. For exterior insulation and finish systems, refer to Section 1408-1407.</p> <p>3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section 1405-1404.</p>		
	<p>2603.13 Cladding attachment over foam sheathing to wood framing. Cladding shall be specified and installed in accordance with Chapter 14 and the cladding manufacturer's installation instructions. Where used, furring and furring attachments shall be designed to resist design loads determined in accordance with Chapter 16. In addition, the cladding or furring attachments through foam sheathing to framing shall meet or exceed the minimum fastening requirements of Section 2603.13.1 or 2603.13.2, or an approved design for support of cladding weight.</p> <p>Exceptions:</p> <p>1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing, those requirements shall apply.</p> <p>2. For exterior insulation and finish systems, refer to Section 1407.</p> <p>3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section 1404.</p>		New requirements
	<p>2603.13.1 Direct attachment. Where cladding is installed directly over foam sheathing without the use of furring, minimum fastening requirements to support the cladding weight shall be as specified in Table 2603.13.1.</p>		New requirement
	<p>TABLE 2603.13.1</p> <p>CLADDING MINIMUM FASTENING REQUIREMENTS FOR DIRECT ATTACHMENT OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT^a</p>		New requirement
	<p>2603.13.2 Furred cladding attachment. Where wood furring is used to attach cladding over foam sheathing, furring minimum fastening requirements to support the cladding weight shall be as specified in Table 2603.13.2. Where placed horizontally, wood furring shall be preservative-treated wood in accordance with Section 2303.1.9 or naturally durable wood and fasteners shall be corrosion resistant in accordance with Section 2304.10.5.</p>		New requirements

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	<p>TABLE 2603.13.2</p> <p>FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT</p> <p>a, b</p>		<p>New requirement</p>
	<p>SECTION 2604</p> <p>INTERIOR FINISH AND TRIM</p>		
	<p>2604.1.1 Plenums. Foam plastics installed in plenums as interior wall or ceiling finish shall comply with Section 2603.7. Foam plastics installed in plenums as interior trim shall comply with Sections 2604.2 and 2603.7.</p>		<p>New requirement</p>
	<p>[F] 2604.2.4 Flame spread. The flame spread index shall not exceed 75 where tested in accordance with ASTM E84 or UL 723. The smoke-developed index shall not be limited.</p> <p>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 803.1.2.1 803.1.1.1, it shall not be required to be tested for flame spread index in accordance with ASTM E84 or UL 723.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 2605</p> <p>PLASTIC VENEER</p>		
	<p>2605.2 Exterior use. Exterior plastic veneer, other than plastic siding, shall be permitted to be installed on the exterior walls of buildings of any type of construction in accordance with all of the following requirements:</p> <ol style="list-style-type: none"> 1. Plastic veneer shall comply with Section 2606.4. 2. Plastic veneer shall not be attached to any exterior wall to a height greater than 50 feet (15 240 mm) above grade. 3. Sections of plastic veneer shall not exceed 300 square feet (27.9 m²) in area and shall be separated by not less than 4 feet (1219 mm) vertically. <p>Exception: The area and separation requirements and the smoke-density limitation are not applicable to plastic veneer applied to buildings constructed of Type VB construction,</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	provided that the walls are not required to have a fire-resistance rating.		
	SECTION 2606 LIGHT-TRANSMITTING PLASTICS		
	2606.7.4 Fire suppression Automatic sprinkler system. In buildings that are equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1, plastic <i>light-diffusing systems</i> shall be protected both above and below unless the sprinkler system has been specifically approved for installation only above the <i>light-diffusing system</i> , or the <i>light-diffusing system</i> is listed and labeled in accordance with UL 723S. Areas of <i>light-diffusing systems</i> that are protected in accordance with this section shall not be limited.		Edits made to clarify code, no major changes to code requirements.
	2606.11 Greenhouses. Light-transmitting plastics shall be permitted in lieu of plain glass in greenhouses.		Edits made to clarify code, no major changes to code requirements.
	2606.12 Solar collectors. Light-transmitting plastic covers on solar collectors having noncombustible sides and bottoms shall be permitted on buildings not over three stories above grade plane or 9,000 square feet (836.1 m ²) in total floor area, provided that the light-transmitting plastic cover does not exceed 33.33 percent of the roof area for CC1 materials or 25 percent of the roof area for CC2 materials. Exception: Light-transmitting plastic covers having a thickness of 0.010 inch (0.3 mm) or less shall be permitted to be of any plastic material provided that the area of the solar collectors does not exceed 33.33 percent of the roof area.		Edits made to clarify code, no major changes to code requirements.
	SECTION 2607 LIGHT-TRANSMITTING PLASTIC WALL PANELS		
	2607.3 Height limitation. Light-transmitting plastics shall not be installed more than 75 feet (22 860 mm) above <u>grade plane</u> , except as allowed by Section 2607.5		Edits made to clarify code, no major changes to code requirements.

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	<p>2607.5 Automatic sprinkler system. Where the building is equipped throughout with an <i>automatic sprinkler system</i> in accordance with Section 903.3.1.1, the maximum percentage area of <i>exterior wall</i> in any <i>story</i> in light-transmitting plastic wall panels and the maximum square footage of a single area given in Table 2607.4 shall be increased 100 percent, but the area of light-transmitting plastic wall panels shall not exceed 50 percent of the wall area in any <i>story</i>, or the area permitted by Section 705.8 for unprotected openings, whichever is smaller. These installations shall be exempt from height limitations not be installed more than 75 feet (22 860 mm) above grade plane.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2608 LIGHT-TRANSMITTING PLASTIC GLAZING</p>		
	<p style="text-align: center;">SECTION 2609 LIGHT-TRANSMITTING PLASTIC ROOF PANELS</p>		
	<p>2609.4 Area limitations. Roof panels shall be limited in area and the aggregate area of panels shall be limited by a percentage of the floor area of the room or space sheltered in accordance with Table 2609.4.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The area limitations of Table 2609.4 shall be permitted to be increased by 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 2. Low-hazard occupancy buildings, such as swimming pool shelters, shall be exempt from the area limitations of Table 2609.4, provided that the buildings do not exceed 5,000 square feet (465 m²) in area and have a minimum fire separation distance of 10 feet (3048 mm). 3. Greenhouses that are occupied for growing plants on a production or research basis maintaining plants, without public access, shall be exempt from the area limitations of Table 2609.4 provided that they have a minimum fire separation distance of 4 feet (1220 mm). 4. Roof coverings over terraces and patios in occupancies in Group R-3 shall be exempt from the area limitations of Table 2609.4 and shall be permitted with light-transmitting plastics. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2610 LIGHT-TRANSMITTING PLASTIC SKYLIGHT GLAZING</p> <p>2610.1 Light-transmitting plastic glazing of skylight assemblies. Skylight assemblies glazed with light-transmitting</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>plastic shall conform to the provisions of this section and Section 2606. Unit skylights glazed with light-transmitting plastic shall comply with Section 2405.5.</p> <p>Exception: Skylights in which the light-transmitting plastic conforms to the required roof-covering class in accordance with Section 1505.</p>		
	<p>2610.1.1 Unit skylights. Unit skylights glazed with light-transmitting plastic shall comply with Section 2405.5.</p>		Edits made to clarify code, no major changes to code requirements.
	<p style="text-align: center;">SECTION 2611</p> <p style="text-align: center;">LIGHT-TRANSMITTING PLASTIC INTERIOR SIGNS</p> <p>2611.1 General. Light-transmitting plastic interior wall signs shall be limited as specified in Sections 2606 and 2611.2 through 2611.4. Light-transmitting plastic interior wall signs in covered and open mall buildings shall comply with Section 402.6.4. Light-transmitting plastic interior signs shall also comply with Section 2606.</p> <p>Exception: Light-transmitting plastic interior wall signs in covered and open mall buildings shall comply with Section 402.6.4.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2611.2 Aggregate area. The sign shall not exceed 20 percent of the wall area.</p>		
	<p>2611.3 2611.2 Maximum area. The sign aggregate area of all light-transmitting plastics shall not exceed 24 square feet (2.23 m²).</p> <p>Exception: In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the aggregate area of light-transmitting plastics shall not exceed 100 square feet (9.29 m), provided that all plastics are Class CC1 in accordance with Section 2606.4.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2611.3 Separation. Signs exceeding the aggregate area of Section 2611.2 shall be separated from each other by not less than 4 feet (1219 mm) horizontally and 8 feet (2438 mm) vertically.</p>		New requirement
	<p>2611.4 Encasement. Edges and backs of the sign Backs of wall-mounted signs and nonilluminated portions of all signs regulated by this section shall be fully encased in metal.</p>		Edits made to clarify code, no major changes to code requirements.

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	SECTION 2612 PLASTIC COMPOSITES		
	<p>2612.2 Labeling and identification. Packages and containers of plastic composites used in exterior applications shall bear a label showing the manufacturer's name, product identification and information sufficient to determine that the end use will comply with code requirements. Plastic composite deck boards and stair treads, or their packaging, shall bear a label that indicates compliance with ASTM D7032 and includes the allowable load and maximum allowable span determined in accordance with ASTM D7032. Plastic composite handrails and guards, or their packaging, shall bear a label that indicates compliance with ASTM D7032 and includes the maximum allowable span determined in accordance with ASTM D7032.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2612.2.1 Performance levels. The label for plastic composites used in exterior applications as deck boards, stair treads, handrails and guards shall indicate the required performance levels and demonstrate compliance with the provisions of ASTM D7032.</p>		
	<p>2612.2.2 Loading. The label for plastic composites used in exterior applications as deck boards, stair treads, handrails and guards shall indicate the type and magnitude of the load determined in accordance with ASTM D7032.</p>		
	<p>2612.3 Flame spread index. Plastic composite deck boards, stair treads, handrails and guards shall exhibit a flame spread index not exceeding 200 when tested in accordance with ASTM E84 or UL 723 with the test specimen remaining in place during the test.</p> <p>Exception: Materials determined to be noncombustible in accordance with Section 703.5.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2612.4 Termite and decay resistance. Where required by Section 2304.12, plastic composite deck boards, stair treads, handrails and guards containing wood, cellulosic or any other biodegradable materials shall be termite and decay resistant as determined in accordance with ASTM D7032.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>2612.5 Construction requirements. Plastic composites meeting the requirements of Section 2612 shall be permitted to be used as exterior deck boards, stair treads, handrails and guards in buildings of Type VB where combustible construction is permitted.</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>2612.6 Plastic composite decking boards, stair treads, handrails and guards. Plastic composite decking boards, stair treads, handrails and guards shall be installed in accordance with this code and the manufacturer's instructions.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION 2613 FIBER-REINFORCED POLYMER</p>		
	<p>2613.3.1 Foam plastic cores. Fiber-reinforced polymer used as interior finish and which that contains foam plastic cores shall comply with Chapter 8 and this chapter.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>2613.5 Exterior use. Fiber-reinforced polymer shall be permitted to be installed on the exterior walls of buildings of buildings of any type of construction when where such polymers meet the requirements of Section 2603.5. Fire-blocking shall be installed in accordance with Section 718.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Compliance with Section 2603.5 is not required when where all of the following conditions are met: <ol style="list-style-type: none"> 1.1. The fiber-reinforced polymer shall not exceed an aggregate total of 20 percent of the area of the specific wall to which it is attached, and no single architectural elements shall not exceed 10 percent of the area of the specific wall to which it is attached, and no contiguous sets of architectural elements shall not exceed 10 percent of the area of the specific wall to which they are attached. 1.2. The fiber-reinforced polymer shall have a flame spread index of 25 or less. The flame spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber-reinforced polymer. 1.3. Fire-blocking complying with Section 718.2.6 shall be installed. 1.4. The fiber-reinforced polymer shall be installed directly to a noncombustible substrate or be separated from the exterior wall by one of the following materials: corrosion-resistant steel having a minimum base metal thickness of 0.016 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>inch (0.41 mm) at any point, aluminum having a minimum thickness of 0.019 inch (0.5 mm) or other approved noncombustible material.</p> <p>2. Compliance with Section 2603.5 is not required when where the fiber-reinforced polymer is installed on buildings that are 40 feet (12 190 mm) or less above grade when all of and the following conditions are met:</p> <p>2.1. The fiber-reinforced polymer shall meet the requirements of Section 1406.2 1405.1.</p> <p>2.2. Where the fire separation distance is 5 feet (1524 mm) or less, the area of the fiber-reinforced polymer shall not exceed 10 percent of the wall area. Where the fire separation distance is greater than 5 feet (1524 mm), there shall be no limit on the area of the exterior wall coverage using fiber-reinforced polymer shall not be limited.</p> <p>2.3. The fiber-reinforced polymer shall have a flame spread index of 200 or less. The flame spread index requirements do not apply to coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber-reinforced polymer.</p> <p>2.4. Fire-blocking complying with Section 718.2.6 shall be installed.</p>		
	<p style="text-align: center;">SECTION 2614</p> <p style="text-align: center;">REFLECTIVE PLASTIC CORE INSULATION</p> <p>2614.1 General. The provisions of this section shall govern the requirements and uses of reflective plastic core insulation in buildings and structures. Reflective plastic core insulation shall comply with the requirements of Section 2614 and of one of the following: Section 2614.3 or 2614.4.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>2015 Houston IBC</p>	<p>2021 IBC – Chapter 27 Electrical</p>	<p>2021 Houston Amendments – Chapter 27</p>	<p>Code Analysis</p>
	<p style="text-align: center;">SECTION 2701</p> <p style="text-align: center;">GENERAL</p> <p>2701.1 Scope. The provisions of this chapter and NFPA 70 shall governs the design, construction, erection and installation of the electrical components, appliances, equipment and systems used in</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	buildings and structures covered by this code. The International Fire Code, the International Property Maintenance Code and NFPA 70 shall govern the use and maintenance of electrical components, appliances, equipment and systems. shall be designed and constructed in accordance with the provisions of NFPA 70 The International Existing Building Code and NFPA 70 shall govern the alteration, repair, relocation, replacement and addition of electrical components, appliances, or equipment and systems.		
	SECTION 2702 EMERGENCY AND STANDBY POWER SYSTEMS [F] 2702.1 Installation General.		
	<p>[F] 2702.1.2 Fuel-line piping protection. Fuel lines supplying a generator set inside a <i>high-rise building</i> shall be separated from areas of the <i>building</i> other than the room the generator is located in by <u>one of the following methods</u>: 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.</p> <p><u>1. A fire-resistant pip-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 <i>building</i> is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required rating shall be reduced to 1 hour.</u></p> <p><u>2. 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></p> <p><u>3. Other approved methods.</u></p>		Edits made to clarify code, additional requirements were added.
	[F] 2702.1.2 2702.1.3 Electrical Installation.		
	[F] 2702.1.3 2702.1.4 Load transfer.		
	[F] 2702.1.4 2702.1.5 Load duration.		

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	[F] 2702.1.5 2702.1.6 Uninterruptable power source.		
	[F] 2702.1.6 2702.1.7 Interchangeability.		
	[F] 2702.1.7 2702.1.8 Group I-2 occupancies. In Group I-2 occupancies, in new construction or where the building is substantially damaged, where an essential electrical system is located in flood hazard areas established in Section 1612.3, the where new essential electrical systems are installed, and where new essential electrical system generators are installed, the systems and generators shall be located and installed in accordance with ASCE 24. Where connections for hookup of temporary generators are provided, the connections shall be located at or above the elevation required in ASCE 24.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.1 2702.2.1 Emergency alarm systems Ambulatory care facilities. Emergency power shall be provided for emergency alarm Essential electrical systems as required by for ambulatory care facilities shall comply with Section 41522.56.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.3 2702.2.3 Emergency responder radio communication coverage systems. Standby power shall be provided for in-building 2-way emergency responder radio communication coverage systems required in Section 918 and the <i>International Fire Code</i> . The standby power supply shall be capable of operating the in-building 2-way emergency responder communication radio coverage system at 100-percent system operation capacity for a duration of not less than 12 hours. at 100-percent system operation capacity.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.4 2702.2.4 Emergency voice/alarm communication systems. Standby 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 accordance with NFPA 72.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.5 2702.2.5 Exhaust systems. Standby power shall be provided for common exhaust systems for domestic kitchens located in multistory structures as required in Section 505.5 of the International Mechanical Code. Standby power shall be provided for common exhaust systems for clothes dryers located in multistory structures as required in Section 504.10 of the International Mechanical Code and Section 614.10 of the International Fuel Gas Code.		New requirements

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

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	[F] 2702.2.5 2702.2.6 Exit signs.		
	[F] 2702.2.7 Gas detection system. Emergency or standby power shall be provided for gas detection systems in accordance with the International Fire Code.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.6 2702.2.8 Group I-2 occupancies.		
	[F] 2702.2.7 2702.2.9 Group I-3 occupancies.		
	[F] 2702.2.8 2702.2.10 Hazardous materials.		
	[F] 2702.2.9 2702.2.11 High-rise buildings. Emergency and standby power shall be provided in high-rise buildings as required in Section 5 403.4.8.		
	[F] 2702.2.12 2702.2.13 Horizontal sliding doors Laboratory suites. 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. Standby or emergency power shall be provided in accordance with Section 5004.7 where laboratory suites are located above the sixth story above grade plane or located in a story below grand plant.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.11 2702.2.13 2702.2.14 Means of egress illumination.		
	[F] 2702.2.12 2702.2.14 2702.2.15 Membrane structures.		
	[F] 2702.2.13 Pyrophoric materials. Emergency power shall be provided for occupancies with silane gas in accordance with the International Fire Code.		

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	[F] 2702.2.14 2702.2.15 2702.2.16 Semiconductor fabrication facilities.		
	[F] 2702.2.15 2702.2.16 2702.2.17 Smoke control systems.		
	[F] 2702.2.17 2702.2.18 Special purpose horizontal sliding, accordion or folding doors. Standby power shall be provided for special purpose horizontal sliding, accordion or folding 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.		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.2.16 2702.2.18 2702.2.19 Underground buildings.		
	[F] 2702.2.12 Hydrogen fuel gas rooms. Standby power shall be provided for hydrogen fuel gas rooms as required by the <i>International Fire Code</i> .		Edits made to clarify code, no major changes to code requirements.
	[F] 2702.3 Critical circuits. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196. Electrical circuit protective systems shall be installed in accordance with their listing requirements. Required critical circuits shall be protected using one of the following methods: 1. Cables, used for survivability of required critical circuits, that are listed in accordance with UL 2196 and have a fire-resistance rating of not less than 1 hour. 2. Electrical circuit protective systems having a fire-resistance rating of not less than 1 hour. Electrical circuit protective systems are installed in accordance with their listing requirements. 3. Construction having a fire-resistance rating of not less than 1 hour.		Edits made to clarify code, no major changes to code requirements.
2015 Houston IBC – Chapter 28 Mechanical Systems	2021 IBC – Chapter 28 Mechanical Systems	2021 Houston Amendments – Chapter 28	Code Analysis
	SECTION 2801 GENERAL [M] 2801.1 Scope. Mechanical appliances, equipment and systems shall be constructed, installed and maintained in accordance with The provisions of this chapter, the International Mechanical		Edits made to clarify code, no major changes to code requirements.

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Code and the International Fuel Gas Code shall govern the design, construction, erection and installation of mechanical appliances, equipment and systems used in buildings and structures covered by this code. Masonry chimneys, fireplaces and barbecues shall comply with the International Mechanical Code and Chapter 21 of this code. The International Fire Code, the International Property Maintenance Code, the International Mechanical Code and the International Fuel Gas Code shall govern the use and maintenance of mechanical components, appliances, equipment and systems. The International Existing Building Code, the International Mechanical Code and the International Fuel Gas Code shall govern the alteration, repair, relocation, replacement and addition of mechanical components, appliances, equipment and systems.

2015 Houston IBC – Chapter 29 Plumbing Systems	2021 IBC – Chapter 29 Plumbing Systems	2021 Houston Amendments – Chapter 29	Code Analysis
	<p style="text-align: center;">SECTION 2901 GENERAL</p> <p>[P] 2901.1 Scope. The provisions of this chapter and the International Plumbing Code shall govern the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance design, construction, erection and installation of plumbing components, appliances, equipment and systems used in buildings and structures covered by this code. Toilet and bathing rooms shall be constructed in accordance with Section 4209-1210 Plumbing systems and equipment shall be constructed, installed and maintained in accordance with the International Plumbing Code. Private sewage disposal systems shall conform to the International Private Sewage Disposal Code. The International Fire Code, the International Property Maintenance Code and the International Plumbing Code shall govern the use and maintenance of plumbing components, appliances, equipment and systems. The International Existing Building Code and the International Plumbing Code shall govern the alteration, repair, relocation, replacement and addition of plumbing components, appliances, equipment and systems.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 2902 MINIMUM PLUMBING FACILITIES</p>		

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[P] TABLE 2902.1

MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a
 (See Sections 2902.1.1 and 2902.2)

CHAPTER 29
 PLUMBING SYSTEMS

[P] TABLE 2902.1
 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 2902.1.1 and 2902.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS ^b (URINALS SEE SECTION 2902.8.4.1 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS (SEE SECTION 2904.410 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
			Male	Female	Male	Female			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures ^c	1 per 125	1 per 65 50	1 per 200		—	1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes ^c	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts ^c	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink
		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums ^c	1 per 125	1 per 65 50	1 per 200		—	1 per 500	1 service sink
		Passenger terminals and transport facilities ^c	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
		Places of worship and other religious services	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 35 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities ^c	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 35 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink		
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	—	1 per 100	1 service sink ^c	

Minor changes to Houston amendment. See "Technical Memo #8 – Drinking Fountains" for changes to Ch. 29 of the IBC.

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[P] TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 2902.1.1 and 2902.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS ^a (URINALS SEE SECTION 2902.8.419.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS (SEE SECTION 2904.410 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
			Male	Female	Male	Female			
			3	Educational	Educational facilities	1 per 50			
		Daycares	1 per 17	1 per 17	—	1 per 100	1 service sink	Daycares	
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembling or processing of products or materials	1 per 100		1 per 100		—	1 per 400	1 service sink
5	Institutional	Custodial care facilities	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		Medical care recipients in hospitals and nursing homes ^b	1 per room ^c		1 per room ^c		1 per 15	1 per 100	1 service sink
		Employees in hospitals and nursing homes ^b	1 per 25		1 per 35		—	1 per 100	—
		Visitors in hospitals and nursing homes	1 per 75		1 per 100		—	1 per 500	—
		Prisons ^b	1 per cell		1 per cell		1 per 15	1 per 100	1 service sink
		Reformatories, detention centers and correctional centers ^b	1 per 15		1 per 15		1 per 15	1 per 100	1 service sink
		Employees in reformatories, detention centers and correctional centers ^b	1 per 25		1 per 35		—	1 per 100	—
Adult day care and child day care	1 per 15		1 per 15		—	1 per 100	1 service sink		
6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500		1 per 750		—	1 per 1,000	1 service sink
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit		1 per sleeping unit		1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit		1 per dwelling unit		1 per dwelling unit	—	1 kitchen sink per dwelling unit, 1 automatic clothes washer connection per 20 dwelling units

(continued)

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[P] TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 2902.1.1 and 2902.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS ^b (URINALS SEE SECTION 2902.2.4.1.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAINS (SEE SECTION 2904.4.10 OF THE INTERNATIONAL PLUMBING CODE)	OTHER
			Male	Female	Male	Female			
7	Residential	One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit		1 per 10		1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		* Congregate living facilities with 16 or fewer persons	1 per 840 (City Code Sec. 10-362.)		1 per 10		1 per 8	1 per 100	1 service sink
8	Storage ^c	Structures for the storage of goods, warehouses, storehouses and freight depots, low and moderate hazard	1 per 100		1 per 100		—	1 per 1,000	1 service sink

^a These are minimum design requirements. The Building Code or the City Code applies, whichever is more restrictive. See Section 10-362 of the City Code.

- a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.
- b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.
- c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted, provided that each patient sleeping unit has direct access to the toilet room and provisions for privacy for the toilet room user are provided.
- d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.
- e. For business and mercantile classifications with an occupant load of 15 or fewer, service sink shall not be required.
- f. The required number and type of plumbing fixtures for outdoor swimming pools shall be in accordance with section 609 of the International Swimming Pool and Spa Code.
- g. Structures used for people awaiting transportation, such as transit centers, shall not be required to install employee and public restroom facilities when all the following conditions apply:
 - 1. The facility includes no onsite employees or security personnel.
 - 2. The structure is an open-air structure with no enclosing walls.
 - 3. The structure is only intended to shelter people awaiting transportation.
- h. For the purpose of establishing employee and public restrooms and plumbing fixture requirements the design occupant load of a self-storage warehouse facility containing only normally unoccupied rental units provided with direct exterior access for dropping off and picking up storage of personal possessions shall be based on the design occupant load of the occupied office building serving that storage facility. The required employee and public restrooms provided at the office building shall be available to the public and all employees who utilize the on-site storage facilities.
- i. One story warehouses and parking garages that are dedicated to a building on site, that do not exceed one story below grade, and include a path of travel to available restroom facilities located within 500 feet located on the same property shall be considered compliant with the provisions of Section 2902.3 for required employee and public restroom facilities.

[P] 2902.1.1 Fixture calculations. To determine the *occupant load* of each sex, the total *occupant load* shall be divided in half. To determine the required number of fixtures, the fixture ratio and ratios for each fixture type shall be applied to the *occupant load* of each sex in accordance with Table 2902.1. Fractional numbers resulting from applying the fixture ratios or Table 2902.1 shall be rounded up to the next whole number. For calculations involving multiple occupancies, such fractional numbers for each occupancy shall first be summed and then rounded up to the next whole number.

Exceptions:

- 1. The total *occupant load* shall not be required to be divided in half where approved statistical data indicates a distribution of the sexes of other than 50 percent of each sex.
- 2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total *occupant load*. In such multiple-user user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.

Edits made to clarify code, no major changes to code requirements.

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	<p><u>3. Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 2902.1.2.</u></p>		
	<p>[P] 2902.1.2 Family or assisted-use toilet and bath fixtures Single-user toilet facility and bathing room fixtures. Fixtures located within family or assisted-use toilet and bathing rooms required by Section 1109.2.1 are permitted to be included in the number of required fixtures for either the male or female occupants in assembly and mercantile occupancies. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1110.2.1, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet facility and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use either by all persons regardless of their sex. The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.</p>		<p>New requirements</p>
	<p>[P] 2902.1.3 Lavatory distribution. Where two or more toilet rooms are provided for each sex, the required number of lavatories shall be distributed proportionately to the required number of water closets.</p>		<p>New requirement</p>
	<p>[P] 2902.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Separate facilities shall not be required for <i>dwelling units</i> and <i>sleeping units</i>. 2. Separate facilities shall not be required in structures or tenant spaces with a total <i>occupant load</i>, including both employees and customers, of 15 or less-fewer. 3. Separate facilities shall not be required in mercantile occupancies in which the maximum <i>occupant load</i> is 100 or fewer. 4. Separate facilities shall not be required in business occupancies in which the maximum <i>occupant load</i> is 25 or fewer. 5. <u>Separate facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 2902.1.2.</u> 6. <u>Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by both sexes and privacy for water closets are installed in accordance with Section 405.3.4 of the <i>International Plumbing Code</i>. Urinals shall be located in</u> 		<p>Edits made to clarify code, new requirements added</p>

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	<p><u>an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.</u></p>		
	<p>[P] 2902.3 Employee and public toilet facilities. For structures and tenant spaces intended for public utilization, customers, patrons and visitors shall be provided with public toilet facilities in. Employees associated with structures and tenant spaces intended for public utilization shall be provided with toilet facilities. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 2902.4 for all users. Employees shall be provided with toilet facilities in all occupancies. Employee toilet facilities shall be either separate or combined employee and public toilet facilities.</p> <p>Exception: Public toilet facilities shall not be required infor:</p> <ol style="list-style-type: none"> 1. Open or enclosed Parking garages where there are no operated without parking attendants. 2. Structures and tenant spaces intended for quick transactions, including takeout, pickup and drop-off, having a public access area less than or equal to 300 square feet (28 m²). 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[P] 2902.3.1 Access. The route to the public toilet facilities required by Section 2902.3 shall not pass through kitchens, storage rooms or closets. Access to the required facilities shall be from within the building or from the exterior of the building. Routes shall comply with the accessibility requirements of this code. The public shall have access to the required toilet facilities at all times that the building is occupied.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[P] 2902.3.2 Prohibited toilet room location. Toilet rooms shall not open directly into a room used for the preparation of food for service to the public.</p>		<p>New requirements</p>
	<p>[P] 2902.3.2 2902.3.3 Location of toilet facilities in occupancies other than malls. In occupancies other than covered and <i>open mall buildings</i>, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 500 feet (152 m).</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The location and maximum distances of travel to required employee facilities in factory and industrial occupancies shall be permitted to exceed that required 		<p>New exceptions</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p><u>by this section, provided that the location and maximum distances of travel are approved.</u></p> <p><u>2. The location and maximum distances of travel to required public and employee facilities in Group S occupancies shall be permitted to exceed that required by this section, provided that the location and maximum distances of travel are approved.</u></p>		
	<p>[P] 2902.3.3 2902.3.4 Location of toilet facilities in malls.</p>		
	<p>[P] 2902.3.4 2902.3.5 Pay facilities.</p>		
	<p>[P] 2902.3.5 2902.3.6 Door locking.</p>		
	<p>[P] 2902.3.6 Prohibited toilet room location. Toilet rooms shall not open directly into a room used for the preparation of food for service to the public.</p>		
	<p>[P] 2902.5 Drinking fountain location. Drinking fountains shall not be required to be located in individual tenant spaces provided that public drinking fountains are located within a distance of travel of 500 feet (152 m) of the most remote location in the tenant space and not more than one story above or below the tenant space. Where the tenant space is in a covered or open mall, such distance shall not exceed <u>300 feet (91 m)</u>. Drinking fountains shall be located on an accessible route.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>2902.7 Fixture types. All water closets shall be either a dual flush or a high efficiency water closet. For males, when more than one water closet is required, 50% of the water closets shall be urinals. Urinals shall be of the non-water type or high efficiency urinals. Moved to 2902.8</p>	<p>[P] 2902.7 Service sink location. <u>Service sinks shall not be required to be located in individual tenant spaces in a covered mall provided that service sinks are located within a distance of travel of 300 feet (91 m) of the most remote location in the tenant space and not more than one story above or below the tenant space. Service sinks shall be located on an accessible route.</u></p>		<p>New requirements</p>
		<p>2902.8 Fixture types. All water closets shall be either a dual flush or a high efficiency water closet. For males, when more than one water closet is required, 50% of the water closets shall be urinals. Urinals shall be of the non-water type or high efficiency urinals.</p>	<p>No change to Houston amendment, relocated from Section 2902.7.</p>

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	<p style="text-align: center;">[P] 2903 INSTALLATION OF FIXTURES</p> <p>[P] 2903.1 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls.</p>		
	<p>[P] 2903.1.1 Water closets, urinals, lavatories and bidets. A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction. Where partitions or other obstructions do not separate adjacent fixtures, fixtures shall not be set closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of a water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floor-mounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wall-hung water closets.</p> <p>Exception: An accessible children's water closet shall be set not closer than 12 inches (305 mm) from its center to the required partition or to the wall on one side.</p>		<p style="text-align: center;">New requirements</p>
	<p>[P] 2903.1.2 Public lavatories. In employee and public toilet rooms, the required lavatory shall be located in the same room as the required water closet.</p>		<p style="text-align: center;">New requirements</p>
	<p>[P] 2903.1.3 Location of fixtures and piping. Piping, fixtures or equipment shall not be located in such a manner as to interfere with the normal operation of windows, doors or other means of egress openings.</p>		<p style="text-align: center;">New requirements</p>
	<p>[P] 2903.1.4 Water closet compartment. Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door. 2. Toilet rooms located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment. 3. This provision is not applicable to toilet areas located within Group I-3 housing areas. 		<p style="text-align: center;">New requirements</p>

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	<p>[P] 2903.1.5 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall be not less than 30 inches (762 mm). The walls or partitions shall begin at a height not greater than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Urinal partitions shall not be required in a single-occupant or family/assisted-use toilet room with a lockable door. 2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions. 		<p>New requirements</p>
		<p style="text-align: center;">SECTION 2904 DRINKING FOUNTAINS</p> <p>2904.1 Approval. Drinking fountains shall conform to ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4, and water coolers shall conform to ASHRAE 18. Drinking fountains, water coolers and water dispensers shall conform to NSF 61, Section 9. Electrically operated, refrigerated drinking water coolers and water dispensers shall be listed and labeled in accordance with UL 399.</p>	<p>New Houston amendment for “drinking fountain” requirements, approved in Public Comment, changes based on requirements in 2021 IPC. See “Technical Memo #8 – Drinking Fountains” for changes to Ch. 29 of the IBC.</p>
		<p>2904.2 High and low drinking fountains. Where drinking fountains are provided on an exterior site, on a floor or within a secured area, the drinking fountains shall be in accordance with Sections 2904.2.1 and 2904.2.2.</p>	<p>New Houston amendment for “drinking fountain” requirements, approved in Public Comment, changes based on requirements in 2021 IPC. See “Technical Memo #8 – Drinking Fountains” for changes to Ch. 29 of the IBC.</p>
		<p>[BE] 2904.2.1 Minimum number. Not fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A single drinking fountain with two separate spouts that complies with the requirements for people who use a wheelchair and standing persons shall be permitted to be substituted for two separate drinking fountains. 	<p>New Houston amendment for “drinking fountain” requirements, approved in Public Comment, changes based on requirements in 2021 IPC. See “Technical Memo #8 – Drinking Fountains” for changes to Ch. 29 of the IBC.</p>

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		<p>2. Where drinking fountains are primarily for children's use, the drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor.</p>	
		<p>[BE] 2904.2.2 More than the minimum number. Where more than the minimum number of drinking fountains specified in Section 2904.2.1 is provided, 50 percent of the total number of drinking fountains provided shall comply with the requirements for persons who use a wheelchair and 50 percent of the total number of drinking fountains provided shall comply with the requirements for standing persons.</p> <p>Exceptions:</p> <p>1. Where 50 percent of the drinking fountains yields a fraction, 50 percent shall be permitted to be rounded up or down, provided that the total number of drinking fountains complying with this section equals 100 percent of the drinking fountains.</p> <p>2. Where drinking fountains are primarily for children's use, drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor.</p>	<p>New Houston amendment for "drinking fountain" requirements, approved in Public Comment, changes based on requirements in 2021 IPC. See "Technical Memo #8 – Drinking Fountains" for changes to Ch. 29 of the IBC.</p>
		<p>2904.3 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other <i>occupancies</i> where three or more drinking fountains are required, <i>water dispensers</i> shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.</p>	<p>New Houston amendment for "drinking fountain" requirements, approved in Public Comment, changes based on requirements in 2021 IPC. See "Technical Memo #8 – Drinking Fountains" for changes to Ch. 29 of the IBC.</p>
		<p>2904.4 Prohibited location. Drinking fountains, <i>water coolers</i> and <i>water dispensers</i> shall not be installed in <i>public</i> restrooms.</p>	<p>New Houston amendment for "drinking fountain" requirements, approved in Public Comment, changes based on requirements in 2021 IPC. See "Technical Memo #8 – Drinking Fountains" for changes to Ch. 29 of the IBC.</p>

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2015 Houston IBC – Chapter 30 Elevators and Conveying Systems	2021 IBC – Chapter 30 Elevators and Conveying Systems	2021 Houston Amendments	Code Analysis
<p>3001.1 Scope. This chapter governs the design, construction, installation, <i>alteration</i> and repair of elevators and conveying systems and their components.</p> <p><u>The building official shall have the authority to adopt and enforce rules and regulations to administer the provisions of this chapter. Such rules and regulations may include, but shall not be limited to, establishing qualifications and other requirements for approval and registration of an approved agency, providing frequency of inspections, and providing for formats of reports, inspection checklists, and other required documents.</u></p> <p><u>The building official shall issue such notices or orders as may be necessary to remove illegal or unsafe conditions, to secure necessary safeguards during construction, to enforce compliance with this chapter, to receive required applications, to issue permits and serial numbers, and to furnish the prescribed certificates.</u></p>	<p style="text-align: center;">SECTION 3001 GENERAL</p>	<p>3001.1 Scope. This chapter governs the design, construction, installation, <i>alteration</i> and repair of elevators and conveying systems and their components.</p> <p><u>The building official shall have the authority to adopt and enforce rules and regulations to administer the provisions of this chapter. Such rules and regulations may include, but shall not be limited to, establishing qualifications and other requirements for approval and registration of an approved agency, providing frequency of inspections, and providing for formats of reports, inspection checklists, and other required documents.</u></p> <p><u>The building official shall issue such notices or orders as may be necessary to remove illegal or unsafe conditions, to secure necessary safeguards during construction, to enforce compliance with this chapter, to receive required applications, to issue permits and serial numbers, and to furnish the prescribed certificates.</u></p>	<p>No changes to Houston amendment.</p>
<p>3001.2 Referenced standards. State/ASME/ANSI Standards. Except as otherwise provided for in this code, the design, construction, installation, <i>alteration</i>, repair and maintenance of elevators and conveying systems and their components shall conform to ASME A17.1/CSA B44, ASME A17.7/CSA B44.7, ASME A90.1, ASME B20.1, ANSI MH29.1, ALI ALCTV and ASCE 24 for construction in flood hazard areas established in Section 1612.3. chapter, all elevators, dumbwaiters, escalators, moving walks, inclined stairway chairlifts, wheelchair lifts and alterations to such conveyances and the installation thereof shall conform to the requirements of ASCE 24 for the purpose of regulations associated with this chapter, and the standards adopted in Chapter 754 of the Texas Health and Safety Code and the standards adopted thereunder by the Texas Commissioner of Licensing and Regulation. The term “Elevator Safety Code” as used in this code shall mean the foregoing state-adopted standards. Manlifts and alterations and installations thereof shall conform to the Safety Standards for Manlifts, American National Standards Institute, Publication No. ANSI A90.1, and the term “Manlift Safety Code” as used in this code shall mean the said publication. Personnel hoists and alterations and installations thereof shall conform to the Safety Requirements for Personnel Hoists, American National Standards Institute, Publication No. ANSI A10.4, and the term “Personnel Hoist Safety Code” as used in this code shall mean the said publication.</p> <p>Moved to 3001.3</p>	<p>3001.2 Emergency elevator communication systems for the deaf, hard of hearing and speech impaired. An emergency two-way communication system shall be provided. The system shall provide visible text and audible modes that meet all of the following requirements:</p> <ol style="list-style-type: none"> 1. Is a visual and text-based and a video-based 24/7 live interactive system. When operating in each mode, include a live interactive system that allows back and forth conversation between the elevator occupants and emergency personnel. 2. Is fully accessible by the deaf, hard of hearing and speech impaired, and shall include voice only options for hearing individuals. operational when the elevator is operational. 3. Has the ability to communicate with emergency personnel utilizing existing video conferencing technology, chat/text software or other approved technology. Allows elevator occupants to select the text-based or audible mode depending on their communication needs to interact with emergency personnel. 		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Previous Houston amendment moved to Section 3001.3.</p>
<p>3001.2.1 Adoption of state standards. Notwithstanding any provisions of this code that may be construed to the contrary, it is the express intent of this jurisdiction that this code be construed as establishing standards of inspection and</p>			<p>Previous Houston amendment moved to Section 3001.3.1.</p>

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<p><u>certification of elevators, escalators, and related equipment and standards for elevator inspection personnel that are no less stringent in any respect than those adopted in or pursuant to Chapter 754 of the Texas Health and Safety Code: ASME A17.1-2007, ASME A17.3-2002, ASME A90.1-2005, ASME B20.1-2015, ASME A18.1-2005, ASME A17.5-2014, ASME A17.4-2015, and QEI-1-2013, which state standards and any amendments hereafter made thereto are adopted and incorporated into this code by reference. To the extent of any inconsistency between the state standards and the other provisions of this code, the more stringent provisions shall apply.</u></p> <p>Moved to 3001.3.1</p>			
	<p>3001.2 3001.3 Referenced standards. Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to ASME A17.1/CSA B44, ASME A17.7/CSA B44.7, ASME A90.1, ASME B20.1, ANSI MH29.1, ALI ALCTV the applicable standard specified in Table 3001.3 and ASCE 24 for construction in flood hazard areas established in Section 1612.3. Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to the applicable standard specified in Table 3001.3 and ASCE 24 for construction in flood hazard areas established in Section 1612.3.</p>	<p>3001.3 Referenced standards State/ASME/ANSI standards. Except as otherwise provided for in this code, the design construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to the applicable standard specified in Table 3001.1 and ASCE 24 for construction in flood hazard areas established in Section 1612.3 chapter, all elevators, dumbwaiters, escalators, moving walks, inclined stairway chairlifts, wheelchair lifts and alterations to such conveyances and the installation thereof shall conform to the requirements of ASCE 24 for the purpose of regulations associated with this chapter, and the standards adopted in Chapter 754 of the <i>Texas Health and Safety Code</i> and the standards adopted thereunder by the Texas Commissioner of Licensing and Regulation. The term "<i>Elevator Safety Code</i>" as used in this code shall mean the foregoing state-adopted standards. Manlifts and alterations and installations thereof shall conform to the <i>Safety Standards for Manlifts, American National Standards Institute, Publication No. ANSI A90.1</i>, and the term "<i>Manlift Safety Code</i>" as used in this code shall mean the said publication. Personnel hoists and alterations and installations thereof shall conform to the <i>Safety Requirements for Personnel Hoists, American National Standards Institute, Publication No. ANSI A10.4</i>, and the term "<i>Personnel Hoist Safety Code</i>" as used in this code shall mean the said publication.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No changes to Houston amendment.</p>
		<p>3001.3.1 Adoption of state standards. Notwithstanding any provisions of this code that may be construed to the contrary, it is the express intent of this <i>jurisdiction</i> that this code be construed as establishing standards of inspection and certification of elevators, escalators, and related equipment and standards for elevator inspection personnel that are no less stringent in any respect than those adopted in or pursuant to Chapter 754 of the <i>Texas Health and Safety Code</i>, including but not limited to: ASME A17.1-2007, ASME A17.3-2002, ASME A90.1-2005, ASME B20.1-2021, ASME A18.1-2005, ASME A17.5-2014, ASME A17.4-2021, and QEI-1-2013, which state standards and any amendments hereafter made thereto are adopted and incorporated into this code by reference. To</p>	<p>No changes to Houston amendment.</p>

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		<u>the extent of any inconsistency between the state standards and the other provisions of this code, the more stringent provisions shall prevail.</u>	
	TABLE 3001.3 ELEVATORS AND CONVEYING SYSTEMS AND COMPONENTS		
3001.4 Change in use. A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall not be made without the approval of the building official. Said approval shall be granted only after it is demonstrated that the installation conforms to the requirements of the Elevator Safety Code comply with Section 8.7 of ASME A17.1/CSA B44. Moved to 3001.5	3001.3-3001.4 Accessibility. Passenger elevators required to be accessible or to serve as part of an accessible means of egress shall comply with Sections 1009 and 1110.8.		Previous Houston amendment moved to Section 3001.5.
3001.5 Definitions. The following terms, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2: ASME CODE. APPROVED AGENCY. AUTHORIZED COMPANY. AUTHORIZED INSPECTOR. CERTIFYING ORGANIZATION. ESCALATOR SKIRT DEFLECTOR DEVICE. INSTALLATION DATE. MANLIFT. PERSONNEL HOIST. WHEELCHAIR LIFT.	3001.4-3001.5 Change in use. A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with Section 8.7 of ASME A17.1/CSA B44.	3001.5 Change in use. A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall not be made without the approval of the building official. Said approval shall be granted only after it is demonstrated that the installation conforms to the requirements of the Elevator Safety Code comply with Section 8.7 of ASME A17.1/CSA B44.	No change to Houston amendment.
		3001.6 Definitions. The following terms, for the purposes of this appendix, shall have the meaning ascribed here or in Chapter 2: ASME CODE. APPROVED AGENCY. AUTHORIZED COMPANY. AUTHORIZED INSPECTOR. CERTIFYING ORGANIZATION. ESCALATOR SKIRT DEFLECTOR DEVICE. MANLIFT.	No change to Houston amendment; relocated from Section 3001.5.

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		<u>PERSONNEL HOIST.</u> <u>WHEELCHAIR LIFT.</u>	
	SECTION 3002 HOISTWAY ENCLOSURES	SECTION 3002 HOISTWAY ENCLOSURES	Edits made to clarify code, no major changes to code requirements.
	3002.1 Hoistway enclosure protection. Elevator, dumbwaiter and other hoistway enclosures shall be shaft enclosures complying with Section 712 and 713.		
3002.3 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 <i>exit stairways</i> and not to use the elevators in case of fire. The sign shall read: <u>IN CASE OF FIRE EMERGENCY, DO NOT USE ELEVATOR ELEVATORS ARE OUT OF SERVICE.</u> USE EXIT STAIRS. The lettering shall be at least ½ inch 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 <i>accessible 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.		3002.3 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 <i>exit stairways</i> and not to use the elevators in case of fire. The sign shall read: IN CASE OF FIRE EMERGENCY, DO NOT USE ELEVATOR ELEVATORS ARE OUT OF SERVICE. USE EXIT STAIRS. The lettering shall be at least ½ inch 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 <i>accessible 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.	No change to Houston amendment.
3002.9 Plumbing and mechanical systems. Plumbing and mechanical systems shall not be located in an elevator hoistway enclosure. Exceptions: 1. Floor drains, sumps and sump pumps shall be permitted at the base of the hoistway enclosure provided they are indirectly connected to the plumbing system. 2. All elevator pits shall be provided with a sump pump as per ASME 17.1. The sump pump shall be discharged to the sanitary sewer.	3002.9 Plumbing and mechanical systems. Plumbing and mechanical systems shall not be located in an elevator hoistway enclosure. Exception: Floor drains, sumps and sump pumps shall be permitted at the base of the hoistway enclosure provided that they are indirectly connected to the plumbing system.	3002.9 Plumbing and mechanical systems. Plumbing and mechanical systems shall not be located in an elevator hoistway enclosure. Exceptions: 1. Floor drains, sumps and sump pumps shall be permitted at the base of the hoistway enclosure provided they are indirectly connected to the plumbing system. 2. All elevator pits shall be provided with a sump pump as per ASME A17.1. The sump pump shall be discharged to the sanitary sewer.	Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.
	SECTION 3003 EMERGENCY OPERATIONS	SECTION 3003 EMERGENCY OPERATION	
	[F] 3003.1.3 Two or more elevators. Where two or more elevators are controlled by a common operating system, all elevators shall automatically transfer to standby power within 60 seconds after failure of normal power where the standby power source is of sufficient capacity to operate all		Edits made to clarify code, no major changes to code requirements.

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	<p>elevators at the same time. Where the standby power source is not of sufficient capacity to operate all elevators at the same time, all elevators shall transfer to standby power in sequence, return to the designated landing and disconnect from the standby power source. After all elevators have been returned to the designated level, at least not less than one elevator shall remain operable from the standby power source.</p>		
<p>[F] 3003.3 Standardized firefighter's service elevator keys. All elevators shall be equipped to operate with a standardized firefighter's service elevator key in accordance with the International Fire Code.</p>	<p>No Change</p>	<p>[F] 3003.3 Standardized fire fighter's service elevator keys. All elevators shall be equipped to operate with a standardized fire fighter's service elevator key in accordance with the International Fire Code.</p>	<p>No change to Houston amendment.</p>
<p>3003.4 Emergency Hoistway Water Sensor. Each elevator hoistway and/or each connected bank of elevator hoistways within a structure located within the 100-year and 500-year floodplain, and elevators located outside the floodplain where elevator cabs travel to floor levels below grade level, shall include a water sensor installed in the hoistway below the landing of the lowest floor served by the elevator. The water sensor shall be installed to automatically override and limit the elevator controls to prevent the elevator and elevator equipment from descending into flooded areas and limit the lowest level of elevator cab travel to a designated floor approved by the fire code official until the flooding has receded. The activation of the automatic water sensor override shall activate visual or audio notification to the building's management. Return to normal operation of the elevator control systems shall require a manual reset by a Texas licensed elevator contractor. This code provision shall be retroactive and applicable to all existing and annexed structures having elevators.</p>	<p>N/a</p>	<p>3003.4 Emergency Hoistway Water Sensor. Each elevator hoistway and/or each connected bank of elevator hoistways within a structure located within the 100-year and 500-year floodplain, and elevators located outside the floodplain where elevator cabs travel to floor levels below grade level, shall include a water sensor installed in the hoistway below the landing of the lowest floor served by the elevator.</p> <ol style="list-style-type: none"> The water sensor shall be installed to automatically override and limit the elevator controls to prevent the elevator(s) and elevator equipment, including counterweights where provided, from descending into flooded areas and cause automatic removal of the elevator from service at a designated floor level approved by the fire code official when the hoistway is flooded and where the elevator shall remain until the flooding has receded and the elevator(s) is manually reset in compliance with 3003.4 item number 3. Activation of the automatic water sensor override shall activate a visual or audible notification to the building's management. When an off-site monitoring service is utilized, they shall immediately notify building management of activation of the override system. Return to normal automatic operation of the elevator control systems shall require a means of manual reset. The means of manual reset shall be accessible only by a Texas licensed elevator contractor. The provisions of Section 3003.4 item number 1 through 4 shall be retroactive and applicable to all existing and annexed structures having elevators that do not already comply with the exception found in Section 3003.4.1. 	<p>Minor changes to Houston amendment that help clarify the requirements of water sensors and their functions.</p>
<p>3003.4.1 Compliance timeline for existing and annexed structures. On or before December 31, 2026, or within five years after the date of annexation of the building into the jurisdiction after April 1, 2022⁵, each elevator hoistway and/or bank of connected elevator hoistways shall be equipped with</p>	<p>N/a</p>	<p>3003.4.1 Compliance timeline for existing and annexed structures. On or before December 31, 2026, or within five years after the date of annexation of a building into the jurisdiction after April 1, 2022, each elevator hoistway and/or bank of connected elevator hoistways shall be equipped with</p>	<p>Minor change to amendment.</p>

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<p><u>an emergency hoistway water sensor installed in accordance with Section 3003.4.</u></p> <p>Exception: <u>This section shall not apply to existing elevator systems containing water sensors installed in the hoistway below the landing of the lowest floor level served that automatically remove the elevator from service to a designated floor level approved by the fire code official when the hoistway is flooded. These specific systems shall also require a manual reset to return to normal operation as specified by Section 3003.4 of this code.</u></p>		<p><u>an emergency hoistway water sensor system installed in accordance with Section 3003.4.</u></p> <p>Exception: <u>This section shall not apply to existing elevator systems containing water sensors installed in the hoistway below the landing of the lowest floor level served that automatically remove the elevator from service to a designated floor level approved by the fire code official when the hoistway is flooded. These specific systems shall also require a manual reset to return to normal operation as specified by Section 3003.4 item number 3 of this code.</u></p>	
<p>3004.1 General. <u>Elevators, escalators, dumbwaiters, manlifts, moving walks, conveyors, inclined stairway chairlifts, wheelchair lifts, vertical reciprocating conveyors, personnel hoists and material hoists shall comply with the provisions of Section 3004.2 through 3004.4.</u></p>	<p style="text-align: center;">SECTION 3004 CONVEYING SYSTEMS</p> <p>No change</p>	<p style="text-align: center;">SECTION 3004 CONVEYING SYSTEMS</p> <p>3004.1 General. <u>Elevators, escalators, dumbwaiters, manlifts, moving walks, conveyors, inclined stairway chairlifts, wheelchair lifts, vertical reciprocating conveyors, personnel hoists and material hoists shall comply with the provisions of Sections 3004.2 through 3004.4.</u></p>	<p>No change to Houston amendment.</p>
	<p>3004.2.2 Escalators. Where provided in below-grade transportation stations, escalators shall have a clear width of not less than 32 inches (815 mm).</p> <p>Exception: The clear width is not required in existing facilities undergoing alterations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>3004.3 Conveyors Vertical reciprocating conveyors. <u>Vertical reciprocating conveyors shall be installed to comply with ASME B20.1. An installation permit is required before the installation of any vertical reciprocating conveyor. The fees shall be as required for elevators (see the city fee schedule for fees). A one-time final inspection report must be submitted to the building official by an approved inspection agency before the vertical reciprocating conveyor is put into operation. The building owner or owner's representative shall be responsible for the safe operation and maintenance of the vertical reciprocating conveyor. Conveyors and conveying systems shall comply with ASME B20.1.</u></p>	<p>No change</p>	<p>3004.3 Conveyors Vertical reciprocating conveyors. <u>Vertical reciprocating conveyors shall be installed to comply with ASME B20.1. An installation permit is required before the installation of any vertical reciprocating conveyor. The fees shall be as required for elevators (see Section 118 and the city fee schedule for fees). A one-time final inspection report must be submitted to the building official by an approved inspection agency before the vertical reciprocating conveyor is put into operation. The building owner or owner's representative shall be responsible for the safe operation and maintenance of the vertical reciprocating conveyor. Conveyors and conveying systems shall comply with ASME B20.1.</u></p>	<p>No change to Houston amendment.</p>
<p>3004.3.1 Enclosure. Conveyors and related equipment connecting successive floors or levels shall be enclosed with shaft enclosures complying with Section 713.</p>	<p>No change</p>	<p>3004.3.1 Enclosure. <u>Conveyors and related equipment connecting successive floors or levels shall be enclosed with shaft enclosures complying with Section 713.</u></p>	<p>No change to Houston amendment.</p>
<p>3004.3.2 Conveyor safeties. Power operated conveyors, belts and other material moving devices shall be equipped with automatic limit switches that will shut off the power in an emergency and automatically stop all operation of the device.</p>	<p>No change</p>	<p>3004.3.2 Conveyor safeties. <u>Power operated conveyors, belts and other material moving devices shall be equipped with automatic limit switches that will shut off the power in an emergency and automatically stop all operation of the device.</u></p>	<p>No change to Houston amendment.</p>

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<p>3004.5 Escalator skirt deflector devices.</p> <p>3004.5.1 Purpose. The purpose of this section is to improve the overall safety of escalators located within the jurisdiction by establishing provisions for the installation of escalator skirt deflector devices on new and existing escalators.</p>	<p>N/a</p>	<p>3004.5 Escalator skirt deflector devices.</p> <p>3004.5.1 Purpose. The purpose of this section is to improve the overall safety of escalators located within the <i>jurisdiction</i> by establishing provisions for the installation of escalator skirt deflector devices on new and existing escalators.</p>	<p>No change to Houston amendment.</p>
<p>3004.5.2 Compliance program. All escalators installed on or after October 21, 2001, shall be equipped with escalator skirt deflector devices or equivalent protection in accordance with ASME A17.1 Safety Code for Elevators and Escalators. The owners of existing buildings in which one or more escalators were installed prior to October 21, 2001, shall have skirt deflector devices or equivalent protective equipment installed on all escalators no later than January 1, 2011.</p>	<p>N/a</p>	<p>3004.5.2 Compliance program. All escalators installed on or after October 21, 2001, shall be equipped with escalator skirt deflector devices or equivalent protection in accordance with the ASME A17.1 Safety Code for Elevators and Escalators. The owners of existing buildings in which one or more escalators were installed prior to October 21, 2001, shall have skirt deflector devices or equivalent protective equipment installed on all escalators no later than January 1, 2011.</p>	<p>No change to Houston amendment.</p>
<p>3004.5.3 Approval. The <i>building official</i> shall have the authority to adopt and enforce rules and regulations to administer approval of the design, construction, configuration and installation of skirt deflector devices for use in this jurisdiction. The <i>building official</i> shall promulgate such rules and regulations.</p>	<p>N/a</p>	<p>3004.5.3 Approval. The <i>building official</i> shall have the authority to adopt and enforce rules and regulations to administer approval of the design, construction, configuration and installation of skirt deflector devices for use in this <i>jurisdiction</i>. The <i>building official</i> shall promulgate such rules and regulations.</p>	<p>No change to Houston amendment.</p>
<p>3004.5.4 Technical requirements. Escalator skirt deflector devices shall be installed in accordance with the deflector device manufacturer's recommended installation instructions and the ASME A17.1 Safety Code for Elevators and Escalators.</p>	<p>N/a</p>	<p>3004.5.4 Technical requirements. Escalator skirt deflector devices shall be installed in accordance with the deflector device manufacturer's recommended installation instructions and the ASME A17.1 Safety Code for Elevators and Escalators.</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 3005 MACHINE ROOMS</p>	<p style="text-align: center;">SECTION 3005 MACHINE ROOMS</p>	
<p>3005.2 Venting. Elevator machine rooms, machinery spaces that contain the driving machine, and control rooms or spaces that contain the operation or motion controller for elevator operation shall be provided with an independent <i>ventilation</i> or air-conditioning system compliant with the provisions of the <i>Construction Code</i> to protect against the overheating of the electrical equipment. The system shall be capable of maintaining temperatures within the range established for the elevator equipment.</p>	<p>No change</p>	<p>3005.2 Venting. Elevator machine rooms, machinery spaces that contain the driving machine, and control rooms or spaces that contain the operation or motion controller for elevator operation shall be provided with an independent <i>ventilation</i> or air-conditioning system compliant with the provisions of the <i>Construction Code</i> to protect against the overheating of the electrical equipment. The system shall be capable of maintaining temperatures within the range established for the elevator equipment.</p>	<p>No change to Houston amendment.</p>
	<p>3005.4 Machine rooms, control rooms, machinery spaces, and control spaces. Elevator machine rooms, control rooms, control spaces and machinery spaces outside of but attached to a hoistway that have openings into the hoistway The following rooms and spaces shall be enclosed with <i>fire barriers</i> constructed in accordance with Section 707 or <i>horizontal assemblies</i> constructed in accordance with Section 711, or both:</p> <p>1. Machine rooms</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Control rooms</p> <p>3. Control spaces</p> <p>4. Machinery spaces outside of the hoistway enclosure</p> <p>The <i>fire-resistance rating</i> shall be not less than the required rating of the hoistway enclosure served by the machinery. Openings in the <i>fire barriers</i> shall be protected with assemblies having a <i>fire protection rating</i> not less than that required for the hoistway enclosure doors.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. For other than fire service access elevators and occupant evacuation elevators, where machine rooms, machinery spaces, control rooms and control spaces do not abut and do not have no openings to the hoistway enclosure they serve, the <i>fire barriers</i> constructed in accordance with Section 707 or <i>horizontal assemblies</i> constructed in accordance with Section 711, or both, shall be permitted to be reduced to a 1-hour <i>fire-resistance rating</i>. 2. For other than fire service access elevators and occupant evacuation elevators, in buildings four <i>stories</i> or less above <i>grade plane</i> where machine room, machinery spaces, control rooms and control spaces do not abut and do not have no openings to the hoistway enclosure they serve, the machine room, machinery spaces, control rooms and control spaces are not required to be fire-resistance rated. 		
	<p>3005.5 Shunt trip. Where elevator hoistways, elevator machine rooms, control rooms and control spaces containing elevator control equipment are protected with automatic sprinklers, a means installed in accordance with Section 21.4 of NFPA 72 shall be provided to disconnect automatically disconnect the main line power supply to the affected elevator prior to the application of water. This means shall not be self-resetting. The activation of automatic sprinklers outside the hoistway, machine room, machinery space, control room or control space shall not disconnect the main line power supply.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p><u>3005.5.1 Delay. Upon activation of the heat detector used for elevator power shutdown, there shall be a delay in the activation of the power shunt trip. This delay shall be the time that it takes the elevator cab to travel from the top of the hoistway to the lowest recall level.</u></p>	<p>N/a</p>	<p><u>3005.5.1 Delay. Upon activation of the heat detector used for elevator power shutdown, there shall be a delay in the activation of the power shunt trip. This delay shall be the time that it takes the elevator cab to travel from the top of the hoistway to the lowest recall level.</u></p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 3006</p> <p style="text-align: center;">ELEVATOR LOBBIES AND HOISTWAY OPENING PROTECTION</p>		

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	<p>3006.2 Hoistway opening protection required. Elevator hoistway door openings shall be protected in accordance with Section 3006.3 where an elevator hoistway connects more than three stories, is required to be enclosed within a shaft enclosure in accordance with Section 712.1.1 and any of the following conditions apply:</p> <ol style="list-style-type: none"> 1. The building is not protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. 2. The building contains a Group I-1, Condition 2 occupancy. 3. The building contains a Group I-2 occupancy. 4. The building contains a Group I-3 occupancy. 5. The building is a high rise and the elevator hoistway is more than 75 feet (22 860 mm) in height. The height of the hoistway shall be measured from the lowest floor to the highest floor of the floors served by the hoistway. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Protection of elevator hoistway door openings is not required where the elevator serves only open parking garages in accordance with Section 406.5. 2. Protection of elevator hoistway door openings is not required at the level(s) of exit discharge, provided that the level(s) of exit discharge is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1. 3. Enclosed elevator lobbies and protection of elevator hoistway door openings are not required on levels where the elevator hoistway opens to the exterior. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3006.2.1 Rated corridors. Where corridors are required to be fire-resistance rated in accordance with Section 1020.1, elevator hoistway openings shall be protected in accordance with Section 3006.3.</p>		<p>New requirement</p>
	<p>3006.4 Means of egress. Elevator lobbies shall be provided with at least not less than one means of egress complying with Chapter 10 and other provisions in this code. Egress through an enclosed elevator lobby shall be permitted in accordance with Item 1 of Section 1016.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 3007</p> <p style="text-align: center;">FIRE SERVICE ACCESS ELEVATOR</p> <p>3007.1 General. Where required by Section 403.6.1, every floor above and including the lowest level of fire department vehicle access of the building shall be served by fire service access</p>		<p>New exceptions</p>

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	<p>elevators complying with Sections 3007.1 through 3007.9. Except as modified in this section, fire service access elevators shall be installed in accordance with this chapter and ASME A17.1/CSA B44.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Elevators that only service an open or enclosed parking garage and the lobby of the building shall not be required to serve as fire service access elevators. 2. The elevator shall not be required to serve the top floor of a building where that floor is utilized only for equipment for building systems. 		
	<p>3007.3 Water protection. An approved method to prevent water from infiltrating into the hoistway approved method to prevent water from infiltrating into the hoistway enclosure Water from the operation of the an automatic sprinkler system outside the enclosed fire service access elevator lobby shall be provided prevented from infiltrating into the hoistway enclosure in accordance with an approved method.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3007.6 Fire service access elevator lobby. The fire service access elevator shall open into an enclosed fire service access elevator lobby in accordance with Sections 3007.6.1 through 3007.6.5. Egress is permitted through the enclosed elevator lobby in accordance with Item 1 of Section 1016.2.</p> <p>Exception: Where a fire service access elevator has two entrances onto a floor, the second entrance shall be permitted to open into an elevator lobby protected in accordance with Section 3006.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3007.6.1 Access to interior exit stairway or ramp. The enclosed fire service access elevator lobby shall have direct access from the enclosed elevator lobby to an enclosure for an interior exit stairway or ramp.</p> <p>Exception: Access to an interior exit stairway or ramp shall be permitted to be through a protected path of travel that has a level of fire protection not less than the elevator lobby enclosure. The protected path shall be separated from the enclosed elevator lobby through an opening protected by a smoke and draft control assembly in accordance Section 716.5.3 716.2.2.1.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3007.6.3 Lobby doorways. Other than doors to the hoistway, elevator control room or elevator control space, each doorway to an enclosed fire service access elevator lobby shall be provided with a 3/4-hour fire door assembly complying with Section 716.5. The fire door assembly shall comply with the smoke and draft control door assembly</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>requirements of Section 716.5.3.12.2.1.1 and be tested in accordance with the UL 1784 test conducted without the an artificial bottom seal.</p>		
	<p>3007.8.1 Protection of wiring or cables. Wires or cables that are located outside of the elevator hoistway and machine room and that provide normal or standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire-detecting systems to fire service access elevators shall be protected by construction having a fire-resistance rating of not less than 2 hours, shall be a circuit integrity cable having a fire-resistance rating of not less than 2 hours or shall be protected by a listed electrical protective system having a fire-resistance rating of not less than 2 hours. using one of the following methods:</p> <ol style="list-style-type: none"> 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. 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. 3. Construction having a fire-resistance rating of not less than 2 hours. <p>Exception: Wiring and cables to control signals are not required to be protected provided that wiring and cables do not serve Phase II emergency in-car operations.</p>		<p>New requirements</p>
	<p>3007.9 Standpipe hose connection. A Class I standpipe hose connection in accordance with Section 905 shall be provided in the interior exit stairway and ramp having direct access from the enclosed fire service access elevator lobby.</p>		
	<p>3007.9.1 Access. The exit enclosure containing the standpipe shall have access to the floor without passing through the enclosed fire service access elevator lobby.</p>		
	<p style="text-align: center;">SECTION 3008</p> <p style="text-align: center;">OCCUPANT EVACUATION ELEVATORS</p> <p>3008.1 General. Where Elevators are to be used for occupant self-evacuation during fires, all passenger elevators for general public use shall comply with Sections 3008.1 through 3008.10. Where</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>other elevators are used for occupant self-evacuation, those elevators shall comply with these sections.</p>		
	<p>3008.1.1 Number of occupant evacuation elevators. The number of elevators available for occupant evacuation shall be determined based on an egress analysis that addresses one of the following scenarios:</p> <ol style="list-style-type: none"> 1. Full-building evacuation where the analysis demonstrates that the number of elevators provided for evacuation results in an evacuation time less than 1 hour. 2. Evacuation of the five consecutive floors with the highest cumulative occupant load where the analysis demonstrates that the number of elevators provided for evacuation results in an evacuation time less than 15 minutes. <p>Not less than one elevator in each bank shall be designated for occupant evacuation. Not less than two shall be provided in each occupant evacuation elevator lobby where more than one elevator opens into the lobby. Signage shall be provided to denote which elevators are available for occupant evacuation.</p>		<p>New requirements</p>
	<p>3008.1.1 3008.1.2 Additional exit stairway.</p>		
	<p>3008.1.2 3008.1.3 Fire safety and evacuation plan.</p>		
	<p>3008.1.3 3008.1.4 Operation.</p>		
	<p>3008.3 Water protection. An approved method to prevent water from infiltrating into the hoistway enclosure Water from the operation of the an automatic sprinkler system outside the enclosed occupant evacuation elevator lobby shall be provided prevented from infiltrating into the hoist way enclosure in accordance with an approved method.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3008.6 Occupant evacuation elevator lobby. Occupant evacuation elevators shall open into an enclosed elevator lobby in accordance with Sections 3008.6.1 through 3008.6.6. Egress is</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	permitted through the elevator lobby in accordance with Item 1 of Section 1016.2.		
	<p>3008.6.1 Access to interior exit stairway or ramp. The occupant evacuation elevator lobby shall have direct access from the enclosed elevator lobby to an interior exit stairway or ramp.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Access to an interior exit stairway or ramp shall be permitted to be through a protected path of travel that has a level of fire protection not less than the elevator lobby enclosure. The protected path shall be separated from the enclosed elevator lobby through an opening protected by a smoke and draft control assembly in accordance Section 716.5.32.2.1. 2. Elevators that only service an open parking garage and the lobby of the building shall not be required to provide direct access. 		Edits made to clarify code, no major changes to code requirements.
	<p>3008.6.3 Lobby doorways. Other than the doors to the hoistway, elevator machine rooms, machinery spaces, control rooms and control spaces within the lobby enclosure smoke barrier, each doorway to an occupant evacuation elevator lobby shall be provided with a 3/4-hour fire door assembly complying with Section 716.5. The fire door assembly shall comply with the smoke and draft control assembly requirements of Section 716.5.3.42.2.1.1 and be tested in accordance with the UL 1784 test conducted without the an artificial bottom seal.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>3008.6.3.1 Vision panel. A vision panel shall be installed in each fire door assembly protecting the lobby doorway. The vision panel shall consist of fire -protection-rated glazing, shall comply with the requirements of Section 716 and shall be located to furnish clear vision of the occupant evacuation elevator lobby.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>3008.6.4 Lobby size. Each occupant evacuation elevator lobby shall have minimum floor area as follows:</p> <ol style="list-style-type: none"> The occupant evacuation elevator lobby floor area shall accommodate, at 3 square feet (0.28 m²) per person, not less than 25 percent of the <i>occupant load</i> of the floor area served by the lobby. 		Edits made to clarify code, no major changes to code requirements.

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	<p>2. The occupant evacuation elevator lobby floor area shall accommodate one wheelchair space 52 inches (760 mm by 420 1320 mm) for each 50 persons, or portion thereof, of the <i>occupant load</i> of the floor area served by the lobby.</p> <p>Exception: The size of lobbies serving multiple banks of elevators shall have the minimum floor area <i>approved</i> on an individual basis and shall be consistent with the building's fire safety and evacuation plan.</p>		
	<p>3008.8.1 Determination of standby power load. Standby power loads shall be based on the determination of the number of occupant evacuation elevators in Section 3008.1.1.</p>		
	<p>3008.8.1 3008.8.2 Protection of wiring or cables. Wires or cables that are located outside of the elevator hoistway, machine room, control room and control space and that provide normal or standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire-detecting systems to occupant evacuation elevators shall be protected by a listed electrical circuit protective system having a fire-resistance rating of not less than 2 hours using one of the following methods:</p> <ol style="list-style-type: none"> 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. 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. 3. Construction having a fire-resistance rating of not less than 2 hours. <p>Exception: Wiring and cables to control signals are not required to be protected provided that wiring and cables do not serve Phase II emergency in-car operation.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3008.10 Hazardous material areas. No Building areas shall not contain hazardous materials exceeding the maximum allowable quantities per control area as addressed in Section 414.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p style="text-align: center;">SECTION 3009 ELEVATORS FOR HIGH RISE BUILDINGS</p> <p>3009.1 Elevators. Elevators and elevator lobbies for high rise buildings shall comply with the provisions in this section and the other provisions of this chapter.</p> <p>1. A bank of elevators is a group of elevators or a single elevator controlled by a common operating system; that is, all those</p>	<p style="text-align: center;">N/a</p>	<p style="text-align: center;">SECTION 3009 ELEVATORS FOR HIGH RISE BUILDINGS</p> <p>3009.1 Elevators. Elevators and elevator lobbies for high rise buildings shall comply with the provisions of section 403 and this chapter.</p> <p>1. A bank of elevators is a group of elevators or a single elevator controlled by a common operating system; that is,</p>	<p>No change to Houston amendment.</p>

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elevators that respond to a single call button constitute a bank of elevators. There is no limit on the number of cars that may be in a bank or group, but there may not be more than four cars within a common hoistway. Hoistways shall be separated by a two-hour fire resistive separation.

2. Each elevator lobby shall be provided with at least two approved smoke detectors with listings from a 3rd party testing laboratory that are located on the lobby ceiling, one positioned at each opening into the lobby other than elevator door entrances, or at least one smoke detector with alarm verification sequence per NFPA 72 with listings from a 3rd party testing laboratory. When two detectors, each on a separate initiating circuit, or one alarm sequence verification detector on the same initiating circuit, are activated, elevator cars shall return to a floor providing direct egress from the building (or to a transfer floor if the cars do not serve an egress floor), and the elevator doors shall open to permit egress of passengers. In the event of a failure of normal electrical service, the standby power system shall have sufficient capacity to return all elevators to the floor of egress on an automatic or manual selective program of one elevator in each bank of elevators simultaneously. An alarm system shall be provided to summon assistance for instances when the return system is manually activated.

NOTE: Banks of elevators not deactivated by the products of combustion detectors shall remain in normal operation. In the event of a fire on the lowest terminus floor, the elevator call shall stop on a floor above the floor of fire involvement.

3. Elevator hoistways shall not be vented through an elevator machine room.

4. An elevator lobby is defined as that portion of a corridor or space within 10 feet of an elevator entrance door. Buildings having banks of elevators serving more than two floors that terminate on an upper floor (sky lobbies) and do not return to a floor level providing direct egress from the building shall have elevator lobbies with a corridor directly connected to an exit stairway. The sky lobbies and connecting corridors shall be separated from the remainder of the building by a two-hour fire resistive occupancy separation.

5. When elevators are returned to the floor of egress due to the activation of the fire detection system, the elevator doors shall open for egress and the elevator shall be shut down. Door open buttons in each car shall remain active. Under this circumstance, facilities shall be provided to permit the operation of any one elevator in an elevator bank by the fire department through the use of a "firefighter's service key." The selected elevator shall be manually operated.

6. Elevators serving below the floodplain for the building shall have a water sensor installed in the hoistway below the lowest landing that the elevator serves to prevent the elevator from

all those elevators that respond to a single call button constitute a bank of elevators. There is no limit on the number of cars that may be in a bank or group, but there may not be more than four cars within a common hoistway. Hoistways shall be separated by a two-hour fire resistive separation.

2. Each elevator lobby shall be provided with at least two smoke detectors with listings from a 3rd party testing laboratory and that are located on the lobby ceiling, one positioned at each opening into the lobby other than the elevator door entrances, or at least one smoke detector with alarm verification sequence per NFPA 72 with listings from a 3rd party testing laboratory. When two detectors, each on a separate initiating circuit, or one alarm sequence verification detector on the same initiating circuit, are activated, elevator cars shall return to a floor providing direct egress from the building (or to a transfer floor if the cars do not serve an egress floor), and the elevator doors shall open to permit egress of passengers. In the event of a failure of normal electrical service, the standby power system shall have sufficient capacity to return all elevators to the floor of egress on an automatic or manual selective program of one elevator in each bank of elevators simultaneously. An alarm system shall be provided to summon assistance, for instances when the return system is manually activated.

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<p><u>descending into a flooded area.</u></p>		<p><u>service key." The selected elevator shall be manually operated.</u></p> <p>6. <u>Elevators serving below the floodplain for the building shall have a water sensor installed in the hoistway below the lowest landing that the elevator serves to prevent the elevator from descending into a flooded area.</u></p>	
<p align="center">SECTION 3010 PERMITS, CERTIFICATES OF INSPECTION</p> <p>3010.1 Construction permits.</p> <p>3010.1.1 General. A separate permit shall be required before erecting or constructing any new elevator, dumbwaiter, escalator, manlift, moving walk, vertical reciprocating conveyor, inclined stairway chairlift, personnel hoist or wheelchair lift, or relocating such existing equipment. The installer of the equipment shall submit an application for such permit accompanied by plans and specifications in accordance with section 107 of this code, in such form as the <i>building official</i> may prescribe. When such plans and specifications indicate compliance with this chapter and other provisions of this code, and the fees specified in Section 118 and in the city fee schedule have been paid, the <i>building official</i> shall issue a construction permit. The plans and specifications shall be stamped "Approved" when the <i>building official</i> issues a construction permit where plans are required. Such approved plans and specifications shall not be changed, modified or altered without authorization from the <i>building official</i>, and all work shall be done in accordance with the approved plans.</p>	<p align="center">N/a</p>	<p align="center">SECTION 3010 PERMITS, CERTIFICATES OF INSPECTION</p> <p>3010.1 Construction permits.</p> <p>3010.1.1 General. Contractors shall obtain a separate permit before erecting or constructing any new elevator, dumbwaiter, escalator, manlift, moving walk, personnel hoist, vertical reciprocating conveyor, inclined stairway chairlift, personnel hoist or wheelchair lift, or before relocating such existing equipment. The installer of the equipment shall submit an application for such permit accompanied by plans and specifications in accordance with section 107 of this code, in such form as the <i>building official</i> may prescribe. When such plans and specifications indicate compliance with this chapter and other provisions of this code, and the fees specified in Section 118 and the city fee schedule have been paid, the <i>building official</i> shall issue a construction permit. The plans and specifications shall be stamped "Approved" when the <i>building official</i> issues a construction permit where plans are required. Such approved plans and specifications shall not be changed, modified or altered without authorization from the <i>building official</i>, and all work shall be done in accordance with the approved plans.</p>	<p align="center">No change to Houston amendment.</p>
<p>3010.1.2 Notification of completion. It shall be the duty of each person installing, relocating or altering such conveyances to notify the <i>building official</i> in writing, at least seven days before completion of the work, and to subject the new, moved or altered portions of the equipment to the acceptance test required by the Elevator Safety Code, Manlift Safety Code or Personnel Hoist Safety Code, as applicable, to show that such equipment meets the requirements specified before placing the equipment into service.</p>	<p align="center">N/a</p>	<p>3010.1.2 Notification of completion. It shall be the duty of each person installing, relocating or altering such conveyances to notify the <i>building official</i> in writing, at least seven days before completion of the work, and to subject the new, moved or altered portions of the equipment to the acceptance test required by the <i>Elevator Safety Code, Manlift Safety Code or Personnel Hoist Safety Code</i>, as applicable, to show that such equipment meets the requirements specified before placing the equipment into service.</p>	<p align="center">No change to Houston amendment.</p>
<p>3010.1.3 Acceptance inspections. All acceptance inspections shall be performed by the <i>building official</i> or an approved agency.</p>	<p align="center">N/a</p>	<p>3010.1.3 Acceptance inspections. All acceptance inspections shall be performed by the <i>building official</i> or an approved agency.</p>	<p align="center">No change to Houston amendment.</p>
<p>3010.2 Operating permits.</p> <p>3010.2.1 General. An operating permit shall be issued by the <i>building official</i> for an elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift or wheelchair lift within 10 days following the receipt of an inspection report indicating</p>	<p align="center">N/a</p>	<p>3010.2 Operating permits.</p> <p>3010.2.1 General. An operating permit shall be issued by the <i>building official</i> for an elevator, dumbwaiter, escalator, manlift, moving walk, personnel hoist, inclined stairway chairlift or wheelchair lift within 10 days following the receipt of an</p>	<p align="center">No change to Houston amendment.</p>

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<p><u>compliance with this chapter and applicable safety codes and the payment of the fee provided for in Section 18 and the city fee schedule.</u></p> <p><u>No owner or lessee of an elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist, or wheelchair lift shall suffer or permit the same to be operated by any person except under a current and valid operating permit or limited permit that has been issued for the equipment by the building official.</u></p> <p>Exception: <u>No operating permit or limited permit shall be required for the operation of the conveyance equipment if located in a Group R-3 occupancy or in an individual dwelling unit of a Group R-2 occupancy.</u></p> <p><u>The operating permit shall be issued for a period of one year and shall be valid only for the operation of the equipment at the rated load and speed for such equipment, which shall be stated on the permit. Operating permits shall not be issued for personnel hoists, which shall be subject to operation only under a limited permit.</u></p> <p><u>If an inspection report required by this chapter indicates failure of compliance with applicable requirements of this chapter, or, in the case of new or altered installations, with detailed plans and specifications approved by the building official, the building official shall give written notice to the owner or lessee or the person or persons filing such plans and specifications of the deficiencies that must be cured for compliance therewith. After the equipment has been brought into conformity, the building official shall issue an operating permit.</u></p>		<p><u>inspection report indicating compliance with this chapter and applicable safety codes and the payment of the fee provided for in Section 118 and the city fee schedule.</u></p> <p><u>No owner or lessee of an elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist, or wheelchair lift shall suffer or permit the same to be operated by any person except under a current and valid operating permit or limited permit that has been issued for the equipment by the building official.</u></p> <p>Exception: <u>No operating permit or limited permit shall be required for the operation of the conveyance equipment if located in a Group R-3 occupancy or in an individual dwelling unit of a Group R-2 occupancy.</u></p> <p><u>The operating permit shall be issued for a period of one year and shall be valid only for the operation of the equipment at the rated load and speed for such equipment, which shall be stated on the permit. Operating permits shall not be issued for personnel hoists, which shall be subject to operation only under a limited permit.</u></p> <p><u>If an inspection report required by this chapter indicates failure of compliance with applicable requirements of this chapter, or, in the case of new or altered installations, with detailed plans and specifications approved by the building official, the building official shall give written notice to the owner or lessee or the person or persons filing such plans and specifications of the deficiencies that must be cured for compliance therewith. After the equipment has been brought into conformity, the building official shall issue an operating permit.</u></p>	
<p>3010.2.2 Annual operating permit. <u>Permits will show the location, type, and number of units permitted.</u></p>	<p>N/a</p>	<p>3010.2.2 Annual operating permit. <u>Permits will show the location, type, and number of units permitted.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.2.3 Posting of permits. <u>An operating permit for an elevator, platform lift, automated people mover, or related equipment must be displayed in one of the following areas:</u></p> <ol style="list-style-type: none"> <u>1. Inside the elevator car enclosure or platform lift, automated people mover, or related equipment passenger enclosure, not more than 7 feet or less than 3 feet above the finished car floor;</u> <u>2. Outside the elevator car enclosure or platform lift or related equipment passenger enclosure, in the main lobby within 10 feet of the call button not more than 7 feet or less than 3 feet above the finished landing floor; or</u> <u>3. In a common area lobby or hallway location within the building in which the equipment is located that is:</u> 	<p>N/a</p>	<p>3010.2.3 Posting of permits. <u>An operating permit for an elevator, platform lift, automated people mover, personnel hoist, or related equipment must be displayed in one of the following areas:</u></p> <ol style="list-style-type: none"> <u>1. Inside the elevator car enclosure or platform lift, automated people mover, personnel hoist, or related equipment or passenger enclosure, not more than 7 feet (2,133.6 mm) or less than 3 feet (914.4 mm) above the finished car floor;</u> <u>2. Outside the elevator car enclosure or platform lift or related equipment or passenger enclosure, in the main lobby within 10 feet (3,048 mm) of the call button and not more than 7 feet (2,133.6 mm) or less than 3 feet (914.4 mm) above the finished landing floor; or</u> 	<p>No major change to Houston amendment. Updates to include metric measurements.</p>

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<p>3.1. Accessible to the public without assistance or permission during all hours in which any equipment is in operation; and</p> <p>3.2. Identified by a plaque mounted in the elevator car enclosure or passenger enclosure within 10 feet of the call button in the main elevator lobby directing the public to the location where the permit(s) is displayed. The font size for letters on the plaque shall be at least 18 points (1/4 inch) and the plaque must state that the equipment is "Regulated by the Texas Department of Licensing and Regulation" and include the department's telephone number TDLR 1-800-803-9202, and the building management's telephone number COH 832-394-8861 or "Regulated by the City of Houston (COH) Elevator Inspections Section" and include the telephone number "COH 832-394-8861", whichever is applicable, and in either instance listed above include the building management's telephone number. These postings shall be updated by the owner of the property within 30 days of there is a change in the contact information for either TDLR or COH.</p>		<p>3. In a common area lobby or hallway location within the building in which the equipment is located that is:</p> <p>3.1 Accessible to the public without assistance or permission during all hours in which any equipment is in operation; and</p> <p>3.2 Identified by a plaque mounted in the elevator car enclosure or passenger enclosure within 10 feet (3,048 mm) of the call button in the main elevator lobby directing the public to the location where the permit is displayed. The font size for letters on the plaque shall be at least 18 points (1/4 inch (76.2 mm)), and the plaque must state that the equipment is "Regulated by the Texas Department of Licensing and Regulation (TDLR) and the City of Houston (COH) Elevator Inspections Section" and include the department's and section's telephone numbers "TDLR 1-800-803-9202, COH 832-394-8861" or "Regulated by the City of Houston (COH) Elevator Inspections Section" and include the telephone number "COH 832-394-8861," whichever is applicable, and in either instance listed above include the building management's telephone number. These postings shall be updated by the owner of the property within 30 days if there is a change in the contact information for either TDLR or COH.</p>	
<p>3010.2.3.1 Escalators. An operating permit for an escalator or moving sidewalk must be displayed in one of the following areas:</p> <p>1. In a common area lobby or hallway location not more than 7 feet or less than 3 feet above the finished landing floor and within the building in which the equipment is located accessible to the public without assistance or permission during all hours in which any escalator or moving sidewalk is in operation; or</p> <p>2. In a common area lobby or hallway location within the building in which the equipment is located that is:</p> <p>2.1. Accessible to the public without assistance or permission during all hours in which any escalator or moving sidewalk is in operation; and</p> <p>2.2. Identified by a plaque mounted within 10 feet of entry or exit of the escalator or moving sidewalk directing the public to the location where the permit(s) is displayed. The font size for letters on the plaque shall be at least 18 points (1/4 inch) and the plaque must state that the equipment is "Regulated by the Texas Department of Licensing and Regulation" and include the department's telephone number 1-800-803-9202, and the</p>		<p>3010.2.3.1 Escalators. An operating permit for an escalator or moving sidewalk must be displayed in one of the following areas:</p> <p>1. In a common area lobby or hallway location not more than 7 feet (2,133.6 mm) or less than 3 feet (914.4 mm) above the finished landing floor and within the building in which the equipment is located accessible to the public without assistance or permission during all hours in which any escalator or moving sidewalk is in operation; or</p> <p>2. In a common area lobby or hallway location within the building in which the equipment is located that is:</p> <p>2.1 Accessible to the public without assistance or permission during all hours in which any escalator or moving sidewalk is in operation; and</p> <p>2.2 Identified by a plaque mounted within 10 feet (3,048 mm) of entry or exit of the escalator or moving sidewalk directing the public to the location where the permit is displayed. The font size for letters on the plaque shall be at least 18 points (1/4 inch).</p>	<p>No major change to Houston amendment. Updates to include metric measurements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p><u>building management's telephone number. These postings shall be updated by the owner of the property within 30 days if there is a change in the contact information for TDLR.</u></p>		<p><u>and the plaque must state that the equipment is "Regulated by the Texas Department of Licensing and Regulation" and include the department's telephone number 1-800-803-9202 and the building management's telephone number. These postings shall be updated by the owner of the property within 30 days if there is a change in the contact information for TDLR.</u></p>	
<p>3010.2.4 Limited operating permit. <u>The building official may issue a limited permit authorizing the temporary use of any elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift for passenger or freight service during its installation or alteration.</u></p> <p><u>In the case of elevators, such limited permit will not be issued until the elevator has been tested with rated load; car safety and terminal stopping equipment have been tested to determine the safety of the equipment; and permanent or temporary guards or enclosures have been placed on the car, around the hoistway and at the landing entrances on each floor. Landing entrance guards shall be provided with locks that can be released from the hoistway side only. Automatic and continuous pressure elevators shall not be placed in temporary operation from the landing push buttons unless door-locking devices and/or interlocks required by the Elevator Safety Code are installed and operative. All tests required by this paragraph and reports thereof must indicate compliance with all applicable provisions of the Elevator Safety Code before a temporary permit will be issued.</u></p> <p><u>For personnel hoists, a limited permit will not be issued until the hoist has been inspected in accordance with the Personnel Hoist Safety Code and has been determined to be in compliance therewith.</u></p>	<p>N/a</p>	<p>3010.2.4 Limited operating permit. <u>The building official may issue a limited permit authorizing the temporary use of any elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, personnel hoist or wheelchair lift for passenger or freight service during its installation or alteration.</u></p> <p><u>In the case of elevators, such limited permit will not be issued until the elevator has been tested with rated load; car safety and terminal stopping equipment have been tested to determine the safety of the equipment; and permanent or temporary guards or enclosures have been placed on the car, around the hoistway and at the landing entrances on each floor. Landing entrance guards shall be provided with locks that can be released from the hoistway side only. Automatic and continuous pressure elevators shall not be placed in temporary operation from the landing push buttons unless door-locking devices and/or interlocks required by the Elevator Safety Code are installed and operative. All tests required by this paragraph and reports thereof must indicate compliance with all applicable provisions of the Elevator Safety Code before a temporary permit will be issued.</u></p> <p><u>For personnel hoists, a limited permit will not be issued until the hoist has been inspected in accordance with the Personnel Hoist Safety Code and has been determined to be in compliance therewith.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.2.5 Lift of limited permits. <u>Limited permits shall be issued in the same manner as operating permits, provided that they shall be valid for a period not to exceed 90 days. However, any equipment being operated pursuant to a limited permit shall be inspected at intervals not exceeding 30 days by the building official or an approved agency.</u></p>	<p>N/a</p>	<p>3010.2.5 Life of limited permits. <u>Limited permits shall be issued in the same manner as operating permits, provided that they shall be valid for a period not to exceed 90 days. However, any equipment being operated pursuant to a limited permit shall be inspected at intervals not exceeding 30 days by the building official or an approved agency.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.2.6 Posting of limited permits. <u>Each limited permit shall be conspicuously posted at a place that is near to or visible from each entrance to permitted equipment, and the limited permit shall also include a statement that the equipment has not been finally approved.</u></p>	<p>N/a</p>	<p>3010.2.6 Posting of limited permits. <u>Each limited permit shall be conspicuously posted at a place that is near to or visible from each entrance to permitted equipment, and the limited permit shall also include a statement that the equipment has not been finally approved.</u></p>	<p>No change to Houston amendment.</p>

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<p>3010.2.7 Responsibility. <u>The person installing, relocating, or altering any equipment operating under a limited permit shall be responsible for its operation and maintenance and for all required tests and inspections until the operating permit has been issued by the <i>building official</i>.</u></p> <p><u>The owner or owner's representative shall be responsible for the safe operation and proper maintenance of such equipment after the operating permit has been issued and during the period of effectiveness of any limited permit. The owner and owner's representative shall also be responsible for all initial and periodic tests required by this chapter.</u></p>	<p>N/a</p>	<p>3010.2.7 Responsibility. <u>The person installing, relocating, or altering any equipment operating under a limited permit shall be responsible for its operation and maintenance and for all required tests and inspections until the operating permit has been issued by the <i>building official</i>.</u></p> <p><u>The owner or owner's representative shall be responsible for the safe operation and proper maintenance of such equipment after the operating permit has been issued and during the period of effectiveness of any limited permit. The owner and owner's representative shall also be responsible for all initial and periodic tests required by this chapter.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.2.8 Special permission for employee use. <u>Special permission may be granted by the <i>building official</i> for use of freight elevators by employees of the establishment in which they are situated if the <i>building official</i> finds that there is compliance with the requirements of Rule 207.4 of the Elevator Safety Code. The application therefor shall be made when the operating permit is requested, and the special permission, if granted, shall be noted on the operation permit. Except in accordance with the provisions of a special operating permit granted under this paragraph, it shall be unlawful for any elevator owner or other person in control of a freight elevator to suffer or permit the freight elevator to be used to carry any passengers other than as may be required to operate the elevator and to load and unload freight that is being carried upon the elevator.</u></p>	<p>N/a</p>	<p>3010.2.8 Special permission for employee use. <u>Special permission may be granted by the <i>building official</i> for use of freight elevators by employees of the establishment in which they are situated if the <i>building official</i> finds that there is compliance with the requirements of Rule 207.4 of the <i>Elevator Safety Code</i>. The application therefor shall be made when the operating permit is requested, and the special permission, if granted, shall be noted on the operation permit. Except in accordance with the provisions of a special operating permit granted under this paragraph, it shall be unlawful for any elevator owner or other person in control of a freight elevator to suffer or permit the freight elevator to be used to carry any passengers other than as may be required to operate the elevator and to load and unload freight that is being carried upon the elevator.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.3 Approval of personnel hoists.</p> <p>3010.3.1 General. <u>A manufacturer, distributor, or agent who desires approval of a personnel hoist manufactured or distributed by him or by his principal shall submit a properly completed application meeting the requirements of this section, including proof of licensure by the State of Texas, all data as hereafter prescribed, and payment of the fee for a manufacturer's design permit as required in section 118 and the city fee schedule. A manufacturer, distributor, or agent shall submit a separate application, the fee, and complete data for each model varying in tower construction, capacity, speed, or method of operation.</u></p> <p><u>If the <i>building official</i> finds that the hoist meets all the requirements of this code, the Personnel Hoist Safety Code, and all other applicable statutes and ordinances, a permit shall be issued identifying the make, model, capacity, and type of tower. If the <i>building official</i> finds that the hoist does not meet the requirements of this code, the Personnel Hoist Safety Code, or any other applicable statute or ordinance, the <i>building official</i> shall so notify the applicant in writing.</u></p>	<p>N/a</p>	<p>3010.3 Approval of personnel hoists.</p> <p>3010.3.1 General. <u>A manufacturer, distributor, or agent who desires approval of a personnel hoist manufactured or distributed by him or by his principal shall submit a properly completed application meeting the requirements of this section, including proof of licensure by the state of Texas, all data as hereafter prescribed, and payment of the fee for a manufacturer's design permit as required in Section 118 and the <i>city fee schedule</i>. A manufacturer, distributor, or agent shall submit a separate application, the fee, and complete data for each model varying in tower construction, capacity, speed, or method of operation.</u></p> <p><u>If the <i>building official</i> finds that the hoist meets all the requirements of this code, the <i>Personnel Hoist Safety Code</i>, and all other applicable statutes and ordinances, he shall issue a permit identifying the make, model, capacity, and type of tower. If the <i>building official</i> finds that the hoist does not meet the requirements of this code, the <i>Personnel Hoist Safety Code</i>, or any other applicable statute or ordinance, the <i>building official</i> shall so notify the applicant in writing.</u></p>	<p>No change to Houston amendment.</p>

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<p><u>Manufacturer's data that must accompany the application for approval of new hoists includes:</u></p> <ol style="list-style-type: none"> <u>1. Tower stress analysis, including two copies of structural specifications, drawings, and calculations, proving that the tower and base contain the factors of safety specified in the Requirements for Personnel Hoists, ANSI A10.4.</u> <u>2. A letter giving the tower serial number, if any, or model description shall accompany the specifications. Such letter shall state the maximum height, wind velocity, car speed and car capacity for which the structure is designed when subjected to strain by operation of the car safety device and the maximum load and striking speed for which the buffers and base structures are designed.</u> <u>3. A complete description as to the operation of the hoisting equipment and function of safety devices, including a schematic wiring diagram of safety and brake circuits and controller.</u> <u>4. Periodic maintenance and inspection checklists, which must specify the frequency of each inspection. Among other things, those lists must include maximum safe tolerance of brake clearance, safety jaw clearance, and guide displacement. Any special tools or equipment required in making an inspection shall be shown and described on each list.</u> <u>5. All data described in the above items 1, 2, 3, and 4 must be approved by a professional engineer registered with the State of Texas.</u> 		<p><u>Manufacturer's data that must accompany the application for approval of new hoists includes:</u></p> <ol style="list-style-type: none"> <u>1. Tower stress analysis, including two copies of structural specifications, drawings, and calculations, proving that the tower and base contain the factors of safety specified in the Requirements for Personnel Hoists, ANSI A10.4.</u> <u>2. A letter giving the tower serial number, if any, or model description shall accompany the specifications. Such letter shall state the maximum height, wind velocity, car speed and car capacity for which the structure is designed when subjected to strain by operation of the car safety device and the maximum load and striking speed for which the buffers and base structures are designed.</u> <u>3. A complete description as to the operation of the hoisting equipment and function of safety devices, including a schematic wiring diagram of safety and brake circuits and controller.</u> <u>4. Periodic maintenance and inspection checklists, which must specify the frequency of each inspection. Among other things, those lists must include maximum safe tolerance of brake clearance, safety jaw clearance, and guide displacement. Any special tools or equipment required in making an inspection shall be shown and described on each list.</u> <u>5. All data described in the above items 1, 2, 3, and 4 must be approved by a professional engineer registered with the State of Texas.</u> 	
<p>3010.3.2 Inspections. <u>Inspections will be made at a time convenient to the <i>building official</i> or approved agency and the construction job superintendent at least monthly and at such additional frequencies, if any, as are stated in the application for the personnel hoist as approved by the <i>building official</i>. The <i>building official</i> or approved agency shall immediately and verbally notify the construction job superintendent of any defects that would make the personnel hoist unsafe for continued operation, and the construction job superintendent shall take the personnel hoist out of service immediately and correct any defect that would make the hoist unsafe prior to continued operation. All other defects shall be corrected as soon as is reasonably possible. Within 24 hours after the inspection, the <i>building official</i> or an approved agency shall confirm the findings in a written report to the construction superintendent. If the <i>building official</i> or approved agency has directed that the personnel hoist be taken out of service pending its repair, then it shall not be returned to service until the <i>building official</i> or approved agency has reinspected the</u></p>	<p>N/a</p>	<p>3010.3.2 Inspections. <u>Inspections will be made at a time convenient to the <i>building official</i> or approved agency and the construction job superintendent at least monthly and at such additional frequencies, if any, as are stated in the application for the personnel hoist as approved by the <i>building official</i>. The <i>building official</i> or approved agency shall immediately and verbally notify the construction job superintendent of any defects that would make the personnel hoist unsafe for continued operation, and the construction job superintendent shall take the personnel hoist out of service immediately and correct any defect that would make the hoist unsafe prior to continued operation. All other defects shall be corrected as soon as is reasonably possible. Within 24 hours after the inspection, the <i>building official</i> or an approved agency shall confirm the findings in a written report to the construction superintendent. If the <i>building official</i> or approved agency has directed that the personnel hoist be taken out of service pending its repair, then it shall not be returned to service until the <i>building official</i> or approved agency has reinspected the</u></p>	<p>No change to Houston amendment.</p>

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<p><u>equipment and determined that it may safely be returned to service.</u></p>		<p><u>equipment and determined that it may safely be returned to service.</u></p>	
<p>3010.3.3 Penalties for violation. 3010.3.3.1 User. It shall be unlawful for any person knowingly to use or to suffer or permit the operation of a personnel hoist that was not issued a permit required by this code or that includes any defect that could make it unsafe for continued operation.</p>	N/a	<p>3010.3.3 Penalties for violation. 3010.3.3.1 User. It shall be unlawful for any person knowingly to use or to suffer or permit the operation of a personnel hoist that was not issued a permit required by this code or that includes any defect that could make it unsafe for continued operation.</p>	No change to Houston amendment.
<p>3010.3.3.2 Workers. It shall be the duty of the superintendent of each construction site to ensure that in the car of each hoist on the construction site, other than approved personnel hoists operating under a limited permit, there is conspicuously posted a card, furnished by the building official, stating: DO NOT RIDE THIS HOIST. VIOLATORS SUBJECT TO A \$200.00 FINE—CITY OF HOUSTON. Except as provided in Section 3010.3.6 below, it shall be unlawful for any person to ride in a car that is so posted.</p>	N/a	<p>3010.3.3.2 Workers. It shall be the duty of the superintendent of each construction site to ensure that in the car of each hoist on the construction site, other than approved personnel hoists operating under a limited permit, there is conspicuously posted a card, furnished by the building official, stating: DO NOT RIDE THIS HOIST. VIOLATORS SUBJECT TO A \$200.00 FINE—CITY OF HOUSTON. Except as provided in Section 3010.3.6 below, it shall be unlawful for any person to ride in a car that is so posted.</p>	No change to Houston amendment.
<p>3010.3.4 Manlifts. Nothing in this code or in the Personnel Hoist Safety Code shall be construed to prohibit the use of a manlift during construction.</p>	N/a	<p>3010.3.4 Manlifts. Nothing in this code or in the <i>Personnel Hoist Safety Code</i> shall be construed to prohibit the use of a manlift during construction.</p>	No change to Houston amendment.
<p>3010.3.5 Hoist cage platform size. The restrictions in the Personnel Hoist Safety Code regarding the cage platform size do not apply if the cage is equipped with an overload safety device.</p>	N/a	<p>3010.3.5 Hoist cage platform size. The restrictions in the <i>Personnel Hoist Safety Code</i> regarding the cage platform size do not apply if the cage is equipped with an overload safety device.</p>	No change to Houston amendment.
<p>3010.3.6 Material hoist. Nothing in this chapter shall prohibit the general contractor from assigning a competent attendant to ride a material hoist during the required period of its use. This attendant, when assigned, shall:</p> <ol style="list-style-type: none"> 1. Prevent passengers from riding the hoist (other than the attendant); 2. Prevent overloading the hoist; and 3. Observe and report unsafe conditions to the construction superintendent. 	N/a	<p>3010.3.6 Material hoist. Nothing in this chapter shall prohibit the general contractor from assigning a competent attendant to ride a material hoist during the required period of its use. This attendant, when assigned, shall:</p> <ol style="list-style-type: none"> 1. Prevent passengers from riding the hoist (other than the attendant); 2. Prevent overloading the hoist; and 3. Observe and report unsafe conditions to the construction superintendent. 	No change to Houston amendment.
<p>3010.4 Tests, inspections. 3010.4.1 General. The owner or owner's representative shall be responsible for the safe operation and maintenance of each elevator, dumbwaiter, escalator or moving walk installation and</p>	N/a	<p>3010.4 Tests, inspections. 3010.4.1 General. The owner or owner's representative shall be responsible for the safe operation and maintenance of each elevator, dumbwaiter, escalator or moving walk installation and</p>	No change to Houston amendment.

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<p><u>shall cause annual inspections, tests and maintenance to be made on such conveyances as required in this section.</u></p>		<p><u>shall cause annual inspections, tests and maintenance to be made on such conveyances as required in this section.</u></p>	
<p>3010.4.2 Periodic inspections and tests. Every elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift and wheelchair lift shall be periodically inspected for compliance with the requirements of this chapter and the Elevator Safety Code or Manlift Safety Code, as applicable, at intervals not exceeding 12 calendar months, provided any such inspection may be made during the month following the last calendar month during which the inspection was due. Such periodic tests shall not be required for any such equipment located in a Group R-3 occupancy or an individual dwelling unit of a Group R-2 occupancy.</p>	<p>N/a</p>	<p>3010.4.2 Periodic inspections and tests. Every elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift and wheelchair lift shall be periodically inspected for compliance with the requirements of this chapter and the <i>Elevator Safety Code</i> or <i>Manlift Safety Code</i>, as applicable, at intervals not exceeding 12 calendar months, provided any such inspection may be made during the month following the last calendar month during which the inspection was due. Such periodic tests shall not be required for any such equipment located in a Group R-3 occupancy or an individual dwelling unit of a Group R-2 occupancy.</p>	<p>No change to Houston amendment.</p>
<p>3010.4.3 Load tests and inspections. Full load and safety tests shall be performed by an elevator company in the presence of the <i>building official</i> or an approved agency. Full load and safety tests and inspections shall be performed at intervals of five years for each traction-type elevator.</p>	<p>N/a</p>	<p>3010.4.3 Load tests and inspections. Full load and safety tests shall be performed by an elevator company in the presence of the <i>building official</i> or an approved agency. Full load and safety tests and inspections shall be performed at intervals of five years for each traction-type elevator.</p>	<p>No change to Houston amendment.</p>
<p>3010.4.4 Inspection costs. All costs of such inspections and tests shall be paid by the owner or owner's representative.</p>	<p>N/a</p>	<p>3010.4.4 Inspection costs. All costs of such inspections and tests shall be paid by the owner or owner's representative.</p>	<p>No change to Houston amendment.</p>
<p>3010.4.5 Inspection reports. After each inspection, a full and correct report of such inspection shall be filed by the authorized inspector/approved agency with the <i>building official</i> within 5 days after the completion of the inspection. This report shall be in a format satisfactory to the <i>building official</i> and shall, at a minimum, indicate the name of the authorized inspector and the name of the authorized company or approved agency, the date of the inspection, the registration number of both the authorized inspector and the authorized inspecting company, the permanent identification number of the equipment inspected, name of the owner or the owner's representative and the tag number assigned by the jurisdiction to the equipment inspected. Tags and report forms shall be obtained from the <i>building official</i> by the authorized inspecting company. The report shall certify that the equipment inspected meets the requirements of this chapter and the Elevator Safety Code or Manlift Safety Code, as applicable, insofar as a thorough and diligent inspection of the equipment as installed allows. The report shall list all items that do not perform in accordance with this chapter or the said safety codes. Every report shall be signed by the persons performing the inspection and witnessing the tests, as applicable.</p>	<p>N/a</p>	<p>3010.4.5 Inspection reports. After each inspection, a full and correct report of such inspection shall be filed by the authorized inspector/approved agency with the <i>building official</i> within 5 days after the completion of the inspection. This report shall be in a format satisfactory to the <i>building official</i> and shall, at a minimum, indicate the name of the authorized inspector and the name of the authorized company or approved agency, the date of the inspection, the registration number of both the authorized inspector and the authorized inspecting company, the permanent identification number of the equipment inspected, name of the owner or the owner's representative and the tag number assigned by the <i>jurisdiction</i> to the equipment inspected. Tags and report forms shall be obtained from the <i>building official</i> by the authorized inspecting company. The report shall certify that the equipment inspected meets the requirements of this chapter and the <i>Elevator Safety Code</i> or <i>Manlift Safety Code</i>, as applicable, insofar as a thorough and diligent inspection of the equipment as installed allows. The report shall list all items that do not perform in accordance with this chapter or the said safety codes. Every report shall be signed by the persons performing the inspection and witnessing the tests, as applicable.</p>	<p>No change to Houston amendment.</p>

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<p>3010.4.6 Inspections. <u>Inspections shall be performed or witnessed by certified and authorized inspection personnel of an authorized company or approved agency in accordance with criteria set forth by the jurisdiction.</u></p>	<p>N/a</p>	<p>3010.4.6 Inspections. <u>Inspections shall be performed or witnessed by certified and authorized inspection personnel of an authorized company or approved agency in accordance with criteria set forth by the jurisdiction.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.4.7 Registration. <u>Each authorized inspector shall meet the qualification requirements of the certifying organization. All authorized inspectors and inspection supervisors shall be certified by an organization accredited by the certifying organization in accordance with requirements of the certifying organization and be annually registered with the jurisdiction. The business registration shall be authorization for such business organization to perform inspections and submit inspection reports. Only inspection reports submitted by authorized companies or approved agencies shall be acceptable when applying for a certificate of inspection.</u></p> <p><u>Without limiting the building official's requirements, each approved agency shall be required to demonstrate that it has professional errors and omissions insurance coverage with policy limits of \$500,000.00 or more, per occurrence; worker's compensation insurance coverage; and comprehensive general liability insurance coverage with policy limits of \$1,000,000.00 or more, per occurrence. The jurisdiction shall be designated as an additional insured on the liability coverage, and the coverage shall include a cross-liability endorsement and a provision for 10 days' written notice to the jurisdiction prior to any cancellation. The building official shall also require an indemnity and hold harmless agreement in a form approved by the City Attorney.</u></p> <p><u>All coverage shall be written by an insurance firm with a rating of A or better in the most recent A.M Best directory.</u></p>	<p>N/a</p>	<p>3010.4.7 Registration. <u>Each authorized inspector shall meet the qualification requirements of the certifying organization. All authorized inspectors and inspection supervisors shall be certified by an organization accredited by the certifying organization in accordance with requirements of the certifying organization and be annually registered with the jurisdiction. The business registration shall be authorization for such business organization to perform inspections and submit inspection reports. Only inspection reports submitted by authorized companies or approved agencies shall be acceptable when applying for a certificate of inspection.</u></p> <p><u>Without limiting the requirements imposed by the building official, each approved agency shall be required to demonstrate that it has professional errors and omissions insurance coverage with policy limits of \$500,000.00 or more, per occurrence; worker's compensation insurance coverage; and comprehensive general liability insurance coverage with policy limits of \$1,000,000.00 or more, per occurrence. The jurisdiction shall be designated as an additional insured on the liability coverage, and the coverage shall include a cross-liability endorsement and a provision for 10 days' written notice to the jurisdiction prior to any cancellation. The building official shall also require an indemnification and hold harmless agreement in a form approved by the city attorney.</u></p> <p><u>All coverage shall be written by an insurance firm with a rating of A or better in the most recent A.M. Best directory.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.4.8 Registration revocation. <u>The building official, for due cause, may revoke registration of any inspecting organization or inspector. Appeals of revocations may be made to the jurisdiction through the appropriate appeals process as set forth in Chapter 113 of this code.</u></p>	<p>N/a</p>	<p>3010.4.8 Registration revocation. <u>The building official, for due cause, may revoke registration of any inspecting organization or inspector. Appeals of revocations may be made to the jurisdiction through the General Appeals Board using the appeals process as set forth in Chapter 113 of this code.</u></p>	<p>No change to Houston amendment.</p>
<p>3010.4.9 Delinquent inspections. <u>Failure of the building official to advise the owner or owner's representative does not alleviate the responsibility of the owner or owner's representative for annual inspections or load tests as specified in Section 3010.4.2. In the event that any required report of an inspection is not filed with the building official by the 30th day after the final date when such equipment should have been inspected or tested, the owner of the equipment or the owner's representative shall be presumed to be in violation of the requirements of this code.</u></p> <p><u>If, after a 120-day period, the owner or the owner's representative has not complied with the requirements of this</u></p>	<p>N/a</p>	<p>3010.4.9 Delinquent inspections. <u>Failure of the building official to advise the owner or owner's representative does not alleviate the responsibility of the owner or owner's representative for annual inspections or load tests as specified in Section 3010.4.2. In the event that any required report of an inspection is not filed with the building official by the 30th day after the final date when such equipment should have been inspected or tested, the owner of the equipment or the owner's representative shall be presumed to be in violation of the requirements of this code.</u></p> <p><u>If, after the 120th day, the owner or the owner's representative has not complied with the requirements of this</u></p>	<p>No change to Houston amendment.</p>

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<p><u>chapter by providing the information required, the jurisdiction shall have the authority to assign inspection of the equipment in question to an authorized inspection organization for completion of the necessary inspections and tests. The costs of such inspections shall be borne by the owner or the owner's representative and the decision of the <i>building official</i> shall be binding on the owner or owner's representative.</u></p>		<p><u>chapter by providing the information required, the <i>jurisdiction</i> shall have the authority to assign inspection of the equipment in question to an authorized inspection organization for completion of the necessary inspections and tests. The costs of such inspections shall be borne by the owner or the owner's representative, and the decision of the <i>building official</i> shall be final and binding on the owner or owner's representative.</u></p>	
<p>3010.5 Fees for tests and inspections. Fees shall be required as set forth in Section 118 and the city fee schedule.</p>	<p>N/a</p>	<p>3010.5 Fees for tests and inspections. Fees shall be required as set forth in Section 118 and the <i>city fee schedule</i>.</p>	<p>No change to Houston amendment.</p>
<p>3010.6 Unsafe conditions. When an inspection reveals an unsafe condition, the inspector shall immediately file with the owner or owner's representative and the <i>building official</i> a full and true report of such inspection and such unsafe condition. If the <i>building official</i> finds that the unsafe condition endangers human life, the <i>building official</i> shall place on such elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, wheelchair lift or personnel hoist, in a conspicuous place, a notice stating that such conveyance is unsafe. The owner or owner's representative shall ensure that such notice of unsafe condition is legibly maintained where it was placed by the <i>building official</i>. The <i>building official</i> shall also issue an order in writing to the owner or owner's representative requiring the repairs or alterations to be made to such conveyance that are necessary to render it safe and may order the operation thereof discontinued until the repairs or alterations are made or the unsafe conditions are removed. A posted notice of unsafe conditions shall be removed only upon authority of the <i>building official</i>.</p>	<p>N/a</p>	<p>3010.6 Unsafe conditions. When an inspection reveals an unsafe condition, the inspector shall immediately file with the owner or owner's representative and the <i>building official</i> a full and true report of such inspection and such unsafe condition. If the <i>building official</i> finds that the unsafe condition endangers human life, the <i>building official</i> shall place on such elevator, dumbwaiter, escalator, manlift, moving walk, inclined stairway chairlift, wheelchair lift or personnel hoist, in a conspicuous place, a notice stating that such conveyance is unsafe. The owner or owner's representative shall ensure that such notice of unsafe condition is legibly maintained where it was placed by the <i>building official</i>. The <i>building official</i> shall also issue an order in writing to the owner or owner's representative requiring the repairs or alterations to be made to such conveyance that are necessary to render it safe and may order the operation thereof discontinued until the repairs or alterations are made or the unsafe conditions are removed. A posted notice of unsafe conditions shall be removed only upon authority of the <i>building official</i>.</p>	<p>No change to Houston amendment.</p>
<p>2015 Houston IBC – Chapter 31 Special Construction</p>	<p>2021 IBC – Chapter 31 Special Construction</p>	<p>2021 Houston Amendments – Chapter 31</p>	<p>Code Analysis</p>
	<p>SECTION 3101 GENERAL</p> <p>3101.1 Scope. The provisions of this chapter shall govern special building construction including <i>membrane structures</i>, temporary structures, <i>pedestrian walkways</i> and tunnels, automatic <i>vehicular gates</i>, <i>awnings</i> and <i>canopies</i>, <i>marquees</i>, signs, and towers and antennas towers, antennas, relocatable buildings, swimming pool enclosures and safety devices, and solar energy systems, public use restroom buildings on publicly owned lands in flood hazard areas and intermodal shipping containers.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	SECTION 3102 MEMBRANE STRUCTURES		
	<p>3102.1.4 3102.2 Tensile membrane structures and air-supported structures. Tensile membrane structures and air-supported structures, including permanent and temporary structures, shall be designed and constructed in accordance with ASCE 55. The provisions in Sections 3102.3 through 3102.6 shall apply.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3102.2 Definitions. The following terms are defined in Chapter 2:</p> <p>AIR-INFLATED STRUCTURE.</p> <p>AIR-SUPPORTED STRUCTURE.</p> <p>Double skin.</p> <p>Single skin.</p> <p>CABLE RESTRAINED, AIR-SUPPORTED STRUCTURE.</p> <p>MEMBRANE COVERED CABLE STRUCTURE.</p> <p>MEMBRANE COVERED FRAME STRUCTURE.</p> <p>NONCOMBUSTIBLE MEMBRANE STRUCTURE.</p> <p>TENSILE MEMBRANE STRUCTURE.</p>		
	<p>3102.3 Type of construction. Noncombustible membrane structures shall be classified as Type IIB construction. Noncombustible frame or cable-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction. Heavy timber frame-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IV-HT construction. Other membrane structures shall be classified as Type V construction.</p> <p style="padding-left: 40px;">Exception: Plastic less than 30 feet (9144 mm) above any floor used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers is not required to meet the fire propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701.</p>		
	<p>3102.6.1 Noncombustible membrane. A noncombustible membrane shall be permitted for use as the roof or as a skylight of any building or atrium of a building of any type of construction provided that the membrane is not less than 20 feet (6096 mm) above any floor, balcony or gallery.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3102.6.1.1 Membrane. A membrane meeting the fire propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701 shall be permitted to be used as the roof or as a skylight on buildings of Type IIB, III, IV-HT and V construction, provided that the membrane is not less than 20 feet (6096 mm) above any floor, balcony or gallery.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3102.8.1 Equipment requirements. This The inflation system shall consist of one or more blowers and shall include provisions for automatic control to maintain the required inflation pressures. The system shall be so designed as to prevent overpressurization of the system.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 3103 TEMPORARY STRUCTURES</p> <p>3103.1 General. The provisions of Sections 3103.1 through 3103.4 shall apply to structures erected for a period of less than 180 days. Tents, Special event structures, tents, umbrella structures and other membrane structures erected for a period of less than 180 days shall <u>also</u> comply with the <i>International Fire Code</i>. Those erected for a longer period of time shall comply with applicable sections of this code.</p>	<p style="text-align: center;">SECTION 3103 TEMPORARY STRUCTURES</p>	<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>3103.1.2 Permit required. Temporary structures that cover an area greater than 120 square feet (11.16 m²), including connection areas or spaces with a common means of egress or entrance that are used or intended to be used for the gathering together of 10 or more persons, shall not be erected, operated or maintained for any purpose without obtaining <u>approval and where required a building permit</u> from the <i>building official</i>. <u>Temporary building shall be compliant with the applicable provisions of this code and be completely removed before 180 days after installation or upon the expiration of the time limit stated in the permit.</u></p> <p><u>Exception: A separate temporary structure permit is not required for a construction trailer or shed used during the construction of a structure when a permit has been obtained for the construction work.</u></p>	<p>No change</p>	<p>3103.1.2 Permit required. Temporary structures that cover an area greater than 120 square feet (11.16 m²), including connection areas or spaces with a common means of egress or entrance that are used or intended to be used for the gathering together of 10 or more persons, shall not be erected, operated or maintained for any purpose without obtaining <u>approval and where required a building permit</u> from the <i>building official</i>. <u>Temporary building shall be compliant with the applicable provisions of this code and be completely removed before 180 days after installation or upon the expiration of the time limit stated in the permit.</u></p> <p><u>Exception: A separate temporary structure permit is not required for a construction trailer or shed used during the construction of a structure when a permit has been obtained for the construction work.</u></p>	<p>No change to Houston amendment.</p>
<p>3103.5 Use period. The aggregate time associated with use or existence of temporary structures, including but not limited to tents or air-supported, air-inflated or tensioned membrane structures, shall not be or extend for a period of more than 179 days within a 12-month period on a single premises.</p> <p><u>Exception: Buildings complying with this code for the intended use and permitted as a permanent structure are exempt.</u></p>	<p>N/a</p>	<p><u>3103.5 Use period. The aggregate time associated with use or existence of temporary structures, including but not limited to tents or air-supported, air-inflated or tensioned membrane structures, shall not be or extend for a period of more than 179 days within a 12-month period on a single premises.</u></p> <p><u>Exception: Buildings complying with this code for the intended use and permitted as a permanent structure are exempt.</u></p>	<p>No change to Houston amendment.</p>

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	SECTION 3104 PEDESTRIAN WALKWAYS AND TUNNELS	SECTION 3104 PEDESTRIAN WALKWAYS AND TUNNELS	
3104.4 Reserved. Contents. Only materials and decorations approved by the building official shall be located in the pedestrian walkway.	No change	3104.4 Reserved. Contents. Only materials and decorations approved by the building official shall be located in the pedestrian walkway.	No change to Houston amendment.
	<p>3104.2 Separate structures. Buildings connected by pedestrian walkways or tunnels shall be considered to be separate structures.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> Buildings that are on the same lot and considered as portions of a single building in accordance with Section 503.1.2. For purposes of calculating the number of Type B units required by Chapter 11, structurally connected buildings and buildings with multiple wings shall be considered to be one structure. 		Edits made to clarify code, no major changes to code requirements.
	<p>3104.3 Construction. The pedestrian walkway shall be of noncombustible construction.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> Combustible construction shall be permitted where connected buildings are of combustible construction. Fire-retardant-treated wood, in accordance with Section 603.1, Item 1.3, shall be permitted for the roof construction of the pedestrian walkway where connected buildings area minimum of not less than Type I or II construction. 		Edits made to clarify code, no major changes to code requirements.
	<p>3104.5.2.2 Glass. The wall shall be constructed of a tempered, wired or laminated glass wall and doors or glass separating the interior of the building from the pedestrian walkway. The glass shall be protected by an automatic sprinkler system in accordance with Section 903.3.1.1 that, when actuated, shall completely wet the entire surface of interior sides of the wall or glass. Obstructions shall not be installed between the sprinkler heads and the wall or glass. The glass shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler operates.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>3104.5.3 Open sides on walkway. Where the distance between the connected buildings is more than 10 feet (3048 mm), the walls at the intersection of the <i>pedestrian walkway</i> and each building need not be fire-resistance rated provided that both sidewalls of the <i>pedestrian walkway</i> are not less than 50</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>percent open with the open area uniformly distributed to prevent the accumulation of smoke and <i>toxic</i> gases. The roof of the walkway shall be located not more than 40 feet (12 160 mm) above <i>grade plane</i>, and the walkway shall only be permitted to connect to the third or lower <i>story</i> of each building.</p> <p>Exception: Where the <i>pedestrian walkway</i> is protected with a an automatic sprinkler system in accordance with Section 903.3.1.1, the roof of the walkway shall be located not more than 55 feet (16 764 mm) above <i>grade plane</i> and the walkway shall only be permitted to connect to the fifth or lower <i>story</i> of each building.</p>		
	<p>3104.10 Tunneled walkway. Separation between the tunneled walkway and the building to which it is connected shall be not less than 2-hour fire-resistant construction and openings therein shall be protected in accordance with Table Section 716.5.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 3105 AWNINGS AND CANOPIES</p> <p>3105.1 General. Awnings and canopies shall comply with the requirements of Sections 3105.2 through 3105.4 and 3105.3 and other applicable sections of this code.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3105.2 Definition. The following term is defined in Chapter 2: RETRACTABLE AWNING.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3105.3 3105.2 Design and construction. Awnings and canopies shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. Awnings shall have frames of noncombustible material, fire-retardant-treated wood, wood of Type IV-size heavy timber complying with Section 2304.11, or 1-hour construction with combustible or noncombustible covers and shall be either fixed, retractable, folding or collapsible.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>3105.4 3105.3 Awnings and canopy materials. Awnings and canopies shall be provided with an approved covering that meets the fire propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701 or has a flame spread index not greater than 25 when tested in accordance with ASTM E84 or UL 723,complies with one of the following:</p> <ol style="list-style-type: none"> 1. The fire propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701. 2. Has a flame spread index not greater than 25 when tested in accordance with ASTM E84 or UL 723. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>3. Meets all of the following criteria when tested in accordance with NFPA 286:</p> <p>3.1. During the 40 kW exposure, flames shall not spread to the ceiling.</p> <p>3.2. Flashover, as defined in NFPA 286, shall not occur.</p> <p>3.3. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.</p> <p>3.4. The peak heat release rate throughout the test shall not exceed 800 kW.</p> <p>Exception: The fire propagation performance and flame spread index requirements shall not apply to awnings installed on detached one- and two-family dwellings.</p>		
	<p>SECTION 3106 MARQUEES</p>		
	<p>SECTION 3107 SIGNS</p>		
	<p>SECTION 3108 TELECOMMUNICATION AND BROADCAST TOWERS</p>		
	<p>[BS] 3108.2 Location and access. Towers shall be located such that guy wires and other accessories shall not cross or encroach upon any street or other public space, or over above-ground electric utility lines, or encroach upon any privately owned property without the written consent of the owner of the encroached upon property, space or above-ground electric utility lines. Towers shall be equipped with climbing and working facilities in compliance with TIA-222. Access to the tower sites shall be limited as required by applicable OSHA, FCC and EPA regulations.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p><u>{EDITORIAL NOTE: DELETE SECTION 3109 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</u></p> <p>3109.1 General. The design and construction of swimming pools, spas, and hot tubs shall comply with the requirements of the <i>City Code</i> and Chapter 757 of the <i>Texas Health and Safety Code</i>.</p>	<p>SECTION 3109 SWIMMING POOLS, SPAS AND HOT TUBS</p> <p>3109.1 General. The design and construction of swimming pools, spas and hot tubs shall comply with the International Swimming Pool and Spa Code.</p>	<p>SECTION 3109 SWIMMING POOLS, SPAS AND HOT TUBS</p> <p><u>{EDITORIAL NOTE: DELETE SECTION 3109 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</u></p> <p>3109.1 General. The design and construction of swimming pools, spas, and hot tubs shall comply with the Houston Swimming Pool and Spa Code, the <i>City Code</i> and Chapter 757 of the <i>Texas Health and Safety Code</i>.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment updated to include reference to the ISPSC for pool/spa design.</p>

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	<p>SECTION 3110 AUTOMATIC VEHICULAR GATES</p> <p>3110.1 General. Automatic vehicular gates shall comply with the requirements of Sections 3110.2 through and 3110.4-3110.3 and other applicable sections of this code.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>3110.2 Definition. The following term is defined in Chapter 2: VEHICULAR GATE.</p>		
	<p>3110.3-3110.2 Vehicular gates intended for automation.</p>		
	<p>3110.4-3110.3 Vehicular gate openers.</p>		
	<p>SECTION 3111 PHOTOVOLTAIC PANELS AND MODULES SOLAR ENERGY SYSTEMS</p> <p>3111.1 General. Photovoltaic panels and modules shall comply with the requirements of this code and the International Fire Code Solar energy systems shall comply with the requirements of this section.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>3111.1.1 Rooftop-mounted photovoltaic panels and modules Wind resistance. Photovoltaic panels and modules installed on a roof or as an integral part of a roof assembly shall comply with the requirements of Chapter 15 and the International Fire Code Rooftop-mounted photovoltaic panels and modules (PV) panel system and solar thermal collectors shall be designed in accordance with Section 1609.</p>		Edits made to clarify code, new requirements
	<p>3111.1.2 Roof live load. Roof structures that provide support for solar energy systems shall be designed in accordance with Section 1607.13.5.</p>		New requirements
	<p>3111.2 Solar thermal systems. Solar thermal systems shall be designed and installed in accordance with this section, Section 2606.12, the <i>International Plumbing Code</i>, the <i>International Mechanical Code</i> and the <i>International Fire Code</i>. Where light-</p>		New requirements

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	transmitting plastic covers are used, solar thermal collectors shall be designed in accordance with Section 2606.12.		
	3111.2.1 Equipment. Solar thermal systems and components shall be listed and labeled in accordance with ICC 900/SRCC 300 and ICC 901/SRCC 100.		New requirements
	3111.3 Photovoltaic solar energy systems. Photovoltaic solar energy systems shall be designed and installed in accordance with this section, the International Fire Code, NFPA 70 and the manufacturer's installation instructions.		New requirements
	3111.3.1 Equipment. Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703 or with both UL 61730-1 and UL 61730-2. Inverters shall be listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.		New requirements
	3111.3.2 Fire classification. Rooftop-mounted photovoltaic (PV) panel systems shall have a fire classification in accordance with Section 1505.9. Building-integrated photovoltaic (BIPV) systems installed as roof coverings shall have a fire classification in accordance with Section 1505.8.		New requirements
	3111.3.3 Building-integrated photovoltaic (BIPV) systems. BIPV systems installed that serve as roof coverings shall be designed and installed in accordance with Section 1507. Section 1507.17.		New requirements
	3111.3.4 Access and pathways. Roof access, pathways and spacing requirements shall be provided in accordance with Section 1204 of the International Fire Code.		New requirements
	3111.3.5 Ground-mounted photovoltaic systems. Ground-mounted photovoltaic systems shall be designed and installed in accordance with Chapter 16 and the International Fire Code.		New requirements
	3111.3.5.1 Fire separation distances. Ground-mounted photovoltaic systems shall be subject to the fire separation distance requirements determined by the local jurisdiction.		New requirements

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<p>Moved to Section 3116</p> <p style="text-align: center;">SECTION 3112</p> <p style="text-align: center;">DRIVEWAYS, SIDEWALKS, PARKING LOTS, BUS PADS AND LANDINGS, AND ALLEYS</p> <p>{REVIEW NOTE: SECTION 3112 IS COORDINATED WITH THE CITY ENGINEER ROW STANDARDS AND IS SUBJECT TO CHANGE.}</p> <p>3112.1 Purpose. This section establishes the minimum regulations governing the design and construction of driveways, sidewalks, parking lots, bus pads and landings, alleys, and paving as required by this code, the Infrastructure Design Manual and the City Code. The most restrictive provision of applicable codes and ordinances shall prevail.</p>	<p style="text-align: center;">SECTION 3112</p> <p style="text-align: center;">GREENHOUSES</p> <p>3112.1 General. The provisions of this section shall apply to greenhouses that are designed and used for the cultivation, maintenance, or protection of plants.</p>		<p>New requirements for greenhouses.</p> <p>Houston amendment for Section 3112 (Driveways/Sidewalks/Etc.) has been moved to Section 3116.</p>
<p>3112.2 Definitions. The following terms, when used in this section, shall have the meaning ascribed in Chapter 2:</p> <p>ALLEY.</p> <p>DRIVEWAY.</p> <p>DRIVEWAY APPROACH.</p> <p>HIGHWAY, STREET OR ROAD.</p> <p>INFRASTRUCTURE DESIGN MANUAL.</p> <p>LOADING BERTH.</p> <p>LOCAL STREET OR ROAD.</p> <p>MAJOR THOROUGHFARE.</p> <p>PARKING LOT.</p> <p>PAVING.</p> <p>PEDESTRIAN.</p> <p>RIGHT-OF-WAY.</p> <p>ROADWAY (GENERAL).</p> <p>SIDEWALK.</p>	<p>3112.2 Accessibility. Greenhouses shall be accessible in accordance with Chapter 11.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment moved to Section 3116.2.</p>
<p>3112.3 Paving on private property. Driveways, sidewalks, patios, and other paving not located in the right-of-way, or not dedicated to the <i>jurisdiction</i> for the purpose of sidewalk construction, shall comply with this section.</p>	<p>3112.3 Structural design. Greenhouses shall comply with the structural design requirements for greenhouses in Chapter 16.</p>		<p>Amendment moved to Section 3116.</p>
<p>3112.3.1 Driveways. Driveways shall comply with the provisions of Section 3112.3.2 and shall connect to a driveway approach as provided in Section 3112.4.3.</p>			<p>Amendment moved to Section 3116.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p>3112.3.2 Paving. All other paving regulated under this section shall meet the minimum slab provisions of Section 1610 and any loads specified in Chapter 16, as applicable. These provisions shall be in addition to any standards required by Chapter 28 of the <i>City Code</i> regarding parking in yards. All paving or improved surfaces shall comply with Section 3112.6.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.3.3 Parking lots. The construction of parking lots shall be as required this section and Drawings 31-01 and 31-02 of Section 3112.4.5. Parking lots shall be designed to meet the loads as specified in Chapter 16. All driveway approaches and access to the parking lot shall be approved by the Office of the City Engineer in Houston Public Works.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.3.3.1 General. When an area is being developed for parking, a plan shall be prepared and submitted to the <i>building official</i> showing the boundary, entrances and exits, geometric layout of parking stalls and aisles, operating plan, drainage, and surfacing or paving. The area being developed for parking shall be surfaced with materials that will not permit wind or waterborne erosion from the area.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.3.3.2 Exiting from lot. When the parking lot is designed to create a one-way aisle operation, an exit shall be provided to enable the vehicle exiting to enter the street in a head-out position.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.3.3.3 Wheel stops. A 6-inch curb/wheel stop shall be installed not less than 2.5 feet from the right-of-way line when property is improved for vehicle use within 3 feet of the right of-way line. Barrier fencing or minimum 4-inch-diameter posts spaced not more than 3 feet apart and not less than 2 feet in height may be installed on the right-of-way line as a substitute for wheel stops. If the improved area is concrete, a permanent 6-inch curb shall be installed in lieu of wheel stops.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4 Work located in the jurisdiction's right-of-way. All work in the right-of-way shall be approved by the Office of the City Engineer in Houston Public Works. Construction or repair of any sidewalk, driveway approach, curb, gutter, or bus pad and landing shall comply with this section and Chapter 40, Article III, of the <i>City Code</i> and the <i>Infrastructure Design Manual</i>.</p>	<p>3112.4 Glass and glazing. Glass and glazing used in greenhouses shall comply with Section 2405.</p>		<p>Edits made to clarify code, no major changes to code requirements. Amendment moved to Section 3116.</p>
<p>3112.4.1 Jurisdiction approval of plans and specifications. No person shall construct or cause to be constructed any driveway approach, sidewalk, private street, parking lot or alley connecting private property with a public street and there shall be no fill deposited in the right-of-way without prior approval of Houston Public Works.</p>			<p>Amendment moved to Section 3116.</p>

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<p>3112.4.2 Plot plan. A complete site plan shall be prepared to a reasonable scale and submitted to Houston Public Works and the <i>jurisdiction's</i> Department of Planning and Development showing the following information:</p> <ol style="list-style-type: none"> 1. All right-of-way lines and property lines that bound the property planned for improvement. 2. Width and design of all existing driveways, driveway approaches, sidewalks, and media openings as they exist on the ground. 3. Existing conditions between the right-of-way line and the traveled roadway, including curbs, ditches, storm sewer inlets, manholes, utility boxes, utility poles, fire hydrants, trees, etc. If median islands exist, the next median opening on each side of the property and any trees within the median adjacent to the property. 4. If open ditches exist, the diameter size and invert elevation of the nearest existing culvert pipe upstream and downstream. 5. The complete intersection when property planned for improvement fronts a "T" intersecting street. 6. All existing on-site conditions with dimensions when property is being improved with add-on construction, remodeling, accessories, repairs, erection of building parking lots or any other improvements. 7. All proposed driveways and sidewalks, and the existing right-of-way conditions for a minimum 15 feet beyond the property line on each side. 			<p>Amendment moved to Section 3116.</p>
<p>3112.4.3 Driveway approach approval. Upon receipt of an application for a driveway approach permit, the Office of the City Engineer in Houston Public Works shall make a determination, pursuant to the guidelines set out in Section 40-86 of the <i>City Code</i>, as to whether the driveway approach applied for is necessary to provide reasonable access to the private property consistent with the safety and convenience of the public.</p> <p>If after review, the Office of the City Engineer in Houston Public Works finds that the plans comply with all applicable codes and ordinances, the Office of City Engineer shall approve the plans.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4.4 Sidewalks. When required by Chapter 10 of the <i>Infrastructure Design Manual</i>, public sidewalks shall be constructed in accordance with the applicable <i>Infrastructure Design Manual</i> drawing number for the specified location and site conditions.</p>			<p>Amendment moved to Section 3116.</p>

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<p>3112.4.5 Standards for design and construction. All construction regulated by this section shall be designed and constructed in accordance with the provisions of this section, including the following three drawings and the <i>Infrastructure Design Manual</i>, latest revised edition, including the drawings therein. When there is a conflict between this code and the <i>Infrastructure Design Manual</i>, the most restrictive provisions shall prevail.</p> <p>1. <u>PARKING LOT REQUIREMENTS ROW STANDARDS (T&T Drawing No. 31-01).</u></p> <p>2. <u>PARKING LOT REQUIREMENT PRIVATE PROPERTY STANDARDS (T&T Drawing No. 31-02).</u></p> <p>3. <u>PARKING LOT REQUIREMENTS PARKING SPACE DIMENSIONS (T&T Drawing No. 31-03).</u></p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4.7 Street curb and gutter replacement. Where construction of driveway approaches and sidewalks will require the removal and replacement of curb and gutter over a continuous run in excess of 25 percent of any one block, the permit applicant shall submit a plan to the Office of the City Engineer in Houston Public Works. In addition to all other applicable requirements in this section, the plans shall comply with the <i>Infrastructure Design Manual</i>.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4.8 Alley paving. The requirements for paving a public alley are identical to those for paving a public street. Plan-profile type of drawings prepared by a licensed professional engineer in the State of Texas and approved by all appropriate <i>jurisdiction</i> departments are required. The <i>Infrastructure Design Manual</i> will govern the design and construction of alleys. A separate paving permit issued by Houston Public Works and a separate paving bond will be required prior to any construction.</p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4.9 Driveway approach drainage. In the event an existing curb-type storm sewer inlet falls within the proposed driveway approach area, a new curb-type storm sewer inlet will be required to be constructed on the nearest remaining straight curb line. The existing inlet will be converted to a flat grate-type inlet and connected to the new inlet by a concrete pipe lead of a diameter not less than the existing lead. Failure to show the existing inlets on the plot plan in no way excuses compliance with the above requirement, even though the permit may have been issued. Refer to Houston Public Works Drawings Nos. 02632-03 and 02632-05 of the <i>Infrastructure Design Manual</i> (relocation of Type B and B-B inlets).</p>			<p>Amendment moved to Section 3116.</p>

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<p>3112.4.10 Bonded contractor. <u>No permit shall be issued to construct, reconstruct, repair, or regrade any driveway approach, sidewalk, culvert pipe, curb or gutter within the jurisdiction unless the applicant shows evidence that he has secured a bond in accordance with Section 40-95 of the City Code.</u></p> <p>Exception: <u>A homeowner will be issued a permit to install culvert pipe or construct a driveway approach where no curb cut is required in accordance with jurisdiction specifications without the bond required above.</u></p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4.11 Responsibility of property owners. <u>For responsibility of property owners of abutting public streets relative to construction or repair of sidewalks, driveways, driveway approaches, and culverts, see Section 40-84 of the City Code. For jurisdiction requirements relative to altering the grades of driveways, sidewalks, culvert pipes, curbs and gutters, see Section 40-90 of the City Code.</u></p>			<p>Amendment moved to Section 3116.</p>
<p>3112.4.12 Driveway approaches prohibited. <u>Driveway approaches are prohibited within any of the following areas:</u></p> <ol style="list-style-type: none"> <u>1. The areas set forth by the Texas Department of Transportation as "access denied."</u> <u>2. The areas designated "access denied" on a recorded subdivision plat or another plat required to be approved by the City of Houston Planning Commission.</u> <u>3. At the end of any dead-end street not terminating in a cul-de-sac or permanent turnaround and intended to be extended in the future.</u> <u>4. The limits of any intersection, with the exception that special consideration will be given to major thoroughfares with existing esplanades and streets primarily used for residential use.</u> <u>5. Abutting a local street where there is less than 20 feet (6,096 mm) of unobstructed depth from the right-of-way line to any obstruction. An overhead door will not be deemed as an obstruction provided that the width of the door is equal to or greater than the width of the driveway and there is also a minimum of 20 feet unobstructed dept on the private property where vehicles can be parked.</u> <u>6. An area abutting a major thoroughfare where the general design of parking does not provide the necessary depth of 44 feet (13,420 mm) to allow a vehicle when exiting to enter the thoroughfare in a head-out position.</u> <u>7. Any area where Houston Public Works finds that it would not provide reasonable access to the private property</u> 			<p>Amendment moved to Section 3116.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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<p><u>consistent with the safety and convenience of the traveling public.</u></p> <p><u>8. Within areas of unpaved street or alley rights-of-way, except as authorized by Section 40-340 of the <i>City Code</i>.</u></p> <p><u>9. Any alley where the proposed driveway approach provides the primary access to any building or structure where required fire department access as specified by the <i>Fire Code</i> is not provided.</u></p> <p><u>Where the construction of any building or structure upon a property causes a driveway to no longer comply with items 6 or 7 above, the driveway shall be removed and the area converted so that it conforms to the design of the surrounding area.</u></p>			
<p>3112.5 Off-street parking. <u>No building or structure shall be constructed, altered or moved onto any lot or building site unless off-street parking spaces are provided pursuant to the restrictions or covenants contained in or related to the subdivision plat or development plat for the property and the parking requirements established in Chapter 26 of the <i>City Code</i>.</u></p>	<p>3112.5 Light-transmitting plastics. Light-transmitting plastics shall be permitted in lieu of plain glass in greenhouses and shall comply with Section 2606.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment moved to Section 3116.</p>
<p>3112.6 Drainage. <u>All paved areas including, but not limited to, alleys, yards, courts and courtyards shall be drained into a storm sewer system where such systems are available; otherwise, they shall be drained to a place of disposal approved by the Office of the City Engineer in the Houston Public Works. For other than single family residential properties, storm water drainage shall not discharge or flow over any public sidewalk or adjoining property. When required by Chapter 9 of the <i>Infrastructure Design Manual</i>, detention shall be required.</u></p>	<p>3112.6 Membrane structures. Greenhouses that are membrane structures shall comply with Section 3102.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p> <p>Amendment moved to Section 3116.</p>
	<p>3112.6.1 Plastic film. Plastic films used in greenhouses shall comply with Section 3102.3.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>3112.7 Bus pads and landings. <u>When a right-of-way contains a bus stop, the engineer shall design the bus pad and landing to integrate with the sidewalk in accordance with Chapter 10, Section 10.06.H, item 12 of the <i>Infrastructure Design Manual</i>.</u></p>			<p>Amendment moved to Section 3116.</p>
<p>IDM Drawings for Parking Lots #1, #2, and #3</p>			<p>Amendment moved to Section 3116.</p>
	<p>SECTION 3113</p> <p>RELOCATABLE BUILDINGS</p> <p>3113.1 General. The provisions of this section shall apply to relocatable buildings. Relocatable buildings manufactured after the</p>		<p>New requirements</p>

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	<p>effective date of this code shall comply with the applicable provisions of this code.</p>		
	<p>3113.1.1 Compliance. A newly constructed relocatable building shall comply with the requirements of this code for new construction. An existing relocatable building that is undergoing alteration, addition, change of occupancy or relocation shall comply with Chapter 14 of the International Existing Building Code.</p>		<p>New requirements</p>
	<p>3113.2 Supplemental information. Supplemental information specific to a relocatable building shall be submitted to the authority having jurisdiction. It shall, as a minimum, include the following in addition to the information required by Section 105:</p> <ol style="list-style-type: none"> 1. Manufacturer's name and address. 2. Date of manufacture. 3. Serial number of module. 4. Manufacturer's design drawings. 5. Type of construction in accordance with Section 602. 6. Design loads including: roof live load, roof snow load, floor live load, wind load and seismic site class, use group and design category. 7. Additional building planning and structural design data. 8. Site-built structure or appurtenance attached to the relocatable building. 		<p>New requirements</p>
	<p>3113.3 Manufacturer's data plate. Each relocatable module shall have a data plate that is permanently attached on or adjacent to the electrical panel, and shall include the following information:</p> <ol style="list-style-type: none"> 1. Occupancy group. 2. Manufacturer's name and address. 3. Date of manufacture. 4. Serial number of module. 5. Design roof live load, design floor live load, snow load, wind and seismic design. 6. Approved quality assurance agency or approved inspection agency. 7. Codes and standards of construction. 8. Envelope thermal resistance values. 9. Electrical service size. 10. Fuel-burning equipment and size. 		<p>New requirements</p>

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	11. Special limitations if any.		
	3113.4 Inspection agencies. The building official is authorized to accept reports of inspections conducted by approved inspection agencies during off-site construction of the relocatable building, and to satisfy the applicable requirements of Sections 110.3 through 110.3.11.1.		New requirements
	SECTION 3114 PUBLIC USE RESTROOM BUILDINGS IN FLOOD HAZARD AREAS 3114.1 General. For the purpose of this section, public restroom buildings are located on publicly owned lands in <i>flood hazard areas</i> and intended for public use. Public restroom buildings and portions of other buildings that contain public restrooms are limited to toilet rooms, bathrooms, showers and changing rooms. Public restroom buildings and portions of buildings that contain public restrooms shall comply with the requirements of this section. Public-use restrooms that are not elevated or <i>dry floodproofed</i> in accordance with Section 1612 shall comply with Section 3114.2. Portions of buildings that include uses other than public-use toilet rooms, bathrooms, showers and changing rooms shall comply with Section 1612.		New requirements
	3114.2 Flood resistance. Public-use restrooms on publicly owned lands in <i>flood hazard areas</i> shall comply with the requirements of ASCE 24, except for elevation requirements, and shall comply with all of the following criteria: 1. The building footprint is not more than 1,500 square feet (139 m²). 2. Located, designated and constructed to resist the effects of <i>flood hazards</i> and <i>flood loads</i> to minimum <i>flood</i> damage from a combination of wind and water <i>loads</i> associated with the <i>base flood</i>. 3. Anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic <i>loads</i>, including the effects of buoyancy during conditions of the <i>base flood</i>. 4. Constructed of <i>flood-damage-resistant materials</i>. 5. Where enclosed by walls, the walls have flood openings. 6. Mechanical and electrical systems are located above the <i>base flood elevation</i>.		New requirements

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	<p><u>7. Plumbing fixtures and plumbing connections are located above the base flood elevation.</u></p> <p><u>8. An emergency plan, approved by the jurisdiction, is submitted to the building official and includes building design documents specifying implementation of protection measures prior to the onset of flooding conditions.</u></p> <p>Exceptions:</p> <p><u>1. Minimum necessary electric equipment required to address health, life safety and electric code requirements is permitted below the base flood elevation in accordance with ASCE 24 provisions for electric elements installed below the minimum elevations.</u></p> <p><u>2. Plumbing fixtures and connections are permitted below the base flood elevation provided that the fixtures and connections are designed and installed to minimize or eliminate infiltration of floodwaters into the sanitary sewage system and discharges from sanitary sewage systems into floodwaters.</u></p>		
	<p style="text-align: center;">SECTION 3115</p> <p style="text-align: center;">INTERMODAL SHIPPING CONTAINERS</p> <p><u>3115.1 General.</u> The provisions of Section 3115 and other applicable sections of this code shall apply to <i>intermodal shipping containers</i> that are repurposed for use as buildings or structures, or as a part of buildings or structures.</p> <p>Exceptions:</p> <p><u>1. Intermodal shipping containers previously approved as existing relocatable buildings complying with Chapter 14 of the International Existing Building Code.</u></p> <p><u>2. Stationary storage battery arrays located in intermodal shipping containers complying with Chapter 12 of the International Fire Code.</u></p> <p><u>3. Intermodal shipping containers that are listed as equipment complying with the standard for equipment, such as air chillers, engine generators, modular data centers, and other similar equipment.</u></p> <p><u>4. Intermodal shipping containers housing or supporting experimental equipment are exempt from the requirements of Section 3115, provided that they comply with all of the following:</u></p> <p><u>4.1. Such units shall be single stand-alone units supported at grade level and used only for occupancies as specified under Risk Category I in Table 1604.5.</u></p>		<p>New requirements</p>

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	<p><u>4.2. Such units are located a minimum of 8 feet (2438 mm) from adjacent structures, and are not connected to a fuel gas system or fuel gas utility.</u></p> <p><u>4.3. In hurricane-prone regions and flood hazard areas, such units are designed in accordance with the applicable provisions of Chapter 16.</u></p>		
	<p><u>3115.2 Construction documents.</u> The construction documents shall contain information to verify the dimensions and establish the physical properties of the steel components and wood floor components of the <i>intermodal shipping container</i>, in addition to the information required by Section 107 and 1603.</p>		New requirements
	<p><u>3115.3 Intermodal shipping container information.</u> Intermodal shipping containers shall bear an existing data plate containing the following information as required by ISO 6346 and verified by an approved agency. A report of the verification process and findings shall be provided to the building owner.</p> <ol style="list-style-type: none"> <u>1. Manufacturer's name or identification number.</u> <u>2. Date manufactured.</u> <u>3. Safety approval number.</u> <u>4. Identification number.</u> <u>5. Maximum operating gross mass or weight (kg) (lbs).</u> <u>6. Allowable stacking load for 1.8G (kg) (lbs).</u> <u>7. Transverse racking test force (Newtons).</u> <u>8. Valid maintenance examination date.</u> <p><u>Where approved by the building official, the markings and existing data plate are permitted to be removed from the intermodal shipping containers before they are repurposed for use as buildings or structures or as a part of buildings or structures.</u></p>		New requirements
	<p><u>3115.4 Protection against decay and termites.</u> Wood structural floors of <i>intermodal shipping containers</i> shall be protected from decay and termites in accordance with the applicable provisions of Section 2304.12.1.1.</p>		New requirements
	<p><u>3115.5 Under-floor ventilation.</u> The space between the bottom of the floor joists and the earth under any <i>intermodal shipping container</i>, except spaces occupied by basements and cellars, shall be provided with ventilation in accordance with Section 1202.4.</p>		New requirements
	<p><u>3115.6 Roof assemblies.</u> <i>Intermodal shipping container</i> roof assemblies shall comply with the applicable requirements of Chapter 15.</p>		New requirements

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	<u>Exception: Single-unit, stand-alone intermodal shipping containers not attached to, or stacked vertically over, other intermodal shipping containers, buildings or structures.</u>		
	<u>3115.7 Joints and voids. Joints and voids that create concealed spaces between connected or stacked <i>intermodal shipping containers</i> at fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved <i>fire-resistant joint system</i> in accordance with Section 715.</u>		New requirements
	<u>3115.8 Structural. Intermodal shipping containers that conform to ISO 1496-1 and are repurposed for use as buildings or structures, or as a part of buildings or structures, shall be designed in accordance with Chapter 16 and this section.</u>		New requirements
	<u>3115.8.1 Foundations. <i>Intermodal shipping containers</i> repurposed for use as a permanent building or structure shall be supported on foundations or other supporting structures designed and constructed in accordance with Chapters 16 through 23.</u>		New requirements
	<u>3115.8.1.1 Anchorage. <i>Intermodal shipping containers</i> shall be anchored to foundations or other supporting structures as necessary to provide a continuous load path for all applicable design and environmental loads in accordance with Chapter 16.</u>		New requirements
	<u>3115.8.2 Welds. New welds and connections shall be equal to or greater than the original connections.</u>		New requirements
	<u>3115.8.3 Structural design. The structural design for the <i>intermodal shipping containers</i> repurposed for use as a building or structure, or as part of a building or structure, shall comply with Sections 3115.8.4 or 3115.8.5.</u>		New requirements
	<u>3115.8.4 Detailed design procedure. A structural analysis meeting the requirements of this section shall be provided to the <i>building official</i> to demonstrate the structural adequacy of the intermodal shipping containers.</u> <u>Exception: Intermodal shipping containers designed in accordance with Section 3115.8.5.</u>		New requirements

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	<p>3115.8.4.1 Material properties. <u>Structural material properties for existing <i>intermodal shipping containers</i> steel components shall be established by material testing where the steel grade and composition cannot be identified by the manufacturer's designation as to manufacture and mill test.</u></p>		<p>New requirements</p>
	<p>3115.8.4.2 Seismic design parameters. <u>The seismic force-resisting system shall be designed and detailed in accordance with one of the following:</u></p> <ol style="list-style-type: none"> <u>1. Where all or portions of the corrugated steel container sides are considered to be the seismic force-resisting system, design and detailing shall be in accordance with the ASCE 7, Table 12.2-1 requirements for light-frame bearing-wall systems with shear panels of all other materials.</u> <u>2. Where portions of the corrugated steel container sides are retained, but are not considered to be the seismic force-resisting system, an independent seismic force-resisting system shall be selected, designed and detailed in accordance with ASCE 7, Table 12.2-1.</u> <u>3. Where portions of the corrugated steel container sides are retained and integrated into a seismic force-resisting system other than as permitted by Item 1, seismic design parameters shall be developed from testing and analysis in accordance with Section 104.11 and ASCE 7, Section 12.2.1.1 or 12.2.1.2.</u> 		<p>New requirements</p>
	<p>3115.8.4.3 Allowable shear value. <u>The allowable shear values for the <i>intermodal shipping container</i> corrugated steel sheet panel side walls and end walls shall be demonstrated by testing and analysis in accordance with Section 104.11. Where penetrations are made in the side walls or end walls designated as part of the lateral force-resisting system, the penetrations shall be substantiated by rational analysis.</u></p>		<p>New requirements</p>
	<p>3115.8.5 Simplified structural design of single-unit containers. <u>Single-unit <i>intermodal shipping containers</i> conforming to the limitations of Section 3115.8.5.1 shall be permitted to be designed in accordance with the simplified structural design provisions of Section 3115.8.5.2.</u></p>		<p>New requirements</p>
	<p>3115.8.5.1 Limitations. <u>The use of Section 3115.8.5 is subject to the following limitations:</u></p> <ol style="list-style-type: none"> <u>1. The <i>intermodal shipping container</i> shall be a single-unit, stand-alone unit supported on a foundation and shall not be in contact with or supporting any other shipping container or other structure.</u> 		<p>New requirements</p>

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	<p><u>2. The intermodal shipping container top and bottom rails, corner castings, and columns or any portion thereof shall not be notched, cut, or removed in any manner.</u></p> <p><u>3. The intermodal shipping container shall be erected in a level and horizontal position with the floor located at the bottom.</u></p> <p><u>4. The intermodal shipping container shall be located in Seismic Design Category A, B, C or D.</u></p>		
	<p>3115.8.5.2 Simplified structural design. Where permitted by Section 3115.8.1, single-unit, stand-alone intermodal shipping containers shall be designed using the following assumptions for the corrugated steel shear walls:</p> <p><u>1. The appropriate detailing requirements contained in Chapters 16 through 23.</u></p> <p><u>2. Response modification coefficient, R = 2.</u></p> <p><u>3. Overstrength factor, $\Omega_0 = 2.5$.</u></p> <p><u>4. Deflection amplification factor, $C_d = 2$.</u></p> <p><u>5. Limits on structural height, $h_p = 9.5$ feet (2900 mm).</u></p>		<p>New requirements</p>
	<p>3115.8.5.3 Allowable shear. The allowable shear for the corrugated steel side walls (longitudinal) and end walls (transverse) for wind design and seismic design using the coefficients of Section 3115.8.5.2 shall be in accordance with Table 3115.8.5.3, provided that all of the following conditions are met:</p> <p><u>1. The total linear length of all openings in any individual side wall or end wall shall be limited to not more than 50 percent of the length of that side wall or end wall, as shown in Figure 3115.8.5.3(1).</u></p> <p><u>2. Any full-height wall length, or portion thereof, less than 4 feet (305 mm) shall not be considered as a portion of the lateral force-resisting system, as shown in Figure 3115.8.5.3(2).</u></p> <p><u>3. All side walls or end walls used as part of the lateral force-resisting system shall have an existing or new boundary element on all sides to form a continuous load path, or paths, with adequate strength and stiffness to transfer all forces from the point of application to the final point of resistance, as shown in Figure 3115.8.5.3(3).</u></p> <p><u>4. Where openings are made in container walls, floors or roofs, for doors, windows and other openings:</u></p>		<p>New requirements</p>

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	<p><u>4.1. The openings shall be framed with steel elements that are designed in accordance with Chapters 16 and 22.</u></p> <p><u>4.2. The cross section and material grade of any new steel element shall be equal to or greater than the steel element removed.</u></p> <p><u>5. A maximum of one penetration not greater than 6 inches (152 mm) in diameter for conduits, pipes, tubes or vents, or not greater than 16 square inches (10 323 mm²) for electrical boxes, is permitted for each individual 8-foot (2438 mm) length of lateral force-resisting wall. Penetrations located in walls that are not part of the lateral force-resisting system shall not be limited in size or quantity. Existing <i>intermodal shipping container</i> vents shall not be considered a penetration, as shown in Figure 3115.8.5.3(4).</u></p> <p><u>6. End wall doors designated as part of the lateral force-resisting system shall be welded closed.</u></p>		
	<p>FIGURE 3115.8.5.3(1) BRACING UNIT DISTRIBUTION—MAXIMUM LINEAR LENGTH</p>		New figure
	<p>FIGURE 3115.8.5.3(2) BRACING UNIT DISTRIBUTION—MINIMUM LINEAR LENGTH</p>		New figure
	<p>FIGURE 3115.8.5.3(3) BRACING UNIT DISTRIBUTION—BOUNDARY ELEMENTS</p>		New figure
	<p>FIGURE 3115.8.5.3(4) BRACING UNIT DISTRIBUTION—PENETRATION LIMITATIONS</p>		New figure
	<p>TABLE 3115.8.5.3 ALLOWABLE SHEAR VALUES FOR INTERMODAL SHIPPING CONTAINER CORRUGATED STEEL WALLS FOR WIND OR SEISMIC LOADING</p>		New Table for shipping container

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		<p align="center">SECTION 3116</p> <p align="center">DRIVEWAYS, SIDEWALKS, PARKING LOTS, BUS PADS AND LANDINGS, AND ALLEYS</p> <p><u>REVIEW NOTE: SECTION 3116 IS COORDINATED WITH THE CITY ENGINEER ROW STANDARDS AND IS SUBJECT TO CHANGE.</u></p> <p>3116.1 Purpose. This section establishes the minimum regulations governing the design and construction of driveways, sidewalks, parking lots, bus pads and landings, alleys, and paving as required by this code, the <i>Infrastructure Design Manual</i> and the <i>City Code</i>. The most restrictive provision of applicable codes and ordinances shall prevail.</p>	<p>Section has been relocated from 3112 – No major changes to provisions of section.</p>
		<p>3116.2 Definitions. The following terms, when used in this section, shall have the meaning ascribed in Chapter 2:</p> <p>ALLEY.</p> <p>DRIVEWAY.</p> <p>DRIVEWAY APPROACH.</p> <p>HIGHWAY, STREET OR ROAD.</p> <p>INFRASTRUCTURE DESIGN MANUAL.</p> <p>LOADING BERTH.</p> <p>LOCAL STREET OR ROAD.</p> <p>MAJOR THOROUGHFARE.</p> <p>PARKING LOT.</p> <p>PAVING.</p> <p>PEDESTRIAN.</p> <p>RIGHT-OF-WAY.</p> <p>ROADWAY (GENERAL).</p> <p>SIDEWALK.</p>	<p>No change to Houston amendment.</p>
		<p>3116.3 Paving on private property. Driveways, sidewalks, patios, and other paving not located in the right-of-way, or not dedicated to the <i>jurisdiction</i> for the purpose of sidewalk construction, shall comply with this section.</p>	<p>No change to Houston amendment.</p>
		<p>3116.3.1 Driveways. Driveways shall comply with the provisions of Section 3116.3.2 and shall connect to a driveway approach as provided in Section 3116.4.3.</p>	<p>No change to Houston amendment.</p>

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		<u>3116.3.2 Paving. All other paving regulated under this section shall meet the minimum slab provisions of Section 1610 and any loads specified in Chapter 16, as applicable. These provisions shall be in addition to any standards required by Chapter 28 of the <i>City Code</i> regarding parking in yards. All paving or improved surfaces shall comply with Section 3116.6.</u>	No change to Houston amendment.
		<u>3116.3.3 Parking lots. The construction of parking lots shall be as required this section and Drawings 31-01 and 31-02 of Section 3116.4.5. Parking lots shall be designed to meet the loads as specified in Chapter 16. All driveway approaches and access to the parking lot shall be approved by the Office of the City Engineer in Houston Public Works.</u>	No change to Houston amendment.
		<u>3116.3.3.1 General. When an area is being developed for parking, a plan shall be prepared and submitted to the <i>building official</i> showing the boundary, entrances and exits, geometric layout of parking stalls and aisles, operating plan, drainage, and surfacing or paving. The area being developed for parking shall be surfaced with materials that will not permit wind or waterborne erosion from the area.</u>	No change to Houston amendment.
		<u>3116.3.3.2 Exiting from lot. When the parking lot is designed to create a one-way aisle operation, an exit shall be provided to enable the vehicle exiting to enter the street in a head-out position.</u>	No change to Houston amendment.
		<u>3116.3.3.3 Wheel stops. A 6-inch curb/wheel stop shall be installed not less than 2.5 feet from the right-of-way line when property is improved for vehicle use within 3 feet of the right of-way line. Barrier fencing or minimum 4-inch-diameter posts spaced not more than 3 feet apart and not less than 2 feet in height may be installed on the right-of-way line as a substitute for wheel stops. If the improved area is concrete, a permanent 6-inch curb shall be installed in lieu of wheel stops.</u>	No change to Houston amendment.
		<u>3116.4 Work located in the <i>jurisdiction's</i> right-of-way. All work in the right-of-way shall be approved by the Office of the City Engineer in Houston Public Works. Construction or repair of any sidewalk, driveway approach, curb, gutter, or bus pad and landing shall comply with this section and Chapter 40, Article III, of the <i>City Code</i> and the <i>Infrastructure Design Manual</i>.</u>	No change to Houston amendment.
		<u>3116.4.1 Jurisdiction approval of plans and specifications. No person shall construct or cause to be constructed any driveway approach, sidewalk, private street, parking lot or alley connecting private property with a public street and there shall be no fill deposited in the right-of-way without prior approval of Houston Public Works.</u>	No change to Houston amendment.

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		<p>3116.4.2 Plot plan. A complete site plan shall be prepared to a reasonable scale and submitted to Houston Public Works and the <i>jurisdiction's</i> Department of Planning and Development showing the following information:</p> <ol style="list-style-type: none"> 1. All right-of-way lines and property lines that bound the property planned for improvement. 2. Width and design of all existing driveways, driveway approaches, sidewalks, and media openings as they exist on the ground. 3. Existing conditions between the right-of-way line and the traveled roadway, including curbs, ditches, storm sewer inlets, manholes, utility boxes, utility poles, fire hydrants, trees, etc. If median islands exist, the next median opening on each side of the property and any trees within the median adjacent to the property. 4. If open ditches exist, the diameter size and invert elevation of the nearest existing culvert pipe upstream and downstream. 5. The complete intersection when property planned for improvement fronts a "T" intersecting street. 6. All existing on-site conditions with dimensions when property is being improved with add-on construction, remodeling, accessories, repairs, erection of building parking lots or any other improvements. 7. All proposed driveways and sidewalks, and the existing right-of-way conditions for a minimum 15 feet beyond the property line on each side. 	<p>No change to Houston amendment.</p>
		<p>3116.4.3 Driveway approach approval. Upon receipt of an application for a driveway approach permit, the Office of the City Engineer in Houston Public Works shall make a determination, pursuant to the guidelines set out in Section 40-86 of the <i>City Code</i>, as to whether the driveway approach applied for is necessary to provide reasonable access to the private property consistent with the safety and convenience of the public.</p> <p>If after review, the Office of the City Engineer in Houston Public Works finds that the plans comply with all applicable codes and ordinances, the Office of City Engineer shall approve the plans.</p>	<p>No change to Houston amendment.</p>
		<p>3116.4.4 Sidewalks. When required by Chapter 10 of the <i>Infrastructure Design Manual</i>, public sidewalks shall be constructed in accordance with the applicable <i>Infrastructure Design Manual</i> drawing number for the specified location and site conditions.</p>	<p>No change to Houston amendment.</p>

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		<p>3116.4.5 Standards for design and construction. All construction regulated by this section shall be designed and constructed in accordance with the provisions of this section, including the following three drawings and the <i>Infrastructure Design Manual</i>, latest revised edition, including the drawings therein. When there is a conflict between this code and the <i>Infrastructure Design Manual</i>, the most restrictive provisions shall prevail.</p> <ol style="list-style-type: none"> 1. PARKING LOT REQUIREMENTS ROW STANDARDS (T&T Drawing No. 31-01). 2. PARKING LOT REQUIREMENT PRIVATE PROPERTY STANDARDS (T&T Drawing No. 31-02). 3. PARKING LOT REQUIREMENTS PARKING SPACE DIMENSIONS (T&T Drawing No. 31-03). 	<p>No change to Houston amendment.</p>
		<p>3116.4.6 Loading berth. In no case shall a “back-in” loading berth be constructed on a major thoroughfare where the vehicle will use the major thoroughfare for maneuvering purposes.</p> <p>Where off-street “back-out” loading berths are constructed, the loading area shall be sufficiently designed and constructed to store the commercial motor vehicle, truck-tractor, tractor, trailer or semitrailer or combination of such vehicles within private property, and no part of the vehicle shall protrude over the property line or obstruct any public street or sidewalk area in whole or in part.</p> <p>The depth of the loading berth from the right-of-way line extending into the private property shall be determined based on the types of commercial vehicles using the facility.</p>	<p>No change to Houston amendment.</p>
		<p>3116.4.7 Street curb and gutter replacement. Where construction of driveway approaches and sidewalks will require the removal and replacement of curb and gutter over a continuous run in excess of 25 percent of any one block, the permit applicant shall submit a plan to the Office of the City Engineer in Houston Public Works. In addition to all other applicable requirements in this section, the plans shall comply with the <i>Infrastructure Design Manual</i>.</p>	<p>No change to Houston amendment.</p>
		<p>3116.4.8 Alley paving. The requirements for paving a public alley are identical to those for paving a public street. Plan-profile type of drawings prepared by a licensed professional engineer in the State of Texas and approved by all appropriate jurisdiction departments are required. The <i>Infrastructure Design Manual</i> will govern the design and construction of alleys. A separate paving permit issued by Houston Public Works and a separate paving bond will be required prior to any construction.</p>	<p>No change to Houston amendment.</p>

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		<p>3116.4.9 Driveway approach drainage. In the event an existing curb-type storm sewer inlet falls within the proposed driveway approach area, a new curb-type storm sewer inlet will be required to be constructed on the nearest remaining straight curb line. The existing inlet will be converted to a flat grate-type inlet and connected to the new inlet by a concrete pipe lead of a diameter not less than the existing lead. Failure to show the existing inlets on the plot plan in no way excuses compliance with the above requirement, even though the permit may have been issued. Refer to Houston Public Works Drawings Nos. 02632-03 and 02632-05 of the <i>Infrastructure Design Manual</i> (relocation of Type B and B-B inlets).</p>	<p>No change to Houston amendment.</p>
		<p>3116.4.10 Bonded contractor. No permit shall be issued to construct, reconstruct, repair, or regrade any driveway approach, sidewalk, culvert pipe, curb or gutter within the <i>jurisdiction</i> unless the applicant shows evidence that he has secured a bond in accordance with Section 40-95 of the <i>City Code</i>.</p> <p>Exception: A homeowner will be issued a permit to install culvert pipe or construct a driveway approach where no curb cut is required in accordance with <i>jurisdiction</i> specifications without the bond required above.</p>	<p>No change to Houston amendment.</p>
		<p>3116.4.11 Responsibility of property owners. For responsibility of property owners of abutting public streets relative to construction or repair of sidewalks, driveways, driveway approaches, and culverts, see Section 40-84 of the <i>City Code</i>. For <i>jurisdiction</i> requirements relative to altering the grades of driveways, sidewalks, culvert pipes, curbs and gutters, see Section 40-90 of the <i>City Code</i>.</p>	<p>No change to Houston amendment.</p>
		<p>3116.4.12 Driveway approaches prohibited. Driveway approaches are prohibited within any of the following areas:</p> <ol style="list-style-type: none"> 1. The areas set forth by the Texas Department of Transportation as "access denied." 2. The areas designated "access denied" on a recorded subdivision plat or another plat required to be approved by the City of Houston Planning Commission. 3. At the end of any dead-end street not terminating in a cul-de-sac or permanent turnaround and intended to be extended in the future. 4. The limits of any intersection, with the exception that special consideration will be given to major thoroughfares with existing esplanades and streets primarily used for residential use. 5. Abutting a local street where there is less than 20 feet (6,096 mm) of unobstructed depth from the right-of-way line to any obstruction. An overhead door will not be 	<p>No change to Houston amendment.</p>

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		<p><u>deemed as an obstruction provided that the width of the door is equal to or greater than the width of the driveway and there is also a minimum of 20 feet unobstructed dept on the private property where vehicles can be parked.</u></p> <p>6. <u>An area abutting a major thoroughfare where the general design of parking does not provide the necessary depth of 44 feet (13,420 mm) to allow a vehicle when exiting to enter the thoroughfare in a head-out position.</u></p> <p>7. <u>Any area where Houston Public Works finds that it would not provide reasonable access to the private property consistent with the safety and convenience of the traveling public.</u></p> <p>8. <u>Within areas of unpaved street or alley rights-of-way, except as authorized by Section 40-340 of the <i>City Code</i>.</u></p> <p>9. <u>Any alley where the proposed driveway approach provides the primary access to any building or structure where required fire department access as specified by the <i>Fire Code</i> is not provided.</u></p> <p><u>Where the construction of any building or structure upon a property causes a driveway to no longer comply with items 6 or 7 above, the driveway shall be removed and the area converted so that it conforms to the design of the surrounding area.</u></p>	
		<p>3116.5 Off-street parking. <u>No building or structure shall be constructed, altered or moved onto any lot or building site unless off-street parking spaces are provided pursuant to the restrictions or covenants contained in or related to the subdivision plat or development plat for the property and the parking requirements established in Chapter 26 of the <i>City Code</i>.</u></p>	<p>No change to Houston amendment.</p>
		<p>3116.6 Drainage. <u>All paved areas including, but not limited to, alleys, yards, courts and courtyards shall be drained into a storm sewer system where such systems are available; otherwise, they shall be drained to a place of disposal approved by the Office of the City Engineer in the Houston Public Works. For other than single family residential properties, storm water drainage shall not discharge or flow over any public sidewalk or adjoining property. When required by Chapter 9 of the <i>Infrastructure Design Manual</i>, detention shall be required.</u></p>	<p>No change to Houston amendment.</p>

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		<p>3116.7 Bus pads and landings. When a right-of-way contains a bus stop, the engineer shall design the bus pad and landing to integrate with the sidewalk in accordance with Chapter 10, Section 10.06.H, item 12 of the <i>Infrastructure Design Manual</i>.</p>	No change to Houston amendment.
2015 Houston IBC – Chapter 32 Encroachments into the Public Right-Of-Way	2021 IBC - Chapter 32 Encroachments into the Public Right-Of-Way	2021 Houston Amendments – Chapter 32	Code Analysis
	SECTION 3202 ENCROACHMENTS	SECTION 3202 ENCROACHMENTS	
<p><small>{REVIEW NOTE: CHAPTER 32 IS COORDINATED WITH THE CITY ENGINEER ROW STANDARDS AND IS SUBJECT TO CHANGE.}</small></p> <p>3202.1.1 Structural support. A part of a building erected below grade that is necessary for structural support of the building or structure shall not project beyond the <i>lot lines</i>, except that the footings of street walls or their supports that are located not less than 8 feet (2,438 mm) below grade shall not project more than 42 <u>24</u> inches (305 <u>610</u> mm) beyond the street <i>lot line</i>.</p>	No change	<p><small>{REVIEW NOTE: CHAPTER 32 IS COORDINATED WITH THE CITY ENGINEER ROW STANDARDS AND IS SUBJECT TO CHANGE.}</small></p> <p>3202.1.1 Structural support. A part of a building erected below grade that is necessary for structural support of the building or structure shall not project beyond the <i>lot lines</i>, except that the footings of street walls or their supports that are located not less than 8 feet (2,438 mm) below grade shall not project more than <u>42 24</u> inches (305 <u>610</u> mm) beyond the street <i>lot line</i>.</p>	No change to Houston amendment.
<p>3202.2 Encroachments above grade and below 8 feet in height. Encroachments into the public right-of-way above grade and below 8 feet (2,438 mm) in height shall be prohibited except as provided for in Sections 3202.2.1 through 3202.2.3. Doors and windows shall not open or project into the public right-of-way Projections shall not encroach within the required width of a sidewalk.</p>	No change	<p>3202.2 Encroachments above grade and below 8 feet in height. Encroachments into the public right-of-way above grade and below 8 feet (2,438 mm) in height shall be prohibited except as provided for in Sections 3202.2.1 through 3202.2.3. Doors and windows shall not open or project into the public right-of-way Projections shall not encroach within the required width of a sidewalk.</p>	No change to Houston amendment.
<p>3202.2.4 Doors. Power-operated doors and their guide rails shall not project over public property. Other doors, either when fully opened or when opening, shall not project more than 3 feet (915 mm) beyond the property line, except that in alleys no projection beyond the property line is permitted.</p> <p>Exception: Doors that do not encroach within the required width of a sidewalk and that will not interfere with the sidewalk flow of pedestrian traffic as determined by the building official are exempt.</p>	N/a	<p>3202.2.4 Doors. Power-operated doors and their guide rails shall not project over public property. Other doors, either when fully opened or when opening, shall not project more than 3 feet (915 mm) beyond the property line, except that in alleys no projection beyond the property line is permitted.</p> <p>Exception: Doors that do not encroach within the required width of a sidewalk and that will not interfere with the sidewalk flow of pedestrian traffic as determined by the building official are exempt.</p>	No change to Houston amendment.

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<p>3202.3.1 Awnings, canopies, and marquees and signs. Awnings, canopies, and marquees and signs shall be constructed so as to support applicable loads as specified in Chapter 16. Awnings, canopies, and marquees and signs with less than 15 feet (4572 mm) clearance above the sidewalk shall not extend into or occupy more than two-thirds the width of the sidewalk measured from the building. Stanchions or columns that support awnings, canopies, and marquees and signs shall be located not less than 2 feet (610 mm) in from the curb line.</p>	<p>3202.3.1 Awnings, canopies, marquees and signs. Awnings, canopies, marquees and signs shall be constructed so as to support applicable loads as specified in Chapter 16. Awnings, canopies, marquees and signs with less than 15 feet (4572 mm) of clearance above the sidewalk shall not extend into or occupy more than two-thirds the width of the sidewalk measured from the building. Stanchions or columns that support awnings, canopies, marquees and signs shall be located not less than 2 feet (610 mm) in from the curb line.</p>	<p>3202.3.1 Awnings, canopies, and marquees and signs. Awnings, canopies, and marquees and signs shall be constructed so as to support applicable loads as specified in Chapter 16. Awnings, canopies, and marquees and signs with less than 15 feet (4572 mm) clearance above the sidewalk shall not extend into or occupy more than two-thirds the width of the sidewalk measured from the building. Stanchions or columns that support awnings, canopies, and marquees and signs shall be located not less than 2 feet (610 mm) in from the curb line.</p>	<p>Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.</p>
<p>3202.3.3 Encroachments 15 feet or more above grade. Encroachments 15 feet (4572 mm) or more above grade shall not be limited. Entrance-type canopy. Entrance-type canopies may have combustible coverings supported on noncombustible frames. The lowest part of such frames shall be not less than 8 feet (2,438 mm) above the grade immediately below, and the lowest part of any fringe or material attached to the covering shall be not less than 7 feet (2,133 mm) above the grade immediately below. The horizontal clearance between the entrance-type canopy and curb line shall be not less than 2 feet (610 mm). In any case, where posts may be necessary for support at the street end of such canopies, such posts shall be installed 2 feet (610 mm) from the curb line. There shall not be any other such post on public property between these outer posts and the property line. Such canopies shall not be wider than 12 feet (3,658 mm).</p>	<p>No change</p>	<p>3202.3.3 Encroachments 15 feet or more above grade. Encroachments 15 feet (4572 mm) or more above grade shall not be limited. Entrance-type canopy. Entrance-type canopies may have combustible coverings supported on noncombustible frames. The lowest part of such frames shall be not less than 8 feet (2,438 mm) above the grade immediately below, and the lowest part of any fringe or material attached to the covering shall be not less than 7 feet (2,133 mm) above the grade immediately below. The horizontal clearance between the entrance-type canopy and curb line shall be not less than 2 feet (610 mm). In any case, where posts may be necessary for support at the street end of such canopies, such posts shall be installed 2 feet (610 mm) from the curb line. There shall not be any other such post on public property between these outer posts and the property line. Such canopies shall not be wider than 12 feet (3,658 mm).</p>	<p>No change to Houston amendment.</p>
<p>3202.3.4 Pedestrian walkways. The installation of a pedestrian walkway over a public right-of-way shall be subject to the approval of the applicable governing authority. The vertical clearance from the public right-of-way to the lowest part of a pedestrian walkway shall be not less than 15 feet (4572 mm).</p>	<p>No change</p>	<p>3202.3.4 Pedestrian walkways. The installation of a pedestrian walkway over a public right-of-way shall be subject to the approval of the applicable governing authority. The vertical clearance from the public right-of-way to the lowest part of a pedestrian walkway shall be not less than 15 feet (4572 mm).</p>	<p>No change to Houston amendment.</p>
<p>3202.4 Temporary encroachments. Where allowed by the applicable governing authority, vestibules and storm enclosures shall not be erected for a period of time exceeding seven months in any one year and shall not encroach more than 3 feet (914 mm) nor more than one-fourth of the width of the sidewalk beyond the street lot line. Temporary entrance awnings shall be erected with a clearance of not less than 7 feet (2134 mm) to the lowest portion of the hood or awning where supported on removable steel or other approved noncombustible support.</p>	<p>3202.4 Temporary encroachments. Where allowed by the applicable governing authority, vestibules and storm enclosures shall not be erected for a period of time exceeding seven 7 months in any one 1 year and shall not encroach more than 3 feet (914 mm) nor more than one-fourth of the width of the sidewalk beyond the street lot line. Temporary entrance awnings shall be erected with a clearance of not less than 7 feet (2134 mm) to the lowest portion of the hood or awning where supported on removable steel or other approved noncombustible support.</p>	<p>3202.4 Temporary encroachments. Where allowed by the applicable governing authority, vestibules and storm enclosures shall not be erected for a period of time exceeding 7 months in any 1 year and shall not encroach more than 3 feet (914 mm) nor more than one-fourth of the width of the sidewalk beyond the street lot line. Temporary entrance awnings shall be erected with a clearance of not less than 7 feet (2134 mm) to the lowest portion of the hood or awning where supported on removable steel or other approved noncombustible support.</p>	<p>Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.</p>

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2015 Houston IBC – Chapter 33 Safeguards During Construction	2021 IBC – Chapter 33 Safeguards During Construction	2021 Houston Amendments – Chapter 33	Code Analysis
<p>3301.1 Scope. The provisions of this chapter shall govern safety during construction and the protection of adjacent public and private properties, <u>and in accordance with NFPA 241.</u></p>	<p style="text-align: center;">SECTION 3301 GENERAL</p> <p>No change</p>	<p style="text-align: center;">SECTION 3301 GENERAL</p> <p>3301.1 Scope. The provisions of this chapter shall govern safety during construction and the protection of adjacent public and private properties, <u>and in accordance with NFPA 241.</u></p>	<p>No change to Houston amendment.</p>
	<p>[BS] 1544.2-3301.2.1 Structural and construction loads. Structural roof components shall be capable of supporting the roof-covering system and the material and equipment <i>loads</i> that will be encountered during installation of the system.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 3302 CONSTRUCTION SAFEGUARDS</p> <p>3302.1 Alterations, repairs and additions. Required exits, existing structural elements, fire protection devices and sanitary safeguards shall be maintained at all times during alterations, repairs or additions to any building or structure.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where such required elements or devices are being altered or repaired, adequate substitute provisions shall be made. 2. Maintenance of such elements and devices is not required when where the existing building is not occupied. 	<p style="text-align: center;">SECTION 3302 CONSTRUCTION SAFEGUARDS</p>	<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>3302.2 Manner of removal. Waste materials shall be removed in a manner that prevents injury or damage to persons, adjoining properties and public rights of way. Deconstruction or material removal. Earth taken from excavations and materials or rubbish taken from buildings from day to day shall not be left upon the sidewalks or streets but shall be removed as rapidly as accumulated. When such materials are dry and likely to produce a dust when handled, they shall be kept moist so as to prevent the wind blowing the same about.</p>	<p>No change</p>	<p>3302.2 Manner of removal. Waste materials shall be removed in a manner that prevents injury or damage to persons, adjoining properties and public rights of way. Deconstruction or material removal. Earth taken from excavations and materials or rubbish taken from buildings from day to day shall not be left upon the sidewalks or streets but shall be removed as rapidly as accumulated. When such materials are dry and likely to produce a dust when handled, they shall be kept moist so as to prevent the wind blowing the same about.</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 3303 DEMOLITION</p> <p>3303.1 Construction documents. Construction documents and a schedule for demolition shall be submitted where required by the building official. Where such information is required, no work shall not be done until such construction documents or schedule, or both, are approved.</p>	<p style="text-align: center;">SECTION 3303 DEMOLITION</p>	<p>Edits made to clarify code, no major changes to code requirements.</p>

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<p>3303.8 Foundation. All concrete slabs shall be removed in conjunction with the demolition of the corresponding structure.</p> <p><u>Exception:</u> When a written request is submitted by the applicant and approved by the <i>building official</i> to use the foundation for an alternate use.</p>	<p>N/a</p>	<p>3303.8 Foundation. All concrete slabs shall be removed in conjunction with the demolition of the corresponding structure.</p> <p><u>Exception:</u> When a written request is submitted by the applicant and approved by the <i>building official</i> to use the foundation for an alternate use.</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 3304 SITE WORK</p>	<p style="text-align: center;">SECITON 3304 SITE WORK</p>	
	<p>3304.1.2 Surcharge. No Fill or other surcharge loads shall not be placed adjacent to any building or structure unless such building or structure is capable of withstanding the additional loads caused by the fill or surcharge. Existing footings or foundations that can be affected by any excavation shall be underpinned adequately or otherwise protected against settlement and shall be protected against lateral movement.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>3304.1.5 Permanent excavation. Permanent excavations shall be protected by permanent means to prevent the movement of the earth of adjoining properties. Such protection shall be provided by the person causing the excavation to be made and shall be on the property and at the expense of the person causing the excavation to be made. The <i>building official</i> may require excavations to be protected by the construction of a substantial barricade or fence not less than 6 feet (1,828.8 mm) in height enclosing such excavated area.</p>	<p>N/a</p>	<p>3304.1.5 Permanent excavation. Permanent excavations shall be protected by permanent means to prevent the movement of the earth of adjoining properties. Such protection shall be provided by the person causing the excavation to be made and shall be on the property and at the expense of the person causing the excavation to be made. The <i>building official</i> may require excavations to be protected by the construction of a substantial barricade or fence not less than 6 feet (1,828.8 mm) in height enclosing such excavated area.</p>	<p>No change to Houston amendment.</p>
<p>3304.1.6 Protection of adjacent property. When a lot or plot is graded to a higher or lower finished grade level than the natural grade on adjacent property, the owner of such lot or plot shall provide a retaining wall or walls on his own property, to protect the adjacent property from caving of earth. Approved protection shall be provided to protect the adjacent property from overflow of water.</p>	<p>N/a</p>	<p>3304.1.6 Protection of adjacent property. When a lot or plot is graded to a higher or lower finished grade level than the natural grade on adjacent property, the owner of such lot or plot shall provide a retaining wall or walls on his own property, to protect the adjacent property from caving of earth. Approved protection shall be provided to protect the adjacent property from overflow of water.</p>	<p>No change to Houston amendment.</p>
<p>3304.1.7 Public property. The person causing any excavation to be made shall prevent the movement of the earth of adjoining properties and the trees and natural objects thereon or therein and shall be responsible for maintaining or restoring public sidewalks, curbs and pavements, and the properties of public utilities that may be affected by the excavation. The maintenance or restoration of sidewalks, curbs and pavements shall be performed in accordance with the grades, levels and other requirements of Houston Public Works, and the maintenance or restoration of the property of public utilities shall be in accordance with the procedures established by the owners thereof for new construction.</p>	<p>N/a</p>	<p>3304.1.7 Public property. The person causing any excavation to be made shall prevent the movement of the earth of adjoining properties and the trees and natural objects thereon or therein and shall be responsible for maintaining or restoring public sidewalks, curbs and pavements, and the properties of public utilities that may be affected by the excavation. The maintenance or restoration of sidewalks, curbs and pavements shall be performed in accordance with the grades, levels and other requirements of Houston Public Works, and the maintenance or restoration of the property of public utilities shall be in accordance with the procedures established by the owners thereof for new construction.</p>	<p>No change to Houston amendment.</p>

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<p>3304.2 Drainage. Whenever the surface of a lot or plot is excavated, filled or graded, catch basins or connected underdrains shall be installed to preclude the accumulation of surface water. Surface water shall not be drained onto adjacent property that is not in the same ownership without written permission from the owner of the adjacent property, and existing natural ground drainage of the ground area surrounding the lot or plot that is excavated, filled, or graded shall not be obstructed. No condition shall be created, nor any existing condition maintained, whereby there will be upon any lot or plot excavations, depressions, pits, holes, gullies or other depressions that may accumulate and retain surface water. Any such condition shall be promptly abated and protected by filling in or by providing code compliant drainage.</p>	<p>N/a</p>	<p>3304.2 Drainage. Whenever the surface of a lot or plot is excavated, filled or graded, catch basins or connected underdrains shall be installed to preclude the accumulation of surface water. Surface water shall not be drained onto adjacent property that is not in the same ownership without written permission from the owner of the adjacent property, and existing natural ground drainage of the ground area surrounding the lot or plot that is excavated, filled, or graded shall not be obstructed. No condition shall be created, nor any existing condition maintained, whereby there will be upon any lot or plot excavations, depressions, pits, holes, gullies or other depressions that may accumulate and retain surface water. Any such condition shall be promptly abated and protected by filling in or by providing code compliant drainage.</p>	<p>No change to Houston amendment.</p>
	<p style="text-align: center;">SECTION 3306 PROTECTION OF PEDESTRIANS</p>		
	<p>[BS] 3306.2 Walkways. A walkway shall be provided for pedestrian travel in front of every construction and demolition site unless the applicable governing authority authorizes the sidewalk to be fenced or closed. A walkway shall be provided for pedestrian travel that leads from a building entrance or exit of an occupied structure to a public way. Walkways shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall they be not less than 4 feet (1219 mm) in width. Walkways shall be provided with a durable walking surface. Walkways shall be accessible in accordance with Chapter 11 and shall be designed to support all imposed loads, and in no case shall the design live load shall be not less than 150 pounds per square foot (psf) (7.2 kN/m²).</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BS] 3306.6 Barrier design. Barriers shall be designed to resist loads required in Chapter 16 unless constructed as follows:</p> <ol style="list-style-type: none"> 1. Barriers shall be provided with 2-inch by 4-inch (51 mm by 102 mm) top and bottom plates. 2. The barrier material shall be boards not less than 3/4-inch (19.1 mm) thick or wood structural panels not less than 1/4-inch (6.4 mm) thick. 3. Wood structural use panels shall be bonded with an adhesive identical to that for exterior wood structural use panels. 4. Wood structural use panels 1/4 inch (6.4 mm) or 5/16 inch (23.8 mm) in thickness shall have studs spaced not more than 2 feet (610 mm) on center. 5. Wood structural use panels 3/8 inch (9.5 mm) or 1/2 inch (12.7 mm) in thickness shall have studs spaced not more than 4 feet (1219 mm) on center provided that a 2-inch by 4-inch (51 mm by 102 mm) stiffener is placed horizontally 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>at mid-height where the stud spacing is greater than 2 feet (610 mm) on center.</p> <p>6. Wood structural use panels 5/8 inch (15.9 mm) or thicker shall not span over 8 feet (2438 mm).</p>		
	<p>[BS] 3306.7 Covered walkways. Covered walkways shall have a clear height of not less than 8 feet (2438 mm) as measured from the floor surface to the canopy overhead. Adequate lighting shall be provided at all times. Covered walkways shall be designed to support all imposed loads. In no case shall The design live load shall be not less than 150 psf (7.2 kN/m²) for the entire structure.</p> <p>Exception: Roofs and supporting structures of covered walkways for new, light-frame construction not exceeding two stories above grade plane are permitted to be designed for a live load of 75 psf (3.6kN/m²) or the loads imposed on them, whichever is greater. In lieu of such designs, the roof and supporting structure of a covered walkway are permitted to be constructed as follows:</p> <ol style="list-style-type: none"> 1. Footings shall be continuous 2-inch by 6-inch (51 mm by 152 mm) members. 2. Posts not less than 4 inches by 6 inches (102 mm by 152 mm) shall be provided on both sides of the roof and spaced not more than 12 feet (3658 mm) on center. 3. Stringers not less than 4 inches by 12 inches (102 mm by 305 mm) shall be placed on edge upon the posts. 4. Joists resting on the stringers shall be not less than 2 inches by 8 inches (51 mm by 203 mm) and shall be spaced not more than 2 feet (610 mm) on center. 5. The deck shall be planks not less than 2 inches (51 mm) thick or wood structural panels with an exterior exposure durability classification not less than 23/32 inch (18.3 mm) thick nailed to the joists. 6. Each post shall be knee braced to joists and stringers by members not less than 2 inches by 4 inches (51 mm by 102 mm); 4 feet (1219 mm) in length. 7. A curb that is not less than 2 inches by 4 inches (51 mm by 102 mm) shall be set on edge along the outside edge of the deck. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[BS] 3306.8 Repair, maintenance and removal. Pedestrian protection required by this chapter shall be maintained in place and kept in good order for the entire length of time pedestrians are subject to being endangered. The owner or the owner's authorized agent, upon the completion of the construction activity, shall</p>		

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	immediately remove walkways, debris and other obstructions and leave such public property in as good a condition as it was before such work was commenced.		
3307.1 Protection required. Adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection shall be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water run-off and erosion during construction or demolition activities. The person making or causing an excavation to be made shall provide written notice to the <i>owners</i> of adjoining buildings advising them that the excavation is to be made and <u>how that the adjoining buildings will should be protected.</u> Said notification shall be delivered not less than 10 days prior to the scheduled starting date of the excavation. <u>Such notice shall be in writing and shall state the depth and location of the proposed excavation.</u>	SECTION 3307 PROTECTION OF ADJOINING PROPERTY [BS] 3307.1 Protection required. Adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection shall be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. The person making or causing an excavation to be made shall provide written notice to the owners of adjoining buildings advising them that the excavation is to be made and that the adjoining buildings should be protected. Said notification shall be delivered not less than 10 days prior to the scheduled starting date of the excavation.	SECTION 3307 PROTECTION OF ADJOINING PROPERTY 3307.1 Protection required. Adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection shall be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. The person making or causing an excavation to be made shall provide written notice to the <i>owners</i> of adjoining buildings advising them that the excavation is to be made and <u>how that the adjoining buildings will should be protected.</u> Said notification shall be delivered not less than 10 days prior to the scheduled starting date of the excavation. <u>Such notice shall be in writing and shall state the depth and location of the proposed excavation.</u>	Edits made to clarify code, no major changes to code requirements. No change to Houston amendment.
	[BS] 3307.2 Excavation retention systems. Where a retention system is used to provide support of an excavation for protection of adjacent structures, the system shall conform to the requirements in Sections 3307.2.1 through 3307.2.3.		New requirement
	[BS] 3307.2.1 Excavation retention system design. Excavation retention systems shall be designed by a registered design professional to provide vertical and lateral support.		New requirement
	[BS] 3307.2.2 Excavation retention system monitoring. The retention system design shall include requirements for monitoring of the system and adjacent structures for horizontal and vertical movement.		New requirement
	[BS] 3307.2.3 Retention system removal. Elements of the system shall only be removed or decommissioned where adequate replacement support is provided by backfill or by the new structure. Removal or decommissioning shall be performed in such a manner that protects the adjacent property.		New requirement
	SECTION 3310 MEANS OF EGRESS 3310.1 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, no fewer than one temporary		Edits made to clarify code, no major changes to code requirements.

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	<p>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.</p>		
	<p>[F] 3310.2 Maintenance of means of egress. Means of egress and required accessible means of egress shall be maintained at all times during construction, demolition, remodeling or alterations and additions to any building.</p> <p>Exception: Existing means of egress need not be maintained where approved temporary means of egress systems and facilities are provided.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION 3311 STANDPIPES</p> <p>[F] 3311.1 Where required. In buildings required to have standpipes by Section 905.3.1, no fewer 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 3310.1. 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>3311.4 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). 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.</p>	<p>N/a</p>	<p>3311.4 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).</p>	<p>Pumping pressure/equipment provisions moved to new Section 3311.5, no other changes.</p>
		<p>3311.5 Standpipe Water Supply. Pumping equipment sufficient to provide this pressure and volume required by 3311.4 shall be available at all times when the building reaches 150 feet (45,270 mm) above grade.</p>	<p>New section incorporating existing pumping pressure/equipment provisions, no changes to requirements.</p>
	<p style="text-align: center;">SECTION 3313 WATER SUPPLY FOR FIRE PROTECTION</p> <p>[F] 3313.1 Where required. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site. building materials arrive on the site, on commencement of vertical</p>		<p>New requirements</p>

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	<p><u>combustible construction, and on installation of a standpipe system in buildings under construction, in accordance with Sections 3313.2 through 3313.5.</u></p> <p><u>Exception: The fire code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.</u></p>		
	<p><u>[F] 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 approved 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.</u></p>		<p>New requirements</p>
	<p><u>[F] 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.</u></p>		<p>New requirements</p>
	<p><u>[F] 3313.3.1 Fire separation up to 30 feet. Where a building of Type III, IV or V construction has a fire separation distance 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.</u></p>		<p>New requirements</p>
	<p><u>[F] 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 (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.</u></p>		<p>New requirements</p>
	<p><u>[F] 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 lot line, a water supply of 500 gallons per minute (1893 L/m) shall be provided.</u></p>		<p>New requirements</p>

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	<p>[F] 3313.4 Vertical construction, Types I and II construction. <u>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.</u></p>		<p>New requirements</p>
	<p>[F] 3313.5 Standpipe supply. <u>Regardless of the presence of combustible building materials, the construction type or the fire separation distance, where a standpipe is required in accordance with Section 3313, 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.</u></p>		<p>New requirements</p>
<p style="text-align: center;">SECTION 3314</p> <p style="text-align: center;">ACCESS FOR FIRE FIGHTING AND E.M.S. OPERATIONS</p> <p>3314.1 Required access. <u>Approved vehicle access for firefighting 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 as required by Section D102.1 of the Fire Code under all weather conditions up to the foundation of every structure on the site prior to the start of any vertical construction. Vehicles access shall be maintained until permanent fire apparatus access roads are available.</u></p>	<p style="text-align: center;">SECTION 3314</p> <p style="text-align: center;">FIRE WATCH DURING CONSTRUCTION</p> <p>[F] 3314.1 Fire watch during combustible construction. <u>A fire watch shall be provided during nonworking hours for 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.</u></p>		<p>New requirements Houston amendment relocated to Section 3315.</p>
		<p style="text-align: center;">SECTION 3315</p> <p style="text-align: center;">ACCESS FOR FIRE FIGHTING AND E.M.S. OPERATIONS</p> <p>3315.1 Required access. <u>Approved vehicle access for firefighting 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 as required by Section D102.1 of the Fire Code under all weather conditions up to the foundation of every structure on the site prior to the start of any vertical construction. Vehicles access shall be maintained until permanent fire apparatus access roads are available.</u></p>	<p>No change to Houston amendment.</p>

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2015 Houston IBC – Chapter 35 Referenced Standards	2021 IBC – Chapter 35	2021 Houston Amendments – Chapter 35	Code Analysis
<p>{EDITORIAL NOTE: PORTIONS OF THIS CHAPTER NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</p> <p>ASHRAE ASHRAE 1791 Tullie Circle, NE Atlanta, GA 30329</p> <hr/> <p><u>Standard</u></p> <p><u>Reference</u></p> <p><u>number</u></p> <p><u>Title</u> <u>section number</u></p> <hr/> <p>170—2008 Ventilation of Health Care Facilities 1203.1</p> <hr/> <p>ASTM ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959</p> <hr/> <p><u>Standard</u></p> <p><u>Reference</u></p> <p><u>number</u></p> <p><u>Title</u> <u>section number</u></p>	<p>ADM—2020 Aluminum Design Manual 1604.3.5, 2002.1</p> <p>711—20 Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products 1404.4</p> <p>714—20 Voluntary Specification for Liquid Applied Flashing Used to Create a Water-resistive Seal around Exterior Wall Openings in Buildings 1404.4 1403.5.1</p> <p>2502—19 Comparative Analysis Procedure for Window and Door Products 1709.5</p> <p>117—10 Specification for Tolerances for Concrete Construction and Materials 1901.7.1</p> <p>318—19 Building Code Requirements for Structural Concrete 722.2.4.3, 1604.3.2, 1616.2.1, 1616.3.1, 1704.5, Table 1705.3, 1705.3.2, 1808.8.2, Table 1808.8.2, 1808.8.5, 1808.8.6, 1810.1.3, 1810.2.4.1, 1810.3.2.1.1, 1810.3.2.1.2, 1810.3.8, 1810.3.9.4.2.1, 1810.3.9.4.2.2, 1810.3.10.1, 1810.3.11, 1810.3.11.1, 1810.3.12, 1810.3.13, 1901.2, 1901.3, 1902.1, 1903.1, 1904.1, 1904.2, 1905.1, 1905.1.1, 1905.1.2, 1905.1.3, 1905.1.4, 1905.1.5, 1905.1.6, 1905.1.7, 1905.1.8, 1908.1, 2108.3, 2206.1</p> <p>550.5—18 Code Requirements for the Design of Precast Concrete Diaphragms for Earthquake Motions Table 1705.3</p> <p>ITG—7-09 Specification for Tolerances for Precast Concrete 1901.7.2</p> <p>ANSI/AISC 358—16/s1—18 Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications, Including Supplement No. 1 2205.2.1.1, 2205.2.1.2</p> <p>AISI S100—16 (2020) w/S2—20: North American Specification for the Design of Cold-Formed Steel Structural Members, 2016 Edition (Reaffirmed 2020), with Supplement 2, 2020 Edition</p>	<p>{EDITORIAL NOTE: PORTIONS OF THIS CHAPTER NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2021 IBC.}</p> <p>ASHRAE ASHRAE 1791 Tullie Circle NE Atlanta, GA 30329USA</p> <p>ASHRAE 18—2008 (RA13): Method of Testing for Rating Drinking-Water Coolers with Self-contained Mechanical Refrigeration (ANSI/ASHRAE Approved) 2904.1</p> <hr/> <p>ASTM ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428</p> <p>E570—2017: Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality 6204.4.1</p> <hr/> <p>NFPA National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471</p> <p>70—23: National Electrical Code 108.3, 406.2.7, 406.2.9, 412.5.7, 415.11.1.8, 430.1, Table 509.1, 904.3.1, 907.6.1, 909.12.2, 909.16.3, 910.4.6, 1204.4.1, 2701.1, 2702.1.3, 3111.3</p> <p>241—20: Standard for Safeguarding Construction, Alteration, and Demolition Operations 3301.1</p>	<p>Referenced standard updates in 2021 Houston amendments include:</p> <ul style="list-style-type: none"> • ASHRAE 18, 2008 edition. • ASTM E570, 2017 edition. • NFPA 70, 2023 edition – Per state law. • NFPA 241, 2020 edition.

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<p>B31.3—2012 Process Piping..... 415.11.6</p> <p><u>E 90—09(2016) Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements</u> N104.1, N105.1</p> <hr/> <p>NFPA National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471</p> <hr/> <p>Standard Referenced</p> <p>Reference in code</p> <p>number Title section number</p> <hr/> <p>70—2014 National Electrical Code 108.3, 415.11.1.8, 904.3.1, 907.6.1, 909.12.2, 909.16.3, 1205.4.1, 2701.1, 2702.1.2, G501.4, G1001.6, H106.1, H106.2, K101, K111.1</p> <hr/> <p><u>241—19 Standard for Safeguarding Construction, Alteration, and Demolition Operations</u> 3301.1</p>	<p>1604.3.3, 1905.1.8, 2202.1, 2203.1, 2210.1, 2210.2</p> <p>AISI S202—20 Code of Standard Practice for Cold-formed Steel Framing, 2020</p> <p>2211.1.3.1</p> <p>AISI S220—20 North American Standard for Cold-formed Steel Nonstructural Framing</p> <p>2202.1, 2203.1, 2211.2, Table 2506.2, Table 2507.2</p> <p>AISI S230—2019 Standard for Cold-formed Steel Framing—Prescriptive Method for One- and Two-family Dwellings, 2019</p> <p>1609.1.1, 1609.1.1.1, 2211.1.2</p> <p>AISI S240—20 North American Standard for Cold-Formed Steel Structuring Framing, 2020</p> <p>2202.1, 2203.1, 2211.1, 2211.1.1.1, 2211.1.3.3, Table 2506.2, Table 2507.2, Table 2603.12.1, Table 2603.12.2</p> <p>AISI S400—20 North American Standard for Seismic Design of Cold-formed Steel Structural Systems, 2020</p> <p>2210.2, 2211.1.1.1, 2211.1.1.2</p>	
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2015 Houston IBC – Chapter 46 Houston Sign Code	2021 IBC	2021 Houston Amendments	Code Analysis
<p style="text-align: center;">CHAPTER 46 HOUSTON SIGN CODE</p> <p><i>The Houston Sign Code, which is published as a separate document, constitutes Chapter 46.</i></p>		<p style="text-align: center;">CHAPTER 46 HOUSTON SIGN CODE</p> <p><i>The Houston Sign Code, which is published as a separate document, constitutes Chapter 46.</i></p>	<p>No change to Houston amendment.</p>
2015 Houston IBC – Chapter 62 Lake Houston Structures	2021 IBC	2021 Houston Amendments	Code Analysis
<p style="text-align: center;">CHAPTER 62 LAKE HOUSTON STRUCTURES</p> <p style="text-align: center;">SECTION 6201 PURPOSE</p> <p>6201.1 General. This chapter prescribes design requirements applicable to bulkheads, piers, jetties and pontoon- or raft-type boats constructed in or on Lake Houston as allowed in Chapter 23 of the <i>City Code</i>.</p> <p>A separate permit shall be required for each structure. In addition to the building permit, a yearly license must be obtained as required in Chapter 23, Article IV, Division 2, of the <i>City Code</i>.</p> <p>The <i>building official shall inspect all pier, bulkhead, and jetty sites before a permit is issued and after construction is completed. Additionally, the building official may require a final inspection of the said sites.</i></p> <p>All bulkheads, jetties, and piers shall be designed by and bear the seal of a professional engineer licensed by the State of Texas.</p>		<p style="text-align: center;">CHAPTER 62 LAKE HOUSTON STRUCTURES</p> <p style="text-align: center;">SECTION 6201 PURPOSE</p> <p>6201.1 General. This chapter prescribes design requirements applicable to bulkheads, piers, jetties and pontoon- or raft-type boats constructed in or on Lake Houston as allowed in Chapter 23 of the <i>City Code</i>.</p> <p>A separate permit shall be required for each structure. In addition to the building permit, a yearly license must be obtained as required in Chapter 23, Article IV, Division 2, of the <i>City Code</i>.</p> <p>The <i>building official shall inspect all pier, bulkhead, and jetty sites before a permit is issued and after construction is completed. Additionally, the building official may require a final inspection of the said sites.</i></p> <p>All bulkheads, jetties, and piers shall be designed by and bear the seal of a professional engineer licensed by the State of Texas.</p>	<p>No change to Houston amendment.</p>
<p>6201.2 Existing structures. All floating structures shall be brought into conformance with the requirements of this chapter. All other structures shall be subject to the requirements of Section 102.6.1 and 115.</p>		<p>6201.2 Existing structures. All floating structures shall be brought into conformance with the requirements of this chapter. All other structures shall be subject to the requirements of Section 102.6.1 and 115.</p>	<p>No change to Houston amendment.</p>
<p>6201.3 Definitions. For the purpose of this chapter, these terms are defined in Chapter 2:</p> <p>BULKHEAD.</p> <p>COMMERCIAL PIER.</p>		<p>6201.3 Definitions. For the purpose of this chapter, these terms are defined in Chapter 2:</p> <p>BULKHEAD.</p> <p>COMMERCIAL PIER.</p>	<p>No change to Houston amendment.</p>

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<p><u>JETTY.</u> <u>PIER.</u> <u>PRIVATE PIER.</u></p>		<p><u>JETTY.</u> <u>PIER.</u> <u>PRIVATE PIER.</u></p>	
<p style="text-align: center;">SECTION 6202 PIER CONSTRUCTION</p> <p>6202.1 Pier construction. All piers shall comply with the following:</p>		<p style="text-align: center;">SECTION 6202 PIER CONSTRUCTION</p> <p>6202.1 Pier construction. All piers shall comply with the following:</p>	<p>No change to Houston amendment.</p>
<p>6202.1.1 Projection. No pier may project more than 30 feet (9.144 meters) past the point at which a 5-foot depth of water is encountered when the lake is at spillway level. No pier shall project so as to be closer to another property than that from which it projects, at any point on such pier. No pier may project more than one-third of the distance across any body of water, inlet, bay, channel, stream, or cove. No pier may be located closer than 5 feet to an extended property line. The maximum width of a commercial pier shall not exceed 12 feet, and the maximum width of a private pier shall not exceed 8 feet. No pier shall protrude into a body of water, turn, then return back to the shore of any property. Violations of this section shall be subject to penalties as prescribed in Section 114.1</p>		<p>6202.1.1 Projection. No pier may project more than 30 feet (9.144 meters) past the point at which a 5-foot depth of water is encountered when the lake is at spillway level. No pier shall project so as to be closer to another property than that from which it projects, at any point on such pier. No pier may project more than one-third of the distance across any body of water, inlet, bay, channel, stream, or cove. No pier may be located closer than 5 feet to an extended property line. The maximum width of a commercial pier shall not exceed 12 feet, and the maximum width of a private pier shall not exceed 8 feet. No pier shall protrude into a body of water, turn, then return back to the shore of any property. Violations of this section shall be subject to penalties as prescribed in Section 114.1</p>	<p>No change to Houston amendment.</p>
<p>6202.1.2 Superstructures. Piers may be provided with posts, railings and roofs, but shall be without walls of any kind whatsoever. Upper decks shall be limited to 600 square feet in total area. The total area for a superstructure, upper deck and boathouse combined shall not exceed 1300 square feet.</p> <p>Exception: Enclosed storage that does not exceed 40 square feet may be provided to store fishing and boating equipment.</p>		<p>6202.1.2 Superstructures. Piers may be provided with posts, railings and roofs, but shall be without walls of any kind whatsoever. Upper decks shall be limited to 600 square feet in total area. The total area for a superstructure, upper deck and boathouse combined shall not exceed 1300 square feet.</p> <p>Exception: Enclosed storage that does not exceed 40 square feet may be provided to store fishing and boating equipment.</p>	<p>No change to Houston amendment.</p>
<p>6202.1.3 Electric power. Electrical wiring shall comply with the <i>Electrical Code</i>.</p>		<p>6202.1.3 Electric power. Electrical wiring shall comply with the <i>Electrical Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>6202.1.4 Lumber. Wood piles and all lumber used in pier construction shall be pressure treated with an approved preservative.</p>		<p>6202.1.4 Lumber. Wood piles and all lumber used in pier construction shall be pressure treated with an approved preservative.</p>	<p>No change to Houston amendment.</p>

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<p>6202.1.5 Warning devices. Amber or yellow reflectors with 3-inch-minimum-diameter lenses shall be placed on all piers and other surface installations placed in the lake. Reflectors shall be placed not more than 8 feet apart and shall be 18 inches above the water when the lake is at spillway elevation or elevation 44½ feet above mean sea level.</p>		<p>6202.1.5 Warning devices. Amber or yellow reflectors with 3-inch-minimum-diameter lenses shall be placed on all piers and other surface installations placed in the lake. Reflectors shall be placed not more than 8 feet apart and shall be 18 inches above the water when the lake is at spillway elevation or elevation 44½ feet above mean sea level.</p>	<p>No change to Houston amendment.</p>
<p>6202.1.6 Design requirements. Commercial piers shall be designed for at least 100 pounds per square foot live floor load. Private piers shall be designed for at least 50 pounds per square foot live floor load.</p> <p>Wave action on piers shall be computed by the following formula: $P=125h^2$ (tan angle), in which the point of application is assumed to be at $\frac{2}{3}h$; P=wave pressure, in pounds per linear foot of wave or per square foot of pier area at $\frac{2}{3}h$; h=height of wave in feet (minimum for h shall be 4 feet); and angle=maximum angle between center line of pier and wave front (minimum angle is 15 degrees).</p>		<p>6202.1.6 Design requirements. Commercial piers shall be designed for at least 100 pounds per square foot live floor load. Private piers shall be designed for at least 50 pounds per square foot live floor load.</p> <p>Wave action on piers shall be computed by the following formula: $P=125h^2$ (tan angle), in which the point of application is assumed to be at $\frac{2}{3}h$; P=wave pressure, in pounds per linear foot of wave or per square foot of pier area at $\frac{2}{3}h$; h=height of wave in feet (minimum for h shall be 4 feet); and angle=maximum angle between center line of pier and wave front (minimum angle is 15 degrees).</p>	<p>No change to Houston amendment.</p>
<p>6202.1.7 Plumbing. Plumbing shall comply with the <i>Plumbing Code</i>.</p>		<p>6202.1.7 Plumbing. Plumbing shall comply with the <i>Plumbing Code</i>.</p>	<p>No change to Houston amendment.</p>
<p>6202.1.8 Alternative materials. A pier constructed of alternative materials, when approved by the <i>building official</i> in accordance with Section 104.11, shall meet or exceed minimum structural requirements and shall support or resist a surcharge of dead weight or load against it as outlined in Section 6202.1.6 above.</p>		<p>6202.1.8 Alternative materials. A pier constructed of alternative materials, when approved by the <i>building official</i> in accordance with Section 104.11, shall meet or exceed minimum structural requirements and shall support or resist a surcharge of dead weight or load against it as outlined in Section 6202.1.6 above.</p>	<p>No change to Houston amendment.</p>
<p>6202.2 Private piers. In lieu of the design requirements in Section 6202.1.6, private piers may be constructed as follows:</p>		<p>6202.2 Private piers. In lieu of the design requirements in Section 6202.1.6, private piers may be constructed as follows:</p>	<p>No change to Houston amendment.</p>
<p>6202.2.1 Piles. The minimum diameter of a pile shall be 4 inches. Piles shall be embedded at least 30 inches in firm soil.</p>		<p>6202.2.1 Piles. The minimum diameter of a pile shall be 4 inches. Piles shall be embedded at least 30 inches in firm soil.</p>	<p>No change to Houston amendment.</p>
<p>6202.2.2 Column action. All piles shall be braced with diagonal braces with not less than 2-inch by 4-inch lumber, pressure treated, and bolted with at least ½-inch galvanized bolts. Two bents (set of diagonal braced piles) in any pier shall be connected with X braces.</p>		<p>6202.2.2 Column action. All piles shall be braced with diagonal braces with not less than 2-inch by 4-inch lumber, pressure treated, and bolted with at least ½-inch galvanized bolts. Two bents (set of diagonal braced piles) in any pier shall be connected with X braces.</p>	<p>No change to Houston amendment.</p>

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<p>6202.2.3 Framing. Ledgers shall be at least 2-inch by 6-inch nominal in size and shall be bolted with at least two ½-inch galvanized bolts.</p>		<p>6202.2.3 Framing. Ledgers shall be at least 2-inch by 6-inch nominal in size and shall be bolted with at least two ½-inch galvanized bolts.</p>	<p>No change to Houston amendment.</p>
<p>6202.2.4 Stringers. Stringers shall be at least 2-inch by 8-inch nominal in size and spaced no more than 3 feet on center.</p>		<p>6202.2.4 Stringers. Stringers shall be at least 2-inch by 8-inch nominal in size and spaced no more than 3 feet on center.</p>	<p>No change to Houston amendment.</p>
<p>6202.2.5 Decking. Decking must not be less than 2 feet above 44½ feet elevation. Nominal size planks shall not be less than 2-inch by 6-inch No. 2 grade, spaced not less than ¼-inch and not more than 1 inch apart, nailed with at least two 16d galvanized nails at each bearing.</p>		<p>6202.2.5 Decking. Decking must not be less than 2 feet above 44½ feet elevation. Nominal size planks shall not be less than 2-inch by 6-inch No. 2 grade, spaced not less than ¼-inch and not more than 1 inch apart, nailed with at least two 16d galvanized nails at each bearing.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION 6203 FLOATING PIERS</p> <p>6203.1 Floating piers. The provisions of this section shall not apply to canoes, row boats, sail boats and other boats having a single hull. All floating piers, rafts, houseboats and other structures in use on the waters of Lake Houston shall comply with applicable requirements of Section 6202.2 and the following:</p>		<p style="text-align: center;">SECTION 6203 FLOATING PIERS</p> <p>6203.1 Floating piers. The provisions of this section shall not apply to canoes, row boats, sail boats and other boats having a single hull. All floating piers, rafts, houseboats and other structures in use on the waters of Lake Houston shall comply with applicable requirements of Section 6202.2 and the following:</p>	<p>No change to Houston amendment.</p>
<p>6203.1.1 Flotation. Flotation shall be by properly sealed barrels, drums, tanks or pontoons constructed of marine plywood, cypress, redwood, fiberglass, foam plastic or metal. Ferrous metals shall be covered with a marine rust-resistant coating.</p>		<p>6203.1.1 Flotation. Flotation shall be by properly sealed barrels, drums, tanks or pontoons constructed of marine plywood, cypress, redwood, fiberglass, foam plastic or metal. Ferrous metals shall be covered with a marine rust-resistant coating.</p>	<p>No change to Houston amendment.</p>
<p>6203.1.2 Fasteners. All barrels, drums, tanks or pontoons used as floats shall be secured in place by means of steel straps, bolts, welds or other fasteners of similar strength and permanency. All fasteners, including bolts, nails and screws used in the floats shall be coated with rust-resistant marine coatings. No strap shall be less than 16 U.S. gauge (1.6 mm) in the least dimension.</p>		<p>6203.1.2 Fasteners. All barrels, drums, tanks or pontoons used as floats shall be secured in place by means of steel straps, bolts, welds or other fasteners of similar strength and permanency. All fasteners, including bolts, nails and screws used in the floats shall be coated with rust-resistant marine coatings. No strap shall be less than 16 U.S. gauge (1.6 mm) in the least dimension.</p>	<p>No change to Houston amendment.</p>
<p>6203.1.3 Steel framing. Steel framing members shall meet the requirements of Chapter 22. All steel fasteners shall be covered with a marine rust-resistant coating or be galvanized.</p>		<p>6203.1.3 Steel framing. Steel framing members shall meet the requirements of Chapter 22. All steel fasteners shall be covered with a marine rust-resistant coating or be galvanized.</p>	<p>No change to Houston amendment.</p>

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<p>6203.1.4 Wood framing. All timber shall be redwood, cypress, or any other wood that has been pressure treated against decay. The least dimension of a beam or girder shall be 4 inches (101.6 mm) in width, and the depth shall not be less than 8 inches (203.2 mm).</p>		<p>6203.1.4 Wood framing. All timber shall be redwood, cypress, or any other wood that has been pressure treated against decay. The least dimension of a beam or girder shall be 4 inches (101.6 mm) in width, and the depth shall not be less than 8 inches (203.2 mm).</p>	<p>No change to Houston amendment.</p>
<p>6203.1.5 Flooring. Flooring shall be at least 2 inches (50.8 mm) nominal thickness and shall be cypress, redwood, or any other wood that has been pressure treated against decay. Exception: Marine or exterior-grade plywood, 3/4 inch (19.05 mm) minimum, may be used for flooring if it meets the requirements of Chapter 23.</p>		<p>6203.1.5 Flooring. Flooring shall be at least 2 inches (50.8 mm) nominal thickness and shall be cypress, redwood, or any other wood that has been pressure treated against decay. Exception: Marine or exterior-grade plywood, 3/4 inch (19.05 mm) minimum, may be used for flooring if it meets the requirements of Chapter 23.</p>	<p>No change to Houston amendment.</p>
<p>6203.1.6 Fasteners. All fasteners shall be galvanized or coated with a rust-resistant marine material.</p>		<p>6203.1.6 Fasteners. All fasteners shall be galvanized or coated with a rust-resistant marine material.</p>	<p>No change to Houston amendment.</p>
<p>6203.1.7 Superstructures. Rooms, cabins, houses and roofs above the platform level shall meet the requirements of Chapters 22 and 23.</p>		<p>6203.1.7 Superstructures. Rooms, cabins, houses and roofs above the platform level shall meet the requirements of Chapters 22 and 23.</p>	<p>No change to Houston amendment.</p>
<p>6203.1.8 Projection. Notwithstanding Section 6202.1.1, floating piers shall not exceed 300 square feet (27.87091 m²) in total area, with a minimum width of 8 feet (2,438.4 mm) and a maximum width of 12 feet (3,657.6 mm).</p>		<p>6203.1.8 Projection. Notwithstanding Section 6202.1.1, floating piers shall not exceed 300 square feet (27.87091 m²) in total area, with a minimum width of 8 feet (2,438.4 mm) and a maximum width of 12 feet (3,657.6 mm).</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION 6204 BULKHEAD CONSTRUCTION</p> <p>6204.1 Bulkhead construction. Bulkheads shall be constructed of wood, steel, concrete or aluminum. All wood used in construction of bulkheads shall be pressure treated with an approved preservative. All private bulkheads shall be constructed on private property. This chapter shall not prohibit the city from constructing or causing to be constructed retaining walls or bulkheads where there is a hazard to life, limb or property or where there is evidence of pollution on the lake.</p>		<p style="text-align: center;">SECTION 6204 BULKHEAD CONSTRUCTION</p> <p>6204.1 Bulkhead construction. Bulkheads shall be constructed of wood, steel, concrete or aluminum. All wood used in construction of bulkheads shall be pressure treated with an approved preservative. All private bulkheads shall be constructed on private property. This chapter shall not prohibit the city from constructing or causing to be constructed retaining walls or bulkheads where there is a hazard to life, limb or property or where there is evidence of pollution on the lake.</p>	<p>No change to Houston amendment.</p>
<p>6204.2 Wood bulkheads. All bulkheads shall be designed by and bear the seal of a professional engineer licensed by the State of Texas and shall comply with the following.</p>		<p>6204.2 Wood bulkheads. All bulkheads shall be designed by and bear the seal of a professional engineer licensed by the State of Texas and shall comply with the following.</p>	<p>No change to Houston amendment.</p>

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<p>6204.2.1 Piles. The minimum diameter of a pile shall be 5 inches (127 mm). Piles shall be embedded a minimum of 5 feet (1,524 mm) into firm soil. Piles shall be 1 inch (25.4 mm) larger in diameter and shall be embedded 1 foot (304.8 mm) deeper for each 5 feet (1,524 mm) above ground. Piles shall not be spaced further apart than 6 feet (1,828.8 mm) center to center.</p>		<p>6204.2.1 Piles. The minimum diameter of a pile shall be 5 inches (127 mm). Piles shall be embedded a minimum of 5 feet (1,524 mm) into firm soil. Piles shall be 1 inch (25.4 mm) larger in diameter and shall be embedded 1 foot (304.8 mm) deeper for each 5 feet (1,524 mm) above ground. Piles shall not be spaced further apart than 6 feet (1,828.8 mm) center to center.</p>	<p>No changes to Houston amendment.</p>
<p>6204.2.2 Horizontal members. Horizontal members shall be of at least 3-inch (76.2 mm) by 8-inch (203.2 mm) lumber. Two horizontal members are required for piles measuring 5 feet (1,524 mm) or less above natural ground. Three horizontal members are required for piles measuring more than 5 feet (1,524 mm) above natural ground. Horizontal members shall be attached to the wood piles with not less than ½-inch (12.7 mm) galvanized bolts, washers and nuts, or not less than two 60d common galvanized nails.</p>		<p>6204.2.2 Horizontal members. Horizontal members shall be of at least 3-inch (76.2 mm) by 8-inch (203.2 mm) lumber. Two horizontal members are required for piles measuring 5 feet (1,524 mm) or less above natural ground. Three horizontal members are required for piles measuring more than 5 feet (1,524 mm) above natural ground. Horizontal members shall be attached to the wood piles with not less than ½-inch (12.7 mm) galvanized bolts, washers and nuts, or not less than two 60d common galvanized nails.</p>	<p>No changes to Houston amendment.</p>
<p>6204.2.3 Vertical members. Vertical members shall be of at least 2-inch (50.8 mm) by 6-inch (152.4 mm) nominal lumber. All vertical members shall be embedded a minimum of 3 feet (914.4 mm) into firm soil. Cracks between members shall not exceed ⅛ inch (3.175 mm). Vertical members shall be attached to each horizontal member with not less than two 16d common galvanized nails.</p>		<p>6204.2.3 Vertical members. Vertical members shall be of at least 2-inch (50.8 mm) by 6-inch (152.4 mm) nominal lumber. All vertical members shall be embedded a minimum of 3 feet (914.4 mm) into firm soil. Cracks between members shall not exceed ⅛ inch (3.175 mm). Vertical members shall be attached to each horizontal member with not less than two 16d common galvanized nails.</p>	<p>No changes to Houston amendment.</p>
<p>6204.2.4 Anchors. Anchors shall be at least 8 inches (203.2 mm) wide and not less than 4 feet in length and shall be embedded into firm soil a minimum of 30 inches (762 mm). All piles shall be secured to an anchor. Not more than three piles shall be secured to any one anchor. Anchor ties shall be a minimum of ½-inch (12.7 mm) galvanized cable with two galvanized clamps on each end or a minimum size ½-inch (12.7 mm) rod secured to the bulkhead and anchor. Other types of anchors may be used when approved by the <i>building official</i> in accordance with Section 104.11.</p>		<p>6204.2.4 Anchors. Anchors shall be at least 8 inches (203.2 mm) wide and not less than 4 feet in length and shall be embedded into firm soil a minimum of 30 inches (762 mm). All piles shall be secured to an anchor. Not more than three piles shall be secured to any one anchor. Anchor ties shall be a minimum of ½-inch (12.7 mm) galvanized cable with two galvanized clamps on each end or a minimum size ½-inch (12.7 mm) rod secured to the bulkhead and anchor. Other types of anchors may be used when approved by the <i>building official</i> in accordance with Section 104.11.</p>	<p>No changes to Houston amendment.</p>
<p>6204.3 Concrete bulkheads. Concrete bulkheads shall comply with the following:</p>		<p>6204.3 Concrete bulkheads. Concrete bulkheads shall comply with the following:</p>	<p>No changes to Houston amendment.</p>
<p>6204.3.1 General. All concrete bulkheads shall be of at least four and one-half sack mix and test a minimum of 2,500 lbs./in.² at 28 days. The bulkhead shall be embedded a minimum of 36 inches (914.4 mm) into firm soil and shall not extend more than 30 inches (762 mm) above the grade of the fill behind the bulkhead. The width of the concrete shall be a minimum of 10 inches (254 mm) for the part below grade and at least 6 inches (152.4 mm) for the part above grade.</p>		<p>6204.3.1 General. All concrete bulkheads shall be of at least four and one-half sack mix and test a minimum of 2,500 lbs./in.² at 28 days. The bulkhead shall be embedded a minimum of 36 inches (914.4 mm) into firm soil and shall not extend more than 30 inches (762 mm) above the grade of the fill behind the bulkhead. The width of the concrete shall be a minimum of 10 inches (254 mm) for the part below grade and at least 6 inches (152.4 mm) for the part above grade.</p>	<p>No changes to Houston amendment.</p>

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<p>6204.3.2 Reinforcing. Reinforcement shall consist of reinforcing steel rods of at least No. 3 size placed every 18 inches (457.2 mm) vertically and every 18 inches (457.2 mm) horizontally. All intersecting steel shall be securely tied or welded to ensure position in the foundation.</p>		<p>6204.3.2 Reinforcing. Reinforcement shall consist of reinforcing steel rods of at least No. 3 size placed every 18 inches (457.2 mm) vertically and every 18 inches (457.2 mm) horizontally. All intersecting steel shall be securely tied or welded to ensure position in the foundation.</p>	<p>No changes to Houston amendment.</p>
<p>6204.3.3 Anchors. If anchors are used, they must be of an approved type acceptable to the <i>building official</i>.</p>		<p>6204.3.3 Anchors. If anchors are used, they must be of an approved type acceptable to the <i>building official</i>.</p>	<p>No changes to Houston amendment.</p>
<p>6204.4 Steel sheet pile bulkheads. Steel sheet pile bulkheads shall comply with the following.</p>		<p>6204.4 Steel sheet pile bulkheads. Steel sheet pile bulkheads shall comply with the following.</p>	<p>No changes to Houston amendment.</p>
<p>6204.4.1 General. Steel shall meet standards of ASTM A 245. All piles shall be of not less than No. 12 gauge. The depth of crimp shall not be less than 1½ inches (38.1 mm) and the width of the crimp shall not be less than 3½ inches (88.9 mm). Piles shall not have less than 1-inch (25.4 mm) crimped interlocks along both vertical sides. Finished pile width shall not be less than 12 inches (304.8 mm). Piles shall be embedded not less than 4 feet (1,219.2 mm) into firm soil and shall not extend more than 30 inches (762 mm) above grade. A form-fitting driving head or sheet driver shall be used to prevent pile damage.</p>		<p>6204.4.1 General. Steel shall meet standards of ASTM A570. All piles shall be of not less than No. 12 gauge. The depth of crimp shall not be less than 1½ inches (38.1 mm) and the width of the crimp shall not be less than 3½ inches (88.9 mm). Piles shall not have less than 1-inch (25.4 mm) crimped interlocks along both vertical sides. Finished pile width shall not be less than 12 inches (304.8 mm). Piles shall be embedded not less than 4 feet (1,219.2 mm) into firm soil and shall not extend more than 30 inches (762 mm) above grade. A form-fitting driving head or sheet driver shall be used to prevent pile damage.</p>	<p>No changes to Houston amendment.</p>
<p>6204.4.2 Anchors. If anchors are used, they shall be of an approved type acceptable to the <i>building official</i>.</p>		<p>6204.4.2 Anchors. If anchors are used, they shall be of an approved type acceptable to the <i>building official</i>.</p>	<p>No changes to Houston amendment.</p>
<p>6204.5 Alternative materials. A bulkhead constructed of alternative materials shall meet or exceed minimum structural requirements according to accepted engineering practices and shall support or resist a surcharge of dead weight or load against it, as is necessary for it to retain. The alternative material shall also be non-polluting and non-corrosive.</p>		<p>6204.5 Alternative materials. A bulkhead constructed of alternative materials shall meet or exceed minimum structural requirements according to accepted engineering practices and shall support or resist a surcharge of dead weight or load against it, as is necessary for it to retain. The alternative material shall also be non-polluting and non-corrosive.</p>	<p>No changes to Houston amendment.</p>
<p style="text-align: center;">SECTION 6205 JETTY CONSTRUCTION</p> <p>6205.1 Jetty construction. Jetties may be built wherever a need is determined by and with the written authorization of the director of Houston Public Works where not specifically prohibited by the <i>City Code</i>. Jetties must be constructed utilizing one of the approved types of bulkheads listed in Section 6204.</p>		<p style="text-align: center;">SECTION 6205 JETTY CONSTRUCTION</p> <p>6205.1 Jetty construction. Jetties may be built wherever a need is determined by and with the written authorization of the director of Houston Public Works where not specifically prohibited by the <i>City Code</i>. Jetties must be constructed utilizing one of the approved types of bulkheads listed in Section 6204.</p>	<p>No changes to Houston amendment.</p>

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2015 Houston IBC Appendix A Employee Qualifications	2021 IBC APPENDIX A	2021 Houston Amendments	Code Analysis
	<p style="text-align: center;">SECTION A101 BUILDING OFFICIAL QUALIFICATIONS</p> <p>[A] A101.1 Building official. The building official shall have at least not fewer than 10 years' experience or equivalent as an architect, engineer, inspector, contractor or superintendent of construction, or any combination of these, 5 years of which shall have been supervisory experience. The building official should be certified as a building official through a recognized certification program. The building official shall be appointed or hired by the applicable governing authority.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] A101.2 Chief inspector. The building official can designate supervisors to administer the provisions of this code and the International Mechanical, Plumbing and Fuel Gas Codes. Each supervisor shall have at least not fewer than 10 years' experience or equivalent as an architect, engineer, inspector, contractor or superintendent of construction, or any combination of these, 5 years of which shall have been in a supervisory capacity. They shall be certified through a recognized certification program for the appropriate trade.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] A101.3 Inspector and plans examiner. The building official shall appoint or hire such number of officers, inspectors, assistants and other employees as shall be authorized by the jurisdiction. A person shall not be appointed or hired as inspector of construction or plans examiner who has not had at least 5 years of experience as a contractor, engineer, architect, or as a superintendent, foreman or competent mechanic in charge of construction shall not be appointed or hired as inspector of construction or plans examiner. The inspector or plans examiner shall be certified through a recognized certification program for the appropriate trade.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION A102 REFERENCED STANDARDS</p>		

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2015 Houston IBC APPENDIX B BOARD OF APPEALS	2021 IBC APPENDIX B	2021 Houston Amendments	Code Analysis
	<p align="center">SECTION B101 GENERAL</p> <p>[A] B101.1 Application. Applications for appeal shall be obtained from the building official. Applications shall be filed within 20 days after notice has been served.</p> <p>[A] B101.1 Scope. A board of appeals shall be established within the jurisdiction for the purpose of hearing applications for modification of the requirements of this code pursuant to the provisions of Section 113. The board shall be established and operated in accordance with this section, and shall be authorized to hear evidence from appellants and the building official pertaining to the application and intent of this code for the purpose of issuing orders pursuant to these provisions.</p>		<p align="center">New requirements</p>
	<p>[A] B101.2 Application for appeal. Any person shall have the right to appeal a decision of the building official to the board. 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 equally good or better form of construction is proposed. The application shall be filed on a form obtained from the building official within 20 days after the notice was served.</p>		<p align="center">New requirements</p>
	<p>[A] B101.2.1 Limitation of authority. The board shall not have authority to waive requirements of this code or interpret the administration of this code.</p>		<p align="center">New requirements</p>
	<p>[A] B101.2.2 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.</p>		<p align="center">New requirements</p>
	<p>[A] B101.2 B101.3 Membership of board. The board of appeals shall consist of persons five voting members appointed by the chief appointing authority of the jurisdiction. Each member shall serve for [INSERT NUMBER OF YEARS] years or until a successor has been appointed. The board members' terms shall be staggered at intervals, so as to provide continuity. The building official shall be an ex officio member of said board but shall not vote on any matter before the board. as follows:</p> <p>1. One for 5 years; one for 4 years; one for 3 years; one for 2 years; and one for 1 year.</p>		<p align="center">Edits made to clarify code, no major changes to code requirements.</p>

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	<p>2. Thereafter, each new member shall serve for 5 years or until a successor has been appointed.</p> <p>The building official shall be an ex officio member of said board but shall have no vote on any matter before the board.</p>		
	<p>[A] B401.2.2 B101.3.1 Qualifications. The board of appeals shall consist of five individuals, who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the jurisdiction, one from each of the following professions or disciplines:</p> <ol style="list-style-type: none"> 1. Registered design professional with architectural experience or a builder or superintendent of building construction with not fewer than 10 years of experience, 5 of which shall have been in responsible charge of work. 2. Registered design professional with structural engineering experience. 3. Registered design professional with mechanical and plumbing engineering experience or a mechanical contractor with not fewer than 10 years of experience, 5 of which shall have been in responsible charge of work. 4. Registered design professional with electrical engineering experience or an electrical contractor with not fewer than 10 years of experience, 5 of which shall have been in responsible charge of work. 5. Registered design professional with fire protection engineering experience or a fire protection contractor with not fewer than 10 years of experience, 5 of which shall have been in responsible charge of work. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B401.2.4 B101.3.2 Alternate members. The chief appointing authority shall 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 5 years, the same term or until a successor has been appointed.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B101.3.3 Vacancies. Vacancies shall be filled for an unexpired term in the same manner in which original appointments are required to be made.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B401.2.4 B101.3.4 Chairperson.</p>		

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	<p>[A] B401.2.6 B101.3.5 Secretary. The chief administrative officer appointing authority shall designate a qualified clerk to serve as secretary to the board. The secretary shall file a detailed record of all proceedings, in the office of the chief administrative officer, 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B401.2.5 B101.3.6 Disqualification of member. Conflict of interest. A member shall not hear an appeal in which that member has awith 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B401.2.7 B101.3.7 Compensation of members. Compensation of members shall be determined by law.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B101.3.8 Removal from the board. A member shall be removed from the board prior to the end of their term only for cause. Any member with continued absence from regular meeting of the board may be removed at the discretion of the chief appointing authority.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B401.2.3 B101.4 Rules and procedures. The board is authorized to 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.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>[A] B401.3 B101.5 Notice of meeting.</p>		
	<p>[A] B401.3.4 B101.5.1 Open hearing.</p>		
	<p>B101.5.2 Quorum. Three members of the board shall constitute a quorum.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	[A] B101.3.3 B101.5.3 Postponed hearing.		
	[A] B101.6 Legal counsel. 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.		Edits made to clarify code, no major changes to code requirements.
	[A] B101.4 B101.7 Board decision. The board shall modify or reverse the decision of the building official by a concurring vote of two-thirds of its members. The board shall only modify or reverse the decision of the building official by a concurring vote of three or more members.		Edits made to clarify code, no major changes to code requirements.
	[A] B101.4.4 B101.7.1 Resolution. The decision of the board shall be by resolution. Certified copies shall be Every decision shall be promptly filed in writing in the office of the building official 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 building code official.		Edits made to clarify code, no major changes to code requirements.
	[A] B101.4.2 B101.7.2 Administration.		
	[A] B101.8 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.		Edits made to clarify code, no major changes to code requirements.
2015 Houston IBC APPENDIX D FIRE DISTRICTS	2021 IBC APPENDIX D	2021 Houston Amendments	Code Analysis
	SECTION D102 BUILDING RESTRICTIONS		

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	<p>D101.2.1 Adjoining blocks. Two or more adjoining blocks, exclusive of intervening streets, where at least not less than 50 percent of the ground area is built upon and more than 50 percent of the built-on area is devoted to hotels and motels of Group R-1; Group B occupancies; theaters, nightclubs, restaurants of Group A-1 and A-2 occupancies; garages, express and freight depots, warehouses and storage buildings used for the storage of finished products (not located with and forming a part of a manufactured or industrial plant); or Group S occupancy. Where the average height of a building is two and one-half stories or more, a block should be considered if the ground area built upon is at least not less than 40 percent.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>D101.2.3 Developed blocks. Where blocks adjacent to the fire district have developed to the extent that at least not less than 25 percent of the ground area is built upon and 40 percent or more of the built-on area is devoted to the occupancies specified in Section D101.2.1, they can be considered for inclusion in the fire district, and can form all or a portion of the 200-foot (60 960 mm) buffer zone required in Section D101.2.2.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>D102.2.5 Structural fire rating. Walls, floors, roofs and their supporting structural members shall be a minimum of not less than 1-hour fire-resistance-rated construction.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Buildings of Type IV construction. 2. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. 3. Automobile parking structures. 4. Buildings surrounded on all sides by a permanently open space of not less than 30 feet (9144 mm). 5. Partitions complying with Section 603.1, Item 11. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>D102.2.8 Permanent canopies. Permanent canopies are permitted to extend over adjacent open spaces provided that all of the following are met:</p> <ol style="list-style-type: none"> 1. The canopy and its supports shall be of noncombustible material, fire-retardant-treated wood, Type IV construction or of 1-hour fire-resistance-rated construction. <p>Exception: Any textile covering for the canopy shall be flame resistant as determined by tests conducted in accordance with NFPA 701 after both</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>accelerated water leaching and accelerated weathering.</p> <p>2. Any canopy covering, other than textiles, shall have a flame spread index not greater than 25 when tested in accordance with ASTM E84 or UL 723 in the form intended for use.</p> <p>3. The canopy shall have at least one long side open.</p> <p>4. The maximum horizontal width of the canopy shall be not exceed greater than 15 feet (4572 mm).</p> <p>5. The fire resistance of exterior walls shall not be reduced.</p>		
	<p>D102.2.10 Plastic signs. The use of plastics complying with Section 2611 for signs is permitted provided that the structure of the sign in which the plastic is mounted or installed is noncombustible.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION D103 CHANGES TO BUILDINGS</p> <p>D103.1 Existing buildings within the fire district. An existing building shall not hereafter be increased in height or area unless it is of a type of construction permitted for new buildings within the fire district or is altered to comply with the requirements for such type of construction. Nor shall any existing building be hereafter extended on any side, nor square footage or floors added within the existing building unless such modifications are of a type of construction permitted for new buildings within the fire district.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>D103.2 Other alterations. Nothing in Section D103.1 shall prohibit other alterations within the fire district provided there is no that such alterations do not create a change of occupancy that is otherwise prohibited and or increase the fire hazard is not increased by such alteration.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION D104 BUILDINGS LOCATED PARTIALLY IN THE FIRE DISTRICT</p> <p>D104.1 General. Any building located partially in the fire district shall be of a type of construction required for the fire district, unless the major portion of such building lies outside of the fire district and no part is all portions of it extend not more than 10 feet (3048 mm) inside the boundaries of the fire district.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p style="text-align: center;">SECTION D105</p> <p style="text-align: center;">EXCEPTIONS TO RESTRICTIONS IN FIRE DISTRICT</p> <p>D105.1 General. The preceding provisions of this appendix shall not apply in the following instances:</p> <ol style="list-style-type: none"> 1. Temporary buildings used in connection with duly authorized construction. 2. A private garage used exclusively as such, not more than one story in height, nor more than 650 square feet (60 m²) in area, located on the same lot with a dwelling. 3. Fences not over 8 feet (2438 mm) high. 4. Coal tipples, material bins and trestles of Type IV construction. 5. Water tanks and cooling towers conforming to Sections 1509.3 and 1509.4. 6. Greenhouses less than 15 feet (4572 mm) high. 7. Porches on dwellings not over one story in height, and not over 10 feet (3048 mm) wide from the face of the building, provided that such porch does not come within 5 feet (1524 mm) of any property line. 8. Sheds open on a long side not over 15 feet (4572 mm) high and 500 square feet (46 m²) in area. 9. One- and two-family dwellings where of a type of construction not permitted in the fire district can be extended 25 percent of the floor area existing at the time of inclusion in the fire district by any type of construction permitted by this code. 10. Wood decks less than 600 square feet (56 m²) where constructed of 2-inch (51 mm) nominal wood, pressure treated for exterior use. 11. Wood veneers on exterior walls conforming to Section 1405.5-1404.5. 12. Exterior plastic veneer complying with Section 2605.2 where installed on exterior walls required to have a fire-resistance rating not less than 1 hour, provided that the exterior plastic veneer does not exhibit sustained flaming as defined in NFPA 268. 		<p style="text-align: center;">Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION D106</p> <p style="text-align: center;">REFERENCED STANDARDS</p>		

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	<p>SECTION E104 SPECIAL OCCUPANCIES</p>		
	<p>E104.2.2 Group I-3. In Group I-3 occupancies at least 2 percent, but no fewer than one of the total number of general holding cells and general housing cells equipped with audible emergency alarm systems notification devices systems, and not less than one cell, shall be provided with visual notification devices. and Permanently installed telephones within the cell shall comply both complying with Section E104.2.4.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION E105 OTHER FEATURES AND FACILITIES</p>		
	<p>E105.2.1 Washing machines. Where three or fewer washing machines are provided, at least one or more shall be accessible. Where more than three washing machines are provided, at least two or more shall be accessible.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>E105.2.2 Clothes dryers. Where three or fewer clothes dryers are provided, at least one or more shall be accessible. Where more than three clothes dryers are provided, at least two or more shall be accessible.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>E105.3 Gaming machines, depositories, vending machines, change machines and similar equipment. At least Not fewer than one of each type of depository, vending machine, change machine and similar equipment shall be accessible. Two percent of gaming machines shall be accessible and provided with a front approach. Accessible gaming machines shall be distributed throughout the different types of gaming machines provided.</p> <p style="padding-left: 40px;">Exception: Drive-up-only depositories are not required to comply with this section.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>E105.4 Mailboxes. Where mailboxes are provided in an interior location, at least 5 percent of the total, but not less than one, of each type shall be accessible. In residential and institutional facilities, where mailboxes are provided for each dwelling unit or sleeping</p>		Edits made to clarify code, no major changes to code requirements.

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	unit, accessible mailboxes shall be provided for each unit required to be an Accessible unit.		
	E105.5 Automatic teller machines and fare machines. Where automatic teller machines or self-service fare vending, collection or adjustment machines are provided, at least not fewer than one machine of each type at each location where such machines are provided shall be accessible. Where bins are provided for envelopes, wastepaper or other purposes, at least not fewer than one of each type shall be accessible.		Edits made to clarify code, no major changes to code requirements.
	SECTION E106 TELEPHONES E106.1 General. Where coin-operated public pay telephones, coinless public pay telephones, public closed-circuit telephones, courtesy phones or other types of public telephones are provided, accessible public telephones shall be provided in accordance with Sections E106.2 through E106.5 for each type of public telephone provided. For purposes of this section, a bank of telephones shall be considered to consist of two or more adjacent telephones.		Edits made to clarify code, no major changes to code requirements.
	E106.4.2 Floor requirement. Where four or more public pay telephones are provided on a floor of a privately owned building, at least one or more public TTY shall be provided on that floor. Where at least one public pay telephone or more , is provided on a floor of a publicly owned building, at least not fewer than one public TTY shall be provided on that floor.		Edits made to clarify code, no major changes to code requirements.
	E106.4.3 Building requirement. Where four or more public pay telephones are provided in a privately owned building, at least one or more public TTY shall be provided in the building. Where at least one public pay telephone is provided in a publicly owned building, at least one or more public TTY shall be provided in the building.		Edits made to clarify code, no major changes to code requirements.
	E106.4.4 Site requirement. Where four or more public pay telephones are provided on a site, at least one or more public TTY shall be provided on the site.		Edits made to clarify code, no major changes to code requirements.
	E106.4.6 Hospitals. Where a public pay telephone is provided in or adjacent to a hospital emergency room, hospital recovery room or hospital waiting room, at least one or more public TTY shall be provided at each such location.		Edits made to clarify code, no major changes to code requirements.

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	<p>E106.4.8 Detention and correctional facilities. In detention and correctional facilities, where a public pay telephone is provided in a secured area used only by detainees or inmates and security personnel, then at least not fewer than one TTY shall be provided in at least not fewer than one secured area.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>E106.4.9 Signs. Public TTYs shall be identified by the International Symbol of TTY complying with ICC A117.1. Directional signs indicating the location of the nearest public TTY shall be provided at banks of public pay telephones not containing a public TTY. Additionally, where signs provide direction to public pay telephones, they shall also provide direction to public TTYs. Such signs shall comply with visual signage requirements in ICC A117.1 and shall include the International Symbol of TTY.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>E106.5 Shelves for portable TTYs. Where a bank of telephones in the interior of a building consists of three or more public pay telephones, at least not fewer than one public pay telephone at the bank shall be provided with a shelf and an electrical outlet.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. In secured areas of detention and correctional facilities, if shelves and outlets are prohibited for purposes of security or safety shelves and outlets for TTYs are not required to be provided. 2. The shelf and electrical outlet shall not be required at a bank of telephones with a TTY. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION E107 SIGNAGE</p>		
	<p>SECTION E108 BUS STOPS</p>		
	<p>SECTION E109 TRANSPORTATION FACILITIES AND STATIONS</p>		

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	<p>E109.2.2.1 Raised character and braille signs. Where signs are provided at entrances to stations identifying the station or the entrance, or both, at least one sign at each entrance shall be raised characters and braille. A minimum of one raised character and braille sign identifying the specific station shall be provided on each platform or boarding area. Such signs shall be placed in uniform locations at entrances and on platforms or boarding areas within the transit system to the maximum extent practicable.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where the station has no does not have a defined entrance but signs are provided, the raised characters and braille signs shall be placed in a central location. 2. Signs are not required to be raised characters and braille where audible signs are remotely transmitted to hand-held receivers, or are user or proximity actuated. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION E110 AIRPORTS</p>		
	<p>SECTION E111 REFERENCED STANDARDS</p>		
	<p>E111.1 General. See Table E111.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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2015 Houston IBC – Appendix F Rodentproofing	2021 IBC APPENDIX F	2021 Houston Amendments	Code Analysis
<p style="text-align: center;">APPENDIX F RODENTPROOFING</p> <p><i>The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.</i></p> <p><u>{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</u></p>		<p style="text-align: center;">APPENDIX F RODENTPROOFING</p> <p><i>The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.</i></p> <p><u>{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX SHALL REMAIN AS SET FORTH IN THE 2021 IBC.}</u></p>	<p>No change to Houston amendment.</p>
	<p>SECTION F101 GENERAL</p>		
	<p>F101.5 Windows and other openings. Windows and other openings for the purpose of light or ventilation located in exterior walls within 2 feet (610 mm) above the existing ground level immediately below such opening shall be covered for their entire height and width, including frame, with hardware cloth of at least not less than 0.035-inch (0.89 mm) wire or heavier.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>F101.5.1 Rodent-accessible openings. Windows and other openings for the purpose of light and ventilation in the exterior walls not covered in this chapter, accessible to rodents by way of exposed pipes, wires, conduits and other appurtenances, shall be covered with wire cloth of at least 0.035-inch (0.89 mm) wire. In lieu of wire cloth covering, said pipes, wires, conduits and other appurtenances shall be blocked from rodent usage by installing solid sheet metal guards 0.024 inch (0.61 mm) thick or heavier. Guards shall be fitted around pipes, wires, conduits or other appurtenances. In addition, they shall be fastened securely to and shall extend perpendicularly from the exterior wall for a minimum distance of not less than 12 inches (305 mm) beyond and on either side of pipes, wires, conduits or appurtenances.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>F101.6.2 Sill at or above 12 inches above ground. Buildings not provided with a continuous foundation and that have sills 12 inches (305 mm) or more above ground level shall be provided with protection against rodents at grade in accordance with any of the following:</p> <ol style="list-style-type: none"> 1. Section F101.6.1.1 or F101.6.1.2. 2. By installing solid sheet metal collars at least not less than 0.024 inch (0.6 mm) thick at the top of 		<p>Edits made to clarify code, no major changes to code requirements.</p>

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

Code Change Summary

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	<p>each pier or pile and around each pipe, cable, conduit, wire or other item that provides a continuous pathway from the ground to the floor.</p> <p>3. By encasing the pipes, cables, conduits or wires in an enclosure constructed in accordance with Section F101.6.1.1.</p>		
2015 Houston IBC – APPENDIX G FLOOD-RESISTANT CONSTRUCTION	2021 IBC APPENDIX G	2021 Houston Amendments	Code Analysis
	<p>SECTION G101 ADMINISTRATION</p>		
	<p>G204.4 G101.5 Designation of floodplain administrator. The [INSERT JURISDICTION'S SELECTED POSITION TITLE] is designated as the floodplain administrator and is authorized and directed to enforce the provisions of this appendix. The floodplain administrator is authorized to delegate performance of certain duties to other employees of the jurisdiction. Such designation shall not alter any duties and powers of the building official.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>SECTION G204 G102 DEFINITIONS</p>		
	<p>G204.2 G102.1 General. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.</p> <p>DEVELOPMENT. Any man-made change to improved or unimproved real estate, including but not limited to, buildings or other structures, temporary structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, operations and other land-disturbing activities.</p> <p>FUNCTIONALLY DEPENDENT FACILITY. A facility that cannot be used for perform its intended purpose unless it is located or carried out in close proximity to water, such as a docking or port facility The term includes only docking facilities, port facilities necessary for the loading or unloading of cargo or passengers, and shipbuilding or and ship repair facilities. The term does not include long-term storage, manufacture, sales or service facilities.</p> <p>MANUFACTURED HOME. A structure that is transportable in one or more sections, built on a permanent chassis, designed for use with or without a permanent foundation when attached to the required utilities, and constructed to the Federal Mobile</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>Manufactured Home Construction and Safety Standards and rules and regulations promulgated by the U.S. Department of Housing and Urban Development. The term also includes mobile homes, park trailers, travel trailers and similar transportable structures that are placed on a site for 180 consecutive days or longer.</p> <p>MANUFACTURED HOME PARK OR SUBDIVISION. A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.</p> <p>RECREATIONAL VEHICLE. A vehicle that is built on a single chassis, 400 square feet (37.16 m²) or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty truck, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel or seasonal use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect-type utilities and security devices and has no permanently attached additions.</p> <p>VARIANCE. A grant of relief from the requirements of this section that permits construction in a manner otherwise prohibited by this section where specific enforcement would result in unnecessary hardship.</p> <p>VIOLATION. A development that is not fully compliant with this appendix or Section 1612, as applicable.</p>		
	<p>SECTION G402 G103 APPLICABILITY</p>		
	<p>G402.1 G103.1 General.</p>		
	<p>G402.2 G103.2 Establishment of flood hazard areas.</p>		
	<p>SECTION G403 G104 POWERS AND DUTIES</p>		
	<p>G403.1 G104.1 Permit applications. All applications for permits must shall comply with the following:</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>1. The building official floodplain administrator shall review all permit applications to determine whether proposed development is located in flood hazard areas established in Section G103.2.</p> <p>2. Where a proposed development site is in a flood hazard area, all development to which this appendix is applicable as specified in Section G103.1 shall be designed and constructed with methods, practices and materials that minimize flood damage and that are in accordance with this code and ASCE 24.</p>		
	<p>G403.2 G104.2 Other permits. It shall be the responsibility of the building official floodplain administrator to ensure that approval of a proposed development shall not be given until proof that necessary permits have been granted by federal or state agencies having jurisdiction over such development.</p>		
	<p>G403.3 G104.3 Determination of design flood elevations. If design flood elevations are not specified, the building official floodplain administrator is authorized to require the applicant to meet one of the following:</p> <ol style="list-style-type: none"> 1. Obtain, review and reasonably utilize data available from a federal, state or other source, or 2. Determine the design flood elevation in accordance with accepted hydrologic and hydraulic engineering techniques. Such analyses shall be performed and sealed by a registered design professional. Studies, analyses and computations shall be submitted in sufficient detail to allow review and approval by the building official floodplain administrator. The accuracy of data submitted for such determination shall be the responsibility of the applicant. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>G403.4 G104.4 Activities in riverine flood hazard areas. In riverine flood hazard areas where design flood elevations are specified but floodways have not been designated, the building official floodplain administrator shall not permit any new construction, substantial improvement or other development, including fill, unless the applicant submits an engineering analysis prepared by a registered design professional, demonstrating that the cumulative effect of the proposed development, when combined with all other existing and anticipated flood hazard area encroachment, will not increase the design flood elevation more than 1 foot (305 mm) at any point within the community.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>G403.5 G104.5 Floodway encroachment. Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the building official floodplain administrator shall require submission of a certification, prepared by a registered design professional, along with supporting technical data, demonstrating that such development will not cause any increase of the base flood level.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	G403.5.4 G104.5.1 Floodway revisions.		Edits made to clarify code, no major changes to code requirements.
	G403.6 G104.6 Watercourse alteration. Prior to issuing a permit for any alteration or relocation of any watercourse, the building official floodplain administrator shall require the applicant to provide notification of the proposal to the appropriate authorities of all affected adjacent government jurisdictions, as well as appropriate state agencies. A copy of the notification shall be maintained in the permit records and submitted to FEMA.		Edits made to clarify code, no major changes to code requirements.
	G403.6.4 G104.6.1 Engineering analysis. The building official floodplain administrator shall require submission of an engineering analysis, prepared by a registered design professional, demonstrating that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased. Such watercourses shall be maintained in a manner that preserves the channel's flood-carrying capacity.		Edits made to clarify code, no major changes to code requirements.
	G403.7 G104.7 Alterations in coastal areas. Prior to issuing a permit for any alteration of sand dunes and mangrove stands in coastal high-hazard areas and coastal A zones, the building official floodplain administrator shall require submission of an engineering analysis, prepared by a registered design professional, demonstrating that the proposed alteration will not increase the potential for flood damage.		Edits made to clarify code, no major changes to code requirements.
	G403.8 G104.8 Records. The building official floodplain administrator shall maintain a permanent record of all permits issued in flood hazard areas, including supporting certifications and documentation required by this appendix and copies of inspection reports, and design certifications and documentation of elevations required in Section 1612 of this code and Section R322 of the International Residential Code.		Edits made to clarify code, no major changes to code requirements.
	G403.9 G104.9 Inspections. Development for which a permit under this appendix is required shall be subject to inspection. The building official floodplain administrator or the building official's floodplain administrator's designee shall make, or cause to be made, inspections of all development in flood hazard areas authorized by issuance of a permit under this appendix.		Edits made to clarify code, no major changes to code requirements.
	G104.10 Use of changed technical data. The floodplain administrator and the applicant shall not use changed flood hazard area boundaries or base flood elevations for proposed buildings or developments unless the floodplain administrator or applicant has applied for a conditional Flood Insurance Rate Map (FIRM) revision		Edits made to clarify code, no major changes to code requirements.

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	and has received the approval of the Federal Emergency Management Agency (FEMA).		
	SECTION G104G105 PERMITS		
	G104.1 G105.1 Required. Any person, owner or owner's authorized agent who intends to conduct any development in a flood hazard area shall first make application to the building official floodplain administrator and shall obtain the required permit.		Edits made to clarify code, no major changes to code requirements.
	G104.3 G105.3 Validity of permit. The issuance of a permit under this appendix shall not be construed to be a permit for, or approval of, any violation of this appendix or any other ordinance of the jurisdiction. The issuance of a permit based on submitted documents and information shall not prevent the building official floodplain administrator from requiring the correction of errors. The building official floodplain administrator is authorized to prevent occupancy or use of a structure or site that is in violation of this appendix or other ordinances of this jurisdiction.		Edits made to clarify code, no major changes to code requirements.
	G104.4 G105.4 Expiration. A permit shall become invalid if the proposed development is not commenced within 180 days after its issuance, or if the work authorized is suspended or abandoned for a period of 180 days after the work commences. Extensions shall be requested in writing and justifiable cause demonstrated. The building official floodplain administrator is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each.		Edits made to clarify code, no major changes to code requirements.
	G104.5 G105.5 Suspension or revocation. The building official floodplain administrator is authorized to suspend or revoke a permit issued under this appendix wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or code of this jurisdiction.		Edits made to clarify code, no major changes to code requirements.
	SECTION G105G106 VARIANCES		
	G105.4 G106.1 General. The board of appeals established pursuant to Section 113, or other established or designed board , shall hear and decide requests for variances. The board of appeals shall base its determination on technical justifications, and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix and Section 1612.		Edits made to clarify code, no major changes to code requirements.

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	<p>G405.2 G106.2 Records. The building—official floodplain administrator shall maintain a permanent record of all variance actions, including justification for their issuance.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>G405.3 G106.3 Historic structures.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>G405.4 G106.4 Functionally dependent facilities. A variance is authorized to be issued for the construction or substantial improvement of a functionally dependent facility provided that the criteria in Section 1612.1 are met and the variance is the minimum necessary to allow the construction or substantial improvement, and that all due consideration has been given to methods and materials that minimize flood damages during the design flood and do not create no additional threats to public safety.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>G405.5 G106.5 Restrictions. The board of appeals shall not issue a variance for any proposed development in a floodway if any increase in flood levels would result during the base flood discharge.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>G405.6 G106.6 Considerations. In reviewing applications for variances, the board of appeals shall consider all technical evaluations, all relevant factors, all other portions of this appendix and the following:</p> <ol style="list-style-type: none"> 1. The danger that materials and debris may be swept onto other lands resulting in further injury or damage. 2. The danger to life and property due to flooding or erosion damage. 3. The susceptibility of the proposed development, including contents, to flood damage and the effect of such damage on current and future owners. 4. The importance of the services provided by the proposed development to the community. 5. The availability of alternate locations for the proposed development that are not subject to flooding or erosion. 6. The compatibility of the proposed development with existing and anticipated development. 7. The relationship of the proposed development to the comprehensive plan and flood plain management program for that area. 8. The safety of access to the property in times of flood for ordinary and emergency vehicles. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>9. The expected heights, velocity, duration, rate of rise and debris and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site.</p> <p>10. The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.</p>		
	<p>G405.7 G106.7 Conditions for issuance.</p> <p>Variances shall only be issued by the board of appeals where all of the following criteria are met:</p> <ol style="list-style-type: none"> 1. A technical showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site renders the elevation standards inappropriate. 2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable. 3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, nor create nuisances, cause fraud on or victimization of the public or conflict with existing local laws or ordinances. 4. A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief. 5. Notification to the applicant in writing over the signature of the building official floodplain administrator that the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage, and that such construction below the base flood level increases risks to life and property. 		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p style="text-align: center;">SECTION G304 G107</p> <p style="text-align: center;">SUBDIVISIONS</p> <p>G304.1 G107.1 General. Any subdivision proposal, including proposals for manufactured home parks and subdivisions, or other proposed new development in a flood hazard area shall be reviewed to verify all of the following:</p> <ol style="list-style-type: none"> 1. All such proposals are consistent with the need to minimize flood damage. 2. All public utilities and facilities, such as sewer, gas, electric and water systems, are located and constructed to minimize or eliminate flood damage. 3. Adequate drainage is provided to reduce exposure to flood hazards. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	G304.2 G107.2 Subdivision requirements.		Edits made to clarify code, no major changes to code requirements.
	SECTION G404 G108 SITE IMPROVEMENT		Edits made to clarify code, no major changes to code requirements.
	G401.1 G108.1 Development in floodways.		
	G401.2 G108.2 Coastal high-hazard areas and coastal A zones.		
	G401.3 G108.3 Sewer facilities.		
	G401.4 G108.4 Water facilities.		
	G401.5 G108.5 Storm drainage.		
	G401.6 G108.6 Streets and sidewalks.		
	SECTION G504 G109 MANUFACTURED HOMES		
	G501.1 G109.1 Elevation.		
	G501.2 G109.2 Foundations.		
	G501.3 G109.3 Anchoring.		
	G501.4 G109.4 Protection of mechanical equipment and outside appliances. Mechanical equipment and outside appliances shall be elevated to or above the design flood elevation. Exception: Where such equipment and appliances are designed and installed to prevent water from entering or accumulating within their components and the systems are constructed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding up to the elevation required by Section R322 of the International Residential Code, the systems and equipment shall be permitted to be located below the elevation required by Section R322 of the International Residential Code. Electrical wiring systems		

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	shall be permitted below the design flood elevation provided that they conform to the provisions of NFPA 70.		
	G504.5 G109.5 Enclosures.		
	SECTION G604 G110 RECREATIONAL VEHICLES		
	G604.1 G110.1 Placement prohibited.		
	G604.2 G110.2 Temporary placement. Recreational vehicles in flood hazard areas shall be fully licensed and ready for highway use, and or shall be placed on a site for less than 180 consecutive days.		Edits made to clarify code, no major changes to code requirements.
	G604.3 G110.3 Permanent placement.		
	SECTION G704 G111 TANKS		
	G704.4 G111.1 Tanks.		
	SECTION G804 G112 OTHER BUILDING WORK		
	G804.4 G112.1 Garages and accessory structures.		
	G804.2 G112.2 Fences. Fences in floodways that may have the potential to block the passage of floodwaters, such as stockade fences and wire mesh fences, shall meet the requirement of Section G103.5.		Edits made to clarify code, no major changes to code requirements.
	G804.3 G112.3 Oil derricks.		
	G804.4 G112.4 Retaining walls, sidewalks and driveways.		
	G804.5 G112.5 Swimming pools.		

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	G804.6 G112.6 Decks, porches, and patios.		
	G804.7 G112.7 Nonstructural concrete slabs in coastal high-hazard areas and coastal A zones.		
	G804.8 G112.8 Roads and watercourse crossings in regulated floodways.		
	SECTION G904 G113 TEMPORARY STRUCTURES AND TEMPORARY STORAGE G904.1 G113.1 Temporary structures.		
	G904.2 G113.2 Temporary storage.		
	G904.3 G113.3 Floodway encroachment.		
	SECTION G4004 G114 UTILITY AND MISCELLANEOUS GROUP U G4004.1 G114.1 Utility and miscellaneous Group U.		
	G4004.2 G114.2 Flood loads.		
	G4004.3 G114.3 Elevation.		
	G4004.4 G114.4 Enclosures below design flood elevation.		

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	G4001.5 G114.5 Flood-damage-resistant materials.		
	<p>G4001.6 G114.6 Protection of mechanical, plumbing and electrical systems. Mechanical, plumbing and electrical systems, including plumbing fixtures, shall be elevated to or above the design flood elevation.</p> <p>Exception: Electrical systems, equipment and components; heating, ventilating, air conditioning and plumbing appliances; plumbing fixtures, duct systems and other service equipment shall be permitted to be located below the design flood elevation provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in compliance with the flood-resistant construction requirements of this code. Electrical wiring systems shall be permitted to be located below the design flood elevation provided that they conform to the provisions of NFPA 70.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION G4401 G115</p> <p>REFERENCED STANDARDS</p>		
2015 Houston IBC – Appendix H Signs	2021 IBC APPENDIX H	2021 Houston Amendments	Code Analysis
	<p>H106.1.1 Internally illuminated signs. Except as provided for in Sections 402.16 and 2611, where internally illuminated signs have facings of wood or of approved plastic complying with the requirements of Section 2606.4, the area of such facing section shall be not more than 120 square feet (11.16 m²) and the wiring for electric lighting shall be entirely enclosed in the sign cabinet with a clearance of not less than 2 inches (51 mm) from the facing material. The dimensional limitation of 120 square feet (11.16 m²) shall not apply to sign facing sections made from flame-resistant-coated fabric (ordinarily known as "flexible sign face plastic") that weighs less than 20 ounces per square yard (678 g/m²) and that, when tested in accordance with NFPA 701, meets the fire propagation performance</p>		Edits made to clarify code, no major changes to code requirements.

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	requirements of both Test 1 and Test 2 or that, when tested in accordance with an approved test method, exhibits an average burn time of 2 seconds or less and a burning extent of 5.9 inches (150 mm) or less for 10 specimens.		
	SECTION H107 COMBUSTIBLE MATERIALS		
	H107.1 Use of combustibles. Wood, approved plastics complying with the requirements of Section H107.1.1 or plastic veneer panels as provided for in Chapter 26, or other materials of combustible characteristics similar to wood, used for moldings, cappings, nailing blocks, letters and latticing, shall comply with Section H109.1 and shall not be used for other ornamental features of signs, unless approved.		Edits made to clarify code, no major changes to code requirements.
	H107.1.1 Plastic materials. Notwithstanding any other provisions of this code, plastic materials that burn at a rate not faster than 2.5 inches per minute (64 mm/s) when tested in accordance with ASTM D635 shall be deemed approved plastics and can be used as the display surface material and for the letters, decorations and facings on signs and outdoor display structures.		Edits made to clarify code, no major changes to code requirements.
	H107.1.3 Area limitation. If the area of a display surface exceeds 200 square feet (18.6 m ²), the area occupied or covered by approved plastics complying with the requirements of Section H107.1.1 shall be limited to 200 square feet (18.6 m ²) plus 50 percent of the difference between 200 square feet (18.6 m ²) and the area of display surface. The area of plastic on a display surface shall not in any case exceed 1,100 square feet (102 m ²).		Edits made to clarify code, no major changes to code requirements.
	H107.1.4 Plastic appurtenances. Letters and decorations mounted on an approved plastic facing or display surface can be made of approved plastics complying with the requirements of Section H107.1.1.		Edits made to clarify code, no major changes to code requirements.
	SECTION H110 ROOF SIGNS		
	H110.1 General. Roof signs shall be constructed entirely of metal or other approved noncombustible material except as provided for in Sections H106.1.1 and H107.1. Provisions shall be made for electric grounding of metallic parts. Where combustible materials are permitted in letters or other ornamental features, wiring and tubing shall be kept free and insulated therefrom. Roof signs shall be so constructed as to leave a clear space of not less than 6 feet (1829 mm) between the roof level and the lowest part of the sign and shall have at least not less than 5 feet (1524 mm) clearance		Edits made to clarify code, no major changes to code requirements.

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	<p>between the vertical supports thereof. No portion of any Roof sign structures shall not project beyond an exterior wall.</p> <p>Exception: Signs on flat roofs with every part of the roof accessible.</p>		
	<p>H110.2 Bearing plates. The bearing plates of roof signs shall distribute the load directly to or up upon masonry walls, steel roof girders, columns or beams. The building shall be designed to avoid overstress of these members.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>H110.4 Height of open signs. Open roof signs in which the uniform open area is not less than 40 percent of total gross area shall not exceed a height of 75 feet (22 860 mm) on buildings of Type 1 or Type 2 construction. On buildings of other construction types, the height shall not exceed 40 feet (12 192 mm). Such signs shall be thoroughly secured to the building up upon which they are installed, erected or constructed by iron, metal anchors, bolts, supports, chains, stranded cables, steel rods or braces and they shall be maintained in good condition.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>H110.5 Height of closed signs. A closed roof sign shall not be erected to a height greater than 50 feet (15 240 mm) above the roof of buildings of Type 1 or Type 2 construction or more than 35 feet (10 668 mm) above the roof of buildings of Type 3, 4 or 5 construction.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION H111 WALL SIGNS</p>		
	<p>H111.2 Exterior wall mounting details. Wall signs attached to exterior walls of solid masonry, concrete or stone shall be safely and securely attached by means of metal anchors, bolts or expansion screws of not less than 3/8 inch (9.5 mm) diameter and shall be embedded at least not less than 5 inches (127 mm). Wood blocks shall not be used for anchorage, except in the case of wall signs attached to buildings with walls of wood. A wall sign shall not be supported by anchorages secured to an unbraced parapet wall.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION H112 PROJECTING SIGNS</p>		
	<p>H112.1 General. Projecting signs shall be constructed entirely of metal or other noncombustible material and securely attached to a building or structure by metal supports such as bolts, anchors, supports, chains, guys or steel rods. Staples or nails shall not be used to secure any projecting sign to any building or structure. The dead load of projecting signs not parallel to the building or structure and the load due to wind pressure shall be supported with chains, guys or steel rods having net cross-sectional dimension of not less</p>		Edits made to clarify code, no major changes to code requirements.

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	<p>than 3/8 inch (9.5 mm) diameter. Such supports shall be erected or maintained at an angle of at least not less than 45 percent (0.78 rad) with the horizontal to resist the dead load and at angle of 45 percent (0.78 rad) or more with the face of the sign to resist the specified wind pressure. If such projecting sign exceeds 30 square feet (2.8 m²) in one facial area, there shall be provided at least not fewer than two such supports on each side not more than 8 feet (2438 mm) apart to resist the wind pressure.</p>		
	<p>H112.4 Height limitation. A projecting sign shall not be erected on the wall of any building so as to project above the roof or cornice wall or, on buildings without a cornice wall, above the roof level where there is no cornice wall; except that a sign erected at a right angle to the building, the horizontal width of which sign is perpendicular to such a wall and does not exceed 18 inches (457 mm), is permitted to be erected to a height not exceeding 2 feet (610 mm) above the roof or cornice wall or above the roof level where there is no cornice wall. A sign attached to a corner of a building and parallel to the vertical line of such corner shall be deemed to be erected at a right angle to the building wall.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>H112.5 Additional loads. Projecting sign structures that will be used to support an individual on a ladder or other servicing device, whether or not specifically designed for the servicing device, shall be capable of supporting the anticipated additional load, but not less than a 100-pound (445 N) concentrated horizontal load and a 300-pound (1334 N) concentrated vertical load applied at the point of assumed or most eccentric loading. The building component to which the projecting sign is attached shall also be designed to support the additional loads.</p>		Edits made to clarify code, no major changes to code requirements.
	<p>SECTION H113 MARQUEE SIGNS</p>		
	<p>H113.4 Height limitation. Marquee signs shall not extend more than 6 feet (1829 mm) above, or 1 foot (305 mm) below such marquee, but under no circumstances shall the sign or Signs shall not have a vertical dimension greater than 8 feet (2438 mm).</p>		Edits made to clarify code, no major changes to code requirements.
<p>2015 Houston IBC – Appendix I Patio Covers</p>	<p>2021 IBC APPENDIX I</p>	<p>2021 Houston Amendments</p>	<p>Code Analysis</p>
	<p style="text-align: center;">SECTION I103 EXTERIOR WALLS AND OPENINGS</p> <p>I103.1 Enclosure walls. Enclosure walls shall be permitted to be of any configuration, provided that the open or glazed area of the</p>		Edits made to clarify code, no major changes to code requirements.

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	longer wall and one additional wall is equal to at least not less than a minimum of not less than 6 feet 8 inches (2032 mm) of each wall, measured from the floor. Openings shall be permitted to be enclosed with insect screening, approved translucent or transparent plastic not more than 0.125 inch (3.2 mm) in thickness conforming to the provisions of Sections 2606 through 2610, glass conforming to the provisions of Chapter 24 or any combination of the foregoing.		
	1103.2 Light, ventilation and emergency egress. Exterior openings of the dwelling unit required for light and ventilation shall be permitted to open into a patio structure. However, the patio structure shall be unenclosed if such openings are serving as emergency egress or rescue openings from sleeping rooms. Where such exterior openings serve as an exit from the dwelling unit, the patio structure, unless unenclosed, shall be provided with exits conforming to the provisions of Chapter 10.		Edits made to clarify code, no major changes to code requirements.
	SECTION 1105 STRUCTURAL PROVISIONS		
	1105.2 Footings. In areas with a frost depth of zero, a patio cover shall be permitted to be supported on a concrete slab on grade without footings, provided that the slab conforms to the provisions of Chapter 19 of this code, and is not less than 3 1/2 inches (89 mm) thick, and further provided that the columns do not support loads in excess of 750 pounds (3.36 kN) per column.		Edits made to clarify code, no major changes to code requirements.

2015 Houston IBC – Appendix J Excavation and Grading	2021 IBC APPENDIX J GRADING	2021 Houston Amendments	Code Analysis
<p style="text-align: center;">APPENDIX J EXCAVATION AND GRADING</p> <p><i>The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.</i></p> <p><small>{EDITORIAL NOTE: CONTENTS OF APPENDIX J NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IBC.}</small></p>	<p style="text-align: center;">APPENDIX J GRADING</p>	<p style="text-align: center;">APPENDIX J EXCAVATION AND GRADING</p> <p><i>The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.</i></p> <p><small>{EDITORIAL NOTE: CONTENTS OF APPENDIX J NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2021 IBC.}</small></p>	<p>No change to Houston amendment.</p>

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<p align="center">SECTION J101 GENERAL</p> <p>J101.1 Scope. The provisions of this chapter <u>appendix</u> apply to grading, excavation and earthwork construction, including fills and embankments; establish the administrative procedure for issuance of permits; and provide for approval of plans and inspection of grading construction. Where conflicts occur between the technical requirements of this chapter <u>appendix</u> and the geotechnical report, the geotechnical report shall govern <u>prevail</u>.</p>	<p align="center">SECTION J101 GENERAL</p> <p>No changes</p>	<p align="center">SECTION J101 GENERAL</p> <p>J101.1 Scope. The provisions of this <u>chapter</u> <u>appendix</u> apply to grading, excavation and earthwork construction, including fills and embankments; establish the administrative procedure for issuance of permits; and provide for approval of plans and inspection of grading construction. Where conflicts occur between the technical requirements of this <u>chapter</u> <u>appendix</u> and the geotechnical report, the geotechnical report shall <u>govern</u> <u>prevail</u>.</p>	<p>No change to Houston amendment.</p>
<p>J101.2 Flood hazard areas. All grading, excavation and earthwork construction, including fills and embankments, that is to be performed in a <u>floodway</u> or a Houston special <u>flood hazard area</u> as defined by FEMA or Chapter 19 of the <u>City Code</u> shall be in conformance with Chapter 19 of the <u>City Code</u> and the <u>Infrastructure Design Manual</u>. Unless the applicant has submitted an engineering analysis, prepared in accordance with standard engineering practice by a <u>registered design professional</u>, that demonstrates the proposed work will not result in any increase in the level of the base flood, grading, excavation and earthwork construction, including fills and embankments, shall not be permitted in <u>floodways</u> that are in <u>flood hazard areas</u> established in Section 1612.3 or in <u>flood hazard areas</u> where design flood elevations are specified but <u>floodways</u> have not been designated.</p>	<p>No changes</p>	<p>J101.2 Flood hazard areas. All grading, excavation and earthwork construction, including fills and embankments, that is to be performed in a <u>floodway</u> or a Houston special <u>flood hazard area</u> as defined by FEMA or Chapter 19 of the <u>City Code</u> shall be in conformance with Chapter 19 of the <u>City Code</u> and the <u>Infrastructure Design Manual</u>. Unless the applicant has submitted an engineering analysis, prepared in accordance with standard engineering practice by a <u>registered design professional</u>, that demonstrates the proposed work will not result in any increase in the level of the base flood, grading, excavation and earthwork construction, including fills and embankments, shall not be permitted in <u>floodways</u> that are in <u>flood hazard areas</u> established in Section 1612.3 or in <u>flood hazard areas</u> where design flood elevations are specified but <u>floodways</u> have not been designated.</p>	<p>No change to Houston amendment.</p>
<p>J102.1 Definitions. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to and in Chapter 2 of this code for general definitions.</p> <p><u>APPROVAL.</u> <u>AS-GRADED.</u> <u>BEDROCK.</u> <u>CIVIL ENGINEER.</u> <u>CIVIL ENGINEERING.</u> <u>EARTH MATERIAL.</u> <u>ENGINEERING GEOLOGIST.</u> <u>ENGINEERING GEOLOGY.</u> <u>GRADE, ROUGH.</u> <u>GRADING, ENGINEERED.</u> <u>GRADING, REGULAR.</u> <u>PROFESSIONAL INSPECTION.</u> <u>SITE.</u> <u>SLOPE.</u></p>	<p align="center">SECTION J102 DEFINITIONS</p> <p>No changes</p>	<p align="center">SECTION J102 DEFINITIONS</p> <p>J102.1 Definitions. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to and in Chapter 2 of this code <u>for general definitions</u>.</p> <p><u>APPROVAL.</u> <u>AS-GRADED.</u> <u>BEDROCK.</u> <u>CIVIL ENGINEER.</u> <u>CIVIL ENGINEERING.</u> <u>EARTH MATERIAL.</u> <u>ENGINEERING GEOLOGIST.</u> <u>ENGINEERING GEOLOGY.</u> <u>GRADE, ROUGH.</u> <u>GRADING, ENGINEERED.</u> <u>GRADING, REGULAR.</u> <u>PROFESSIONAL INSPECTION.</u></p>	<p>No change to Houston amendment.</p>

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<p><u>SOIL.</u> SOILS ENGINEER (GEOTECHNICAL ENGINEER). SOILS ENGINEERING (GEOTECHNICAL ENGINEERING).</p>		<p><u>SITE.</u> <u>SLOPE.</u> <u>SOIL.</u> SOILS ENGINEER (GEOTECHNICAL ENGINEER). SOILS ENGINEERING (GEOTECHNICAL ENGINEERING).</p>	
	<p>SECTION J103 PERMITS REQUIRED</p>	<p>SECTION J103 PERMITS REQUIRED</p>	
<p>J103.2 Exemptions. A grading <i>permit</i> shall not be required for the following <u>if the work meets the definition of <i>regular grading</i>:</u></p> <ol style="list-style-type: none"> 1. <u>When approved by the <i>building official</i>, grading in an isolated, self-contained area, provided there is no danger to the public and that such grading will not adversely affect adjoining properties.</u> 2. <u>Excavation below finished grade for construction of basements and footings of a building, retaining wall or other structure permitted under this code. This shall not exempt any fill made with the material from such excavation or exempt any excavation having an unsupported height greater than 5 feet (1,524 mm) after the completion of such structure.</u> 3. Cemetery graves. 4. Refuse disposal sites controlled by other regulations. 5. Excavations for wells, <u>tunnels</u> or trenches for utilities. 6. Mining, quarrying, excavating, processing or stockpiling of rock, sand, gravel, aggregate or clay controlled by other regulations, provided such operations do not affect the lateral support of, or significantly increase stresses in, soil on <u>adjoining any adjacent or contiguous</u> properties. 7. Exploratory excavations performed under the direction of a <u>registered design professional</u> soil engineers or engineering geologists. <p>Exemption from the permit requirements of this appendix shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this <i>jurisdiction</i>.</p>	<p>J103.2 Exemptions. A grading permit shall not be required for the following:</p> <ol style="list-style-type: none"> 1. Grading in an isolated, self-contained area, provided there is no danger to that the public is not endangered and that such grading will not adversely affect adjoining properties. 2. Excavation for construction of a structure permitted under this code. 3. Cemetery graves. 4. Refuse disposal sites controlled by other regulations. 5. Excavations for wells, or trenches for utilities. 6. Mining, quarrying, excavating, processing or stockpiling rock, sand, gravel, aggregate or clay controlled by other regulations, provided that such operations do not affect the lateral support of, or significantly increase stresses in, soil on adjoining properties. 7. Exploratory excavations performed under the direction of a registered design professional. <p>Exemption from the permit requirements of this appendix shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.</p>	<p>J103.2 Exemptions. A grading <i>permit</i> shall not be required for the following <u>if the work meets the definition of <i>regular grading</i>:</u></p> <ol style="list-style-type: none"> 1. <u>When approved by the <i>building official</i>, ggrading in an isolated, self-contained area, provided that the public is not endangered and that such grading will not adversely affect adjoining properties.</u> 2. <u>Excavation below finished grade for construction of basements and footings of a building, retaining wall or other structure permitted under this code. This shall not exempt any fill made with the material from such excavation or exempt any excavation having an unsupported height greater than 5 feet (1,524 mm) after the completion of such structure.</u> 3. Cemetery graves. 4. Refuse disposal sites controlled by other regulations. 5. Excavations for wells, <u>tunnels</u> or trenches for utilities. 6. Mining, quarrying, excavating, processing or stockpiling of rock, sand, gravel, aggregate or clay controlled by other regulations, provided such operations do not affect the lateral support of, or significantly increase stresses in, soil on adjoining any adjacent or contiguous properties. 7. Exploratory excavations performed under the direction of a a registered design professional soil engineers or engineering geologists. <p>Exemption from the permit requirements of this appendix shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this <i>jurisdiction</i>.</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
<p>J103.3 State and federal requirements. This appendix is cumulative of all state and federal laws and regulations, including, but not limited to, Chapter 756 of the <i>Texas Health and Safety Code</i> and regulations issued thereunder and the U.S. Department of Labor Occupational Safety and Health Administration standards. No provision of this appendix, nor any permit issued hereunder,</p>	<p>N/a</p>	<p>J103.3 State and federal requirements. This appendix is cumulative of all state and federal laws and regulations, including, but not limited to, Chapter 756 of the <i>Texas Health and Safety Code</i> and regulations issued thereunder and the U.S. Department of Labor Occupational Safety and Health Administration standards. No provision of this appendix, nor any permit issued hereunder,</p>	<p>No change to Houston amendment.</p>

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<p>shall be construed to authorize any work to be performed in a manner inconsistent with state or federal requirements. It is the responsibility of the permit holder to ensure compliance therewith.</p>		<p>shall be construed to authorize any work to be performed in a manner inconsistent with state or federal requirements. It is the responsibility of the permit holder to ensure compliance therewith.</p>	
	<p>SECTION J104 PERMIT APPLICATION AND SUBMITTALS</p>		
<p>{EDITORIAL NOTE: DELETE SECTION J104 TEST IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</p> <p>J104.1 Permits required. Except as exempted in Section J103, no person shall do any grading without first obtaining a grading permit from the <i>building official</i>. A separate permit shall be obtained for each site, and a single permit may cover both excavations and fills on one site.</p>	<p>J104.1 Submittal requirements. In addition to the provisions of Section 105.3, the applicant shall state the estimated quantities of excavation and fill.</p>	<p>{EDITORIAL NOTE: DELETE SECTION J104 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</p> <p>J104.1 Permits required. Except as exempted in Section J103, no person shall do any grading without first obtaining a grading permit from the <i>building official</i>. A separate permit shall be obtained for each site, and a single permit may cover both excavations and fills on one site.</p>	<p>No change to Houston amendment.</p>
<p>J104.1.1 Grading permit fees. Fees shall be assessed in accordance with the provisions of this section, Section 118, and the city fee schedule. A fee for each grading permit shall be paid to the <i>building official</i> as set forth in Section 118.2.1. Separate permits and fees shall apply to retaining walls or major drainage structures as required elsewhere in this code. There shall be no separate charge for standard terrace drains and similar facilities.</p>		<p>J104.1.1 Grading permit fees. Fees shall be assessed in accordance with the provisions of this section, Section 118, and the city fee schedule. A fee for each grading permit shall be paid to the <i>building official</i> as set forth in Section 118.2.1. Separate permits and fees shall apply to retaining walls or major drainage structures as required elsewhere in this code. There shall be no separate charge for standard terrace drains and similar facilities.</p>	<p>No change to Houston amendment.</p>
<p>J104.1.2 Bond required. The <i>building official</i> may require bonds in such form and amounts as may be deemed necessary to ensure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions.</p> <p>In lieu of a surety bond, the applicant may file a cash bond or instrument of credit with the <i>building official</i> in an amount equal to that which would be required in the surety bond.</p>	<p>J104.2 Site plan requirements. In addition to the provisions of Section 107, a grading plan shall show the existing grade and finished grade in contour intervals of sufficient clarity to indicate the nature and extent of the work and show in detail that it complies with the requirements of this code. The plans shall show the existing grade on adjoining properties in sufficient detail to identify how grade changes will conform to the requirements of this code.</p>	<p>J104.1.2 Bond required. The <i>building official</i> may require bonds in such form and amounts as may be deemed necessary to ensure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions.</p> <p>In lieu of a surety bond, the applicant may file a cash bond or instrument of credit with the <i>building official</i> in an amount equal to that which would be required in the surety bond.</p>	<p>No change to Houston amendment.</p>
<p>J104.2 Application. The provisions of Section 105.3 are applicable to grading. Additionally, the application shall state the estimated quantities of work involved.</p>		<p>J104.2 Application. The provisions of Section 105.3 are applicable to grading. Additionally, the application shall state the estimated quantities of work involved.</p>	<p>No change to Houston amendment.</p>
<p>J104.3 Grading destination. Grading in excess of 1,000 cubic yards (765 m³) shall be performed in accordance with an approved grading plan prepared by a Texas professional engineer and shall be designated as “engineered grading.” Grading involving less than or equal to 1,000 cubic yards (765 m³) shall be designated “regular</p>	<p>J104.3 Geotechnical report. A geotechnical report prepared by a registered design professional shall be provided. The report shall contain at least not less than the following:</p> <ol style="list-style-type: none"> 1. The nature and distribution of existing soils. 	<p>J104.3 Grading destination. Grading in excess of 1,000 cubic yards (765 m³) shall be performed in accordance with an approved grading plan prepared by a Texas professional engineer and shall be designated as “engineered grading.” Grading involving less than or equal to 1,000 cubic yards (765 m³) shall be designated “regular</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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<p><u>grading</u> unless the permittee chooses to have the grading performed as <u>engineered grading</u> or the <u>building official</u> determines that the property is located in a Houston special flood hazard area as defined in Chapter 19 of the <u>City Code</u> and special conditions or unusual hazards exist, in which case <u>grading</u> shall conform to the requirements for <u>engineered grading</u>.</p>	<p>2. Conclusions and recommendations for grading procedures.</p> <p>3. Soil design criteria for any structures or embankments required to accomplish the proposed grading.</p> <p>4. Where necessary, slope stability studies, and recommendations and conclusions regarding site geology.</p> <p>Exception: A geotechnical report is not required where the building official determines that the nature of the work applied for is such that a report is not necessary.</p>	<p><u>grading</u> unless the permittee chooses to have the grading performed as <u>engineered grading</u> or the <u>building official</u> determines that the property is located in a Houston special flood hazard area as defined in Chapter 19 of the <u>City Code</u> and special conditions or unusual hazards exist, in which case <u>grading</u> shall conform to the requirements for <u>engineered grading</u>.</p>	
<p>J104.4 Engineered grading requirements. Application for a <u>grading</u> permit shall be accompanied by two sets of plans and specifications, as well as supporting data consisting of a <u>soils engineering</u> report and <u>engineering geology</u> report. The plans and specifications shall be prepared and signed by a Texas professional engineer.</p> <p><u>Specifications shall contain information covering construction and material requirements.</u></p> <p><u>Plans shall be drawn to scale upon substantial paper or cloth and shall be of sufficient clarity to indicate the nature and extent of the work proposed and show in detail that they will conform to the provisions of this code and all relevant laws, ordinances, rules and regulations. The first sheet of each set of plans shall display the location of the work, the name and address of the owner, and the name of the person who prepared them.</u></p> <p>The plans shall include the following information:</p> <ol style="list-style-type: none"> 1. <u>General vicinity of the proposed site.</u> 2. <u>Property limits and accurate contours of existing ground and details of terrain and area drainage.</u> 3. <u>Limiting dimensions, elevations or finish contours to be achieved by the <u>grading</u> and proposed drainage channels and related construction.</u> 4. <u>Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains.</u> 5. <u>Location of any buildings or structures on the <u>site</u> upon which the work is to be performed and the location of any buildings or structures on property adjacent to the site that are within 15 feet</u> 	<p>J104.4 Liquefaction study. For sites with mapped maximum considered earthquake spectral response accelerations at short periods (Ss) greater than 0.5g as determined by Section 1613, a study of the liquefaction potential of the site shall be provided and the recommendations incorporated in the plans.</p> <p>Exception: A liquefaction study is not required where the building official determines from established local data that the liquefaction potential is low.</p>	<p>J104.4 Engineered grading requirements. Application for a <u>grading</u> permit shall be accompanied by two sets of plans and specifications, as well as supporting data consisting of a <u>soils engineering</u> report and <u>engineering geology</u> report. The plans and specifications shall be prepared and signed by a Texas professional engineer.</p> <p><u>Specifications shall contain information covering construction and material requirements.</u></p> <p><u>Plans shall be drawn to scale upon substantial paper or cloth and shall be of sufficient clarity to indicate the nature and extent of the work proposed and show in detail that they will conform to the provisions of this code and all relevant laws, ordinances, rules and regulations. The first sheet of each set of plans shall display the location of the work, the name and address of the owner, and the name of the person who prepared them.</u></p> <p><u>The plans shall include the following information:</u></p> <ol style="list-style-type: none"> 1. <u>General vicinity of the proposed <u>site</u>.</u> 2. <u>Property limits and accurate contours of existing ground and details of terrain and area drainage.</u> 3. <u>Limiting dimensions, elevations or finish contours to be achieved by the <u>grading</u> and proposed drainage channels and related construction.</u> 4. <u>Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains.</u> 5. <u>Location of any buildings or structures on the <u>site</u> upon which the work is to be performed and the location of any buildings or structures on property adjacent to the site that are within 15 feet (4,572 mm) of the property or that may be affected by the proposed <u>grading</u> operations.</u> 6. <u>The dates of <u>soils engineering</u> and <u>engineering geology</u> reports together with the names, addresses, and phone</u> 	<p>No change to Houston amendment.</p>

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<p><u>(4,572 mm) of the property or that may be affected by the proposed grading operations.</u></p> <p><u>6. The dates of soils engineering and engineering geology reports together with the names, addresses, and phone numbers of the firms or individuals who prepared the reports.</u></p> <p><u>Recommendations included in the soils engineering report and the engineering geology report shall be incorporated in the grading plans or specifications. Specific recommendations contained in the soils engineering report and the engineering geology report that are applicable to the proposed grading shall at minimum be included by reference in the engineered grading plans.</u></p>		<p><u>numbers of the firms or individuals who prepared the reports.</u></p> <p><u>Recommendations included in the soils engineering report and the engineering geology report shall be incorporated in the grading plans or specifications. Specific recommendations contained in the soils engineering report and the engineering geology report that are applicable to the proposed grading shall at minimum be included by reference in the engineered grading plans.</u></p>	
<p>J104.5 Soils engineering report. <u>The soils engineering report required by Section J104.4 shall include data regarding the nature, distribution, and strength of existing soils; conclusions and recommendations for grading procedures; design criteria for corrective measures, including buttress fills, when necessary; and opinion on adequacy for the intended use of sites to be developed by the proposed grading as affected by soils engineering factors, including the stability of slopes.</u></p>		<p>J104.5 Soils engineering report. <u>The soils engineering report required by Section J104.4 shall include data regarding the nature, distribution, and strength of existing soils; conclusions and recommendations for grading procedures; design criteria for corrective measures, including buttress fills, when necessary; and opinion on adequacy for the intended use of sites to be developed by the proposed grading as affected by soils engineering factors, including the stability of slopes.</u></p>	<p>No change to Houston amendment.</p>
<p>J104.6 Engineering geology report. <u>The engineering geology report required by Section J104.4 shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors.</u></p>		<p>J104.6 Engineering geology report. <u>The engineering geology report required by Section J104.4 shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors.</u></p>	<p>No change to Houston amendment.</p>
<p>J104.7 Liquefaction study. <u>The building official may require a geotechnical investigation in accordance with Section 1803 when, during the course of an investigation, all of the following conditions are discovered:</u></p> <ol style="list-style-type: none"> <u>1. Shallow ground water, 50 feet (15,240 mm) or less;</u> <u>2. Unconsolidated sandy alluvium; and</u> <u>3. Seismic Zones C and D.</u> <p><u>The report of the investigation shall address the potential for liquefaction.</u></p>		<p>J104.7 Liquefaction study. <u>The building official may require a geotechnical investigation in accordance with Section 1803 when, during the course of an investigation, all of the following conditions are discovered:</u></p> <ol style="list-style-type: none"> <u>1. Shallow ground water, 50 feet (15,240 mm) or less;</u> <u>2. Unconsolidated sandy alluvium; and</u> <u>3. Seismic Zones C and D.</u> <p><u>The report of the investigation shall address the potential for liquefaction.</u></p>	<p>No change to Houston amendment.</p>

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<p>J104.8 Regular grading requirements. Each application for a <u>grading permit shall be accompanied by a plan in sufficient clarity to indicate the nature and extent of the work. The plans shall give the location of the work, the name of the owner, and the name of the person who prepared the plan. The plan shall include the following information:</u></p> <ol style="list-style-type: none"> 1. <u>General vicinity of the proposed site;</u> 2. <u>Limiting dimensions and depth of cut and fill; and</u> <p><u>Location of any buildings or structures on the site upon which the work is to be performed and the location of any buildings or structures within 15 feet (4,572 mm) of the proposed grading.</u></p>		<p>J104.8 Regular grading requirements. Each application for a <u>grading permit shall be accompanied by a plan in sufficient clarity to indicate the nature and extent of the work. The plans shall give the location of the work, the name of the owner, and the name of the person who prepared the plan. The plan shall include the following information:</u></p> <ol style="list-style-type: none"> 1. <u>General vicinity of the proposed site;</u> 2. <u>Limiting dimensions and depth of cut and fill; and</u> 3. <u>Location of any buildings or structures on the site upon which the work is to be performed and the location of any buildings or structures within 15 feet (4,572 mm) of the proposed grading.</u> 	<p>No change to Houston amendment.</p>
<p>J104.9 Issuance. The provisions of Section 105.3 are applicable to <u>grading permits. The building official may require that grading operations and project designs be modified if delays occur which incur weather-generated problems not considered at the time the permit was issued.</u></p>		<p>J104.9 Issuance. The provisions of Section 105.3 are applicable to <u>grading permits. The building official may require that grading operations and project designs be modified if delays occur which incur weather-generated problems not considered at the time the permit was issued.</u></p>	<p>No change to Houston amendment.</p>
<p>{EDITORIAL NOTE: DELETE SECTION J105 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</p> <p style="text-align: center;">SECTION J105 GRADING INSPECTIONS</p> <p>J105.1 General. Grading operations for which a permit is required shall be subject to inspection by the <i>building official</i>. Professional inspection of grading operations shall be provided by a Texas professional engineer retained to provide such services in accordance with Section J105.5 for engineered grading and as required by the <i>building official</i> for regular grading.</p>		<p>{EDITORIAL NOTE: DELETE SECTION J105 TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.}</p> <p style="text-align: center;">SECTION J105 GRADING INSPECTIONS</p> <p>J105.1 General. Grading operations for which a permit is required shall be subject to inspection by the <i>building official</i>. Professional inspection of grading operations shall be provided by a Texas professional engineer retained to provide such services in accordance with Section J105.5 for engineered grading and as required by the <i>building official</i> for regular grading.</p>	<p>No change to Houston amendment.</p>
<p>J105.2 Civil engineer. The civil engineer shall provide professional inspection within such engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required by a code official during the course of the work, they shall be prepared by the civil engineer.</p>		<p>J105.2 Civil engineer. The civil engineer shall provide professional inspection within such engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required by a code official during the course of the work, they shall be prepared by the civil engineer.</p>	<p>No change to Houston amendment.</p>
<p>J105.3 Soils engineer. The soils engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The soils engineer shall provide sufficient observation during the preparation of the natural ground placement and compaction of the fill to verify that such work is being performed</p>		<p>J105.3 Soils engineer. The soils engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The soils engineer shall provide sufficient observation during the preparation of the natural ground placement and compaction of the fill to verify that such work is being performed</p>	<p>No change to Houston amendment.</p>

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<p><u>in accordance with the conditions of the approved plan and the appropriate requirements of this appendix. Revised recommendations if any relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the permittee, the <i>building official</i>, and the civil engineer.</u></p>		<p><u>in accordance with the conditions of the approved plan and the appropriate requirements of this appendix. Revised recommendations if any relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the permittee, the <i>building official</i>, and the civil engineer.</u></p>	
<p>J105.4 Engineering geologist. <u>The engineering geologist shall provide professional inspection within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved engineering geology report shall be submitted to the soils engineer.</u></p>		<p>J105.4 Engineering geologist. <u>The engineering geologist shall provide professional inspection within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved engineering geology report shall be submitted to the soils engineer.</u></p>	<p>No change to Houston amendment.</p>
<p>J105.5 Permittee. <u>The permittee shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this code. The permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator among the consultants, the contractor, and the <i>building official</i>. In the event of changed conditions, the permittee shall be responsible for informing the <i>building official</i> of such change and shall provide revised plans for approval.</u></p>		<p>J105.5 Permittee. <u>The permittee shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this code. The permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator among the consultants, the contractor, and the <i>building official</i>. In the event of changed conditions, the permittee shall be responsible for informing the <i>building official</i> of such change and shall provide revised plans for approval.</u></p>	<p>No change to Houston amendment.</p>
<p>J105.6 Building official. <u>The <i>building official</i> shall inspect the project at the various stages of work requiring approval to determine the adequate control is being exercised by the professional consultants.</u></p>		<p>J105.6 Building official. <u>The <i>building official</i> shall inspect the project at the various stages of work requiring approval to determine the adequate control is being exercised by the professional consultants.</u></p>	<p>No change to Houston amendment.</p>
<p>J105.7 Notification of noncompliance. <u>If, in the course of fulfilling their respective duties under this appendix, the civil engineer, the soils engineer, or the engineering geologist finds that the work is not being done in conformance with this appendix or the approved grading plans, the discrepancies shall be reported immediately in writing to the permittee and to the <i>building official</i>.</u></p>		<p>J105.7 Notification of noncompliance. <u>If, in the course of fulfilling their respective duties under this appendix, the civil engineer, the soils engineer, or the engineering geologist finds that the work is not being done in conformance with this appendix or the approved grading plans, the discrepancies shall be reported immediately in writing to the permittee and to the <i>building official</i>.</u></p>	<p>No change to Houston amendment.</p>
<p>J105.8 Transfer of responsibility. <u>If the civil engineer, the soils engineer, or the engineering geologist of record is changed during grading, the work shall be stopped until the replacement has agreed in writing to accept responsibility within the area of the consultant's technical competence for approval upon completion of the work. It shall be the duty of the permittee to notify the <i>building official</i> in writing of such change prior to the recommencement of such grading.</u></p>		<p>J105.8 Transfer of responsibility. <u>If the civil engineer, the soils engineer, or the engineering geologist of record is changed during grading, the work shall be stopped until the replacement has agreed in writing to accept responsibility within the area of the consultant's technical competence for approval upon completion of the work. It shall be the duty of the permittee to notify the <i>building official</i> in writing of such change prior to the recommencement of such grading.</u></p>	<p>No change to Houston amendment.</p>

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<p>J105.9 Hazards. Whenever the <i>building official</i> determines that any existing excavation, embankment, or fill on private property has become a hazard to life and limb, endangers property, or adversely affects the safety, use, or stability of a public way or drainage channel, the owner or agent in control of the property upon which the excavation or fill is located, upon receipt of notice in writing from the <i>building official</i>, shall within the period specified therein repair or eliminate such excavation or embankment so as to eliminate the hazard and be in conformance with the requirements of this code.</p>		<p>J105.9 Hazards. Whenever the <i>building official</i> determines that any existing excavation, embankment, or fill on private property has become a hazard to life and limb, endangers property, or adversely affects the safety, use, or stability of a public way or drainage channel, the owner or agent in control of the property upon which the excavation or fill is located, upon receipt of notice in writing from the <i>building official</i>, shall within the period specified therein repair or eliminate such excavation or embankment so as to eliminate the hazard and be in conformance with the requirements of this code.</p>	<p>No change to Houston amendment.</p>
<p>J105.10 Final reports. Upon completion of the rough <i>grading</i> work and at the final completion of the work, the following reports and drawings and supplements thereto are required for <i>engineered grading</i> or when <i>professional inspection</i> is performed for <i>regular grading</i>, as applicable.</p> <ol style="list-style-type: none"> 1. An as-built <i>grading</i> plan prepared by the Texas professional engineer engaged to provide such services in accordance with Section J105.5 showing original ground surface elevations, <i>as-graded</i> ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and of the outlets of subsurface drains. As-constructed locations, elevations and details of subsurface drains shall be shown as reported by the <i>soils engineer</i>. A Texas professional engineer shall provide a special inspection report to the field inspector that states, to the best of their knowledge, the work within their area of responsibility was done in accordance with the final approved <i>grading</i> plan and applicable provisions of this appendix chapter. 2. A report prepared by the <i>soils engineer</i> is engaged to provide such services in accordance with Section J105.5, including locations and elevations of field density tests, summaries of field and laboratory tests, other substantiating data, and comments on any changes made during <i>grading</i> and their effect on the recommendations made in the approved <i>soils engineering</i> investigation report. <i>Soils engineers</i> shall provide a special inspection report to the field inspector that states, to the best of their knowledge, the work within their area of responsibilities is in accordance with the approved <i>soils engineering</i> report and applicable provisions of this appendix. <p>A report prepared by the <i>engineering geologist</i> is engaged to provide such services in accordance with Section J105.5, including a final description of the geology of the <i>site</i> and any new information disclosed during the <i>grading</i> and the effect of same on recommendations incorporated in the approved <i>grading</i> plan. <i>Engineering geologists</i> shall provide a special inspection report to</p>		<p>J105.10 Final reports. Upon completion of the rough <i>grading</i> work and at the final completion of the work, the following reports and drawings and supplements thereto are required for <i>engineered grading</i> or when <i>professional inspection</i> is performed for <i>regular grading</i>, as applicable. A final report must be sealed by a Professional Engineer except as provided below.</p> <ol style="list-style-type: none"> 1. An as-built <i>grading</i> plan prepared by the Texas professional engineer engaged to provide such services in accordance with Section J105.5 showing original ground surface elevations, <i>as-graded</i> ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and of the outlets of subsurface drains. As-constructed locations, elevations and details of subsurface drains shall be shown as reported by the <i>soils engineer</i>. A Texas professional engineer shall provide a special inspection report to the field inspector that states, to the best of their knowledge, the work within their area of responsibility was done in accordance with the final approved <i>grading</i> plan and applicable provisions of this appendix chapter. 2. A report prepared by the <i>soils engineer</i> is engaged to provide such services in accordance with Section J105.5, including locations and elevations of field density tests, summaries of field and laboratory tests, other substantiating data, and comments on any changes made during <i>grading</i> and their effect on the recommendations made in the approved <i>soils engineering</i> investigation report. <i>Soils engineers</i> shall provide a special inspection report to the field inspector that states, to the best of their knowledge, the work within their area of responsibilities is in accordance with the approved <i>soils engineering</i> report and applicable provisions of this appendix. 3. A report prepared by the <i>engineering geologist</i> is engaged to provide such services in accordance with Section J105.5, including a final description of the geology of the <i>site</i> and any new information disclosed during the <i>grading</i> and the effect of same on recommendations incorporated in the approved <i>grading</i> plan. <i>Engineering geologists</i> shall provide a special inspection report to the field inspector that states, to the best of their knowledge, the work within their 	<p>No change to Houston amendment.</p>

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<p>the field inspector that states, to the best of their knowledge, the work within their area of responsibility is in accordance with the approved <i>engineering geologist</i> report and applicable provisions of this appendix.</p>		<p><u>area of responsibility is in accordance with the approved <i>engineering geologist</i> report and applicable provisions of this appendix.</u></p>	
<p>J105.11 Notification of completion. The permittee shall notify the <i>building official</i> when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices, and all erosion-control measure have been completed in accordance with the final approved <i>grading plan</i> and the required special inspection reports have been submitted.</p>		<p>J105.11 Notification of completion. The permittee shall notify the <i>building official</i> when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices, and all erosion-control measure have been completed in accordance with the final approved <i>grading plan</i> and the required special inspection reports have been submitted.</p>	<p>No change to Houston amendment.</p>
<p>J106.1 Maximum slope. The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be not more than one unit vertical in two units horizontal (50-percent slope) unless the owner or the owner’s authorized agent furnishes a geotechnical report soils engineering or an engineering geology report, or both, justifying a steeper slope stating that the site has been investigated and giving an opinion that a cut at a steeper slope will be stable and not create a hazard to public or private property.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A cut surface shall be permitted to be at a slope of 1.5 units horizontal to one unit vertical (67-percent slope) provided that all of the following are met: <ol style="list-style-type: none"> 1.1. It is not intended to support structures or surcharges. 1.2. It is adequately protected against erosion. 1.3. It is no more than 8 feet (2,438 mm) in height. 1.4. It is approved by the building code official. 1.5. Ground water is not encountered. <p>A cut surface in bedrock shall be permitted to be at a slope of one-unit horizontal to one unit vertical (100-percent slope).</p>	<p style="text-align: center;">SECTION J106 EXCAVATIONS</p> <p>J106.1 Maximum slope. The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be not more than one unit vertical in two units horizontal (50-percent slope) unless the owner or the owner’s authorized agent furnishes a geotechnical report justifying a steeper slope.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A cut surface shall be permitted to be at a slope of 1.5 units horizontal to 1 unit vertical (67-percent slope) provided that all of the following are met: <ol style="list-style-type: none"> 1.1. It is not intended to support structures or surcharges. 1.2. It is adequately protected against erosion. 1.3. It is not more than 8 feet (2438 mm) in height. 1.4. It is approved by the building code official. 1.5. Ground water is not encountered. 2. A cut surface in bedrock shall be permitted to be at a slope of 1 unit horizontal to 1 unit vertical (100-percent slope). 	<p style="text-align: center;">SECTION J106 EXCAVATIONS</p> <p>J106.1 Maximum slope. The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be not more than one unit vertical in two units horizontal (50-percent slope) unless the owner or the owner’s authorized agent furnishes a geotechnical report soils engineering or an engineering geology report, or both, justifying a steeper slope stating that the site has been investigated and giving an opinion that a cut at a steeper slope will be stable and not create a hazard to public or private property.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A cut surface shall be permitted to be at a slope of 1.5 units horizontal to one unit vertical (67-percent slope) provided that all of the following are met: <ol style="list-style-type: none"> 1.1 It is not intended to support structures or surcharges. 1.2 It is adequately protected against erosion. 1.3 It is not more than 8 feet (2,438 mm) in height. 1.4 It is approved by the building code official. 1.5 Ground water is not encountered. 2. A cut surface in bedrock shall be permitted to be at a slope of one-unit horizontal to one unit vertical (100-percent slope). 	<p>No change to Houston amendment.</p>
<p>J107.1 General. Unless otherwise recommended in the geotechnical soils engineering report, fills shall comply with the provisions of this section.</p> <p><u>In the absence of an approved soils engineering report, these provisions may be waived for minor fills not intended to support structures.</u></p>	<p style="text-align: center;">SECTION J107 FILLS</p> <p>No change</p>	<p style="text-align: center;">SECTION J107 FILLS</p> <p>J107.1 General. Unless otherwise recommended in the geotechnical soils engineering report, fills shall comply with the provisions of this section.</p> <p><u>In the absence of an approved soils engineering report, these provisions may be waived for minor fills not intended to support</u></p>	<p>No change to Houston amendment.</p>

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		<p>structures. Minor fills will be recognized as any fill that is less than 1000 cubic yards.</p>	
<p>J107.2 Surface preparation. Fill slopes shall not be constructed on natural slopes steeper than 1 unit vertical in 2 units horizontal (50% slope). The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials, and scarifying the ground to provide a bond with the fill material. <u>The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be provided. When fill is to be placed over a cut, the bench under the toe of fill shall be at least 10 feet (3,048 mm) wide, but the cut shall be made before acceptance by the soils engineer or engineering geologist, or both, as a suitable foundation for fill and placement of the fill.</u></p>	<p>J107.2 Surface preparation. Fill slopes shall not be constructed on natural slopes steeper than 1 unit vertical in 2 units horizontal (50% slope). The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials, and scarifying the ground to provide a bond with the fill material.</p>	<p>J107.2 Surface preparation. The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials, and scarifying the ground to provide a bond with the fill material. <u>The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be provided. When fill is to be placed over a cut, the bench under the toe of fill shall be at least 10 feet (3,048 mm) wide, but the cut shall be made before acceptance by the soils engineer or engineering geologist, or both, as a suitable foundation for fill and placement of the fill.</u></p>	<p>No change to Houston amendment.</p>
	<p>J107.3 Benching. Where existing grade is at a slope steeper than one unit vertical in five units horizontal (20-percentslope) and the depth of the fill exceeds 5 feet (1524 mm) benching shall be provided in accordance with Figure J107.3. A key shall be provided that is at least not less than 10 feet (3048 mm) in width and 2 feet (610 mm) in depth.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>J107.4 Fill material. Fill material shall not include organic, frozen or other deleterious materials. <u>Except as permitted by the <i>building official</i>, no rock or similar irreducible material greater than 12 inches (305 mm) in any dimension shall be included in fills.</u></p> <p><u>Exception: The <i>building official</i> may permit placement of larger rock when the soils engineer properly devises a method of placement and continuously inspects its placement and approves the fill stability. The following conditions shall also apply:</u></p> <ol style="list-style-type: none"> <u>1. Prior to issuance of the grading permit, potential rock disposal areas shall be delineated on the grading plan.</u> <u>2. Rocks of a size greater than 12 inches (305 mm) in maximum dimension shall be placed 10 feet (3,048 mm) or more below grade, measured vertically.</u> <u>3. Rocks shall be placed so as to assure filling of all voids with well-graded soil.</u> 	<p>J107.4 Fill material. Fill material shall not include organic, frozen or other deleterious materials. No Rock or similar irreducible material greater than 12 inches (305 mm) in any dimension shall not not be included in fills.</p>	<p>J107.4 Fill material. Fill material shall not include organic, frozen or other deleterious materials. <u>Except as permitted by the <i>building official</i>, Rock or similar irreducible material greater than 12 inches (305 mm) in any dimension shall not be included in fills.</u></p> <p><u>Exception: The <i>building official</i> may permit placement of larger rock when the soils engineer properly devises a method of placement and continuously inspects its placement and approves the fill stability. The following conditions shall also apply:</u></p> <ol style="list-style-type: none"> <u>1. Prior to issuance of the grading permit, potential rock disposal areas shall be delineated on the grading plan.</u> <u>2. Rocks of a size greater than 12 inches (305 mm) in maximum dimension shall be placed 10 feet (3,048 mm) or more below grade, measured vertically.</u> <u>3. Rocks shall be placed so as to assure filling of all voids with well-graded soil.</u> 	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>
<p>J107.6 Maximum slope. The slope of fill surfaces shall be no steeper than is safe for the intended use. Fill slopes steeper than one-unit vertical in two units horizontal (50-percent slope) shall be justified by a geotechnical <u>an approved soils engineering report or engineering data.</u></p>	<p>J107.6 Maximum slope. The slope of fill surfaces shall be not not steeper than is safe for the intended use. Fill slopes steeper than one unit vertical in two units horizontal (50-percent slope) shall be justified by a geotechnical report or engineering data.</p>	<p>J107.6 Maximum slope. The slope of fill surfaces shall be not steeper than is safe for the intended use. Fill slopes steeper than one-unit vertical in two units horizontal (50-percent slope) shall be justified by a geotechnical <u>an approved soils engineering report or engineering data.</u></p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No change to Houston amendment.</p>

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	SECTION J108 SETBACKS	SECTION J108 SETBACKS	
	<p>J108.3 Slope protection. Where required to protect adjacent properties at the toe of a slope from adverse effects of the grading, additional protection, approved by the building official, shall be included. Examples of such protection may include but shall are not be limited to:</p> <ol style="list-style-type: none"> 1. Setbacks greater than those required by Figure J108.1. 2. Provisions for retaining walls or similar construction. 3. Erosion protection of the fill slopes. 4. Provision for the control of surface waters. 		Edits made to clarify code, no major changes to code requirements.
<p>J108.4 Modification of slope location. <u>The building official may approve alternate setbacks. The building official may require an investigation and recommendation by a qualified engineer or engineering geologist to demonstrate that the intent of this section has been satisfied.</u></p>	N/a	<p>J108.4 Modification of slope location. <u>The building official may approve alternate setbacks. The building official may require an investigation and recommendation by a qualified engineer or engineering geologist to demonstrate that the intent of this section has been satisfied.</u></p>	No change to Houston amendment.
	SECTION J109 DRAINAGE AND TERRACING	SECTION J109 DRAINAGE AND TERRACING	
<p>J109.1 General. Unless otherwise indicated by a registered design professional on the approved grading plan, drainage facilities and terracing shall be provided in accordance with the requirements of this section.</p> <p>Exception: Drainage facilities and terracing need not be provided where the ground slope is not steeper than one unit vertical in three units horizontal (33-percent slope).</p>	<p>J109.1 General. Unless otherwise recommended by a registered design professional, drainage facilities and terracing shall be provided in accordance with the requirements of this section.</p> <p>Exception: Drainage facilities and terracing need not be provided where the ground slope is not steeper than one unit vertical in three units horizontal (33-percent slope).</p>	<p>J109.1 General. Unless otherwise indicated by a registered design professional on the approved grading plan, drainage facilities and terracing shall be provided in accordance with the requirements of this section.</p> <p>Exception: Drainage facilities and terracing need not be provided where the ground slope is not steeper than one unit vertical in three units horizontal (33-percent slope).</p>	<p>Edits made to clarify code, no major changes to code requirements.</p> <p>No changes to Houston amendment.</p>
	<p>J109.2 Terraces. Terraces at least not less than 6 feet (1829 mm) in width shall be established at not more than 30-foot (9144 mm) vertical intervals on all cut or fill slopes to control surface drainage and debris. Suitable access shall be provided to allow for cleaning and maintenance.</p> <p>Where more than two terraces are required, one terrace, located at approximately mid-height, shall be at least not less than 12 feet (3658 mm) in width.</p> <p>Swales or ditches shall be provided on terraces. They shall have a minimum gradient of one unit vertical in 20 units horizontal (5-percent slope) and shall be paved with concrete not less than 3 inches (76 mm) in thickness, or with other materials suitable to the</p>		Edits made to clarify code, no major changes to code requirements.

2015 Houston IBC Amendments

2021 International Building Code

2021 Houston IBC Amendments

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	<p>application. They shall have a depth not less than 12 inches (305 mm) and a width not less than 5 feet (1524 mm).</p> <p>A single run of swale or ditch shall not collect runoff from a tributary area exceeding 13,500 square feet (1256 m²) (projected) without discharging into a down drain.</p>		
<p>J109.5 Subsurface drainage. <u>Cut and fill slopes shall be provided with subsurface drainage as necessary for stability.</u></p>	<p>N/a</p>	<p>J109.5 Subsurface drainage. <u>Cut and fill slopes shall be provided with subsurface drainage as necessary for stability.</u></p>	<p>No change to Houston amendment.</p>
<p>J109.6 Disposal. <u>All drainage facilities shall be designed to carry waters to the nearest practicable drainage way approved by the building official or other appropriate jurisdiction as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of nonerosive downdrains or other devices.</u></p> <p><u>Building pads shall have a drainage gradient of 2 percent toward approved drainage facilities, unless waived by the building official.</u></p> <p>Exception: <u>The gradient from the building pad may be 1 percent if all of the following conditions exist throughout the permit area:</u></p> <ol style="list-style-type: none"> <u>1. No proposed fills are greater than 10 feet (3,048 mm) in maximum depth.</u> <u>2. No proposed finish cut or fill slope faces have a vertical height in excess of 10 feet (3,048 mm).</u> <u>3. No existing slope faces steeper than 1 unit vertical in 10 units horizontal (10% slope) have a vertical height in excess of 10 feet (3,048 mm).</u> 	<p>N/a</p>	<p>J109.6 Disposal. <u>All drainage facilities shall be designed to carry waters to the nearest practicable drainage way approved by the building official or other appropriate jurisdiction as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of nonerosive downdrains or other devices.</u></p> <p><u>Building pads shall have a drainage gradient of 2 percent toward approved drainage facilities, unless waived by the building official.</u></p> <p>Exception: <u>The gradient from the building pad may be 1 percent if all of the following conditions exist throughout the permit area:</u></p> <ol style="list-style-type: none"> <u>1. No proposed fills are greater than 10 feet (3,048 mm) in maximum depth.</u> <u>2. No proposed finish cut or fill slope faces have a vertical height in excess of 10 feet (3,048 mm).</u> <u>3. No existing slope faces steeper than 1 unit vertical in 10 units horizontal (10% slope) have a vertical height in excess of 10 feet (3,048 mm).</u> 	<p>No change to Houston amendment.</p>
<p>2015 Houston IBC – Appendix K Conventional Light-Frame Wood Construction for High-Wind Areas</p>	<p>2021 IBC APPENDIX K ADMINISTRATIVE PROVISIONS</p>	<p>2021 Houston Amendments</p>	<p>Code Analysis</p>
<p>APPENDIX K {EDITORIAL NOTE: DELETE APPENDIX K TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.} CONVENTIONAL LIGHT-FRAME WOOD CONSTRUCTION FOR HIGH-WIND AREAS</p>			<p>Appendix K as a Houston amendment has been removed as it is no longer usable for buildings constructed under the IBC.</p>
<p>SECTION K101 GENERAL</p>			

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<p>K101.1 Scope. This appendix applies to regular-shaped buildings that are not more than three stories in height and are of conventional light-frame construction.</p> <p>Exception: Detached carports and garages not exceeding 700 square feet (65 m²) and accessory to Group R-3 occupancies need only comply with the roof-member-to-wall-tie requirements of Section K103.8.</p>			
<p style="text-align: center;">SECTION K102</p> <p style="text-align: center;">DEFINITION</p> <p>K102.1 General. The following terms, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2:</p> <p>CORROSION RESISTANT or NONCORROSIVE.</p>			
<p style="text-align: center;">SECTION K103</p> <p style="text-align: center;">COMPLETE LOAD PATH AND UPLIFT TIES</p> <p>K103.1 General. Blocking, bridging, straps, approved framing anchors or mechanical fasteners shall be installed to provide continuous ties from the roof to the foundation system. Tie straps shall be 1½-inch (28.6 mm) by 0.036-inch (0.91 mm) (No. 20 gage) sheet steel and shall be corrosion-resistant as herein specified. All metal connectors and fasteners used in exposed locations or in areas otherwise subject to corrosion shall be of corrosion-resistant or noncorrosive material. The number of common nails specified is the total required and shall be equally divided on each side of the connection. Nails shall be spaced to avoid splitting of the wood.</p> <p>Exception: Pre-manufactured connectors that provide equal or greater tie-down capacity may be used, provided that they are installed in compliance with all the manufacturer's specifications.</p>			
<p>K103.2 Wall-to-foundation tie. Exterior walls shall be tied to a continuous foundation system or an elevated foundation system in accordance with Section K105.</p>			
<p>K103.3 Sills and foundation tie. Foundation plates resting on concrete or masonry foundations shall be bolted to the foundation with not less than ½-inch-diameter (13 mm) anchor bolts with 7-inch-minimum (178 mm) embedment into the foundation and spaced not more than 4 feet (1,219 mm) on center.</p>			
<p>K103.4 Floor-to-foundation tie. The lowest-level exterior wall studs shall be connected to the foundation sill plate or an approved elevated foundation system with bent tie straps spaced not more than 48 inches (1,219 mm) on center. Tie straps shall be nailed with a minimum of 4 ten penny nails.</p>			

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<p>K103.5 Wall framing details. The spacing of studs in exterior walls shall be in accordance with Chapter 23. Mechanical fasteners complying with this appendix shall be installed at a maximum of 32 inches (813 mm) on center as required to connect studs to the sole plates, foundation sill plate and top plates of the wall. The fasteners shall be nailed with a minimum of 8 eight penny nails.</p> <p>Where openings exceed 32 inches (813 mm) in width, the required tie straps shall be at each edge of the opening and connected to a doubled full-height wall stud. When openings exceed 12 feet (3,658 mm) in width, two ties at each connection or a manufactured fastener designed to prevent uplift shall be provided.</p>			
<p>K103.6 Wall sheathing. All exterior walls and required interior main cross-stud partitions shall be sheathed in accordance with Chapter 23.</p>			
<p>K103.7 Floor-to-floor tie. Upper-level exterior wall studs shall be aligned and connected to the wall studs below with tie straps placed a minimum of 32 inches (813 mm) on center and connected with a minimum of 6 eight penny nails per strap.</p>			
<p>K103.8 Roof-members-to-wall tie. Tie straps shall be provided from the side of the roof-framing member to the supporting member below the roof. Tie straps shall be placed no further apart than every roof-framing member and connected with a minimum of 8 eight penny nails.</p>			
<p>K103.9 Ridge ties. Opposing common rafters shall be aligned at the ridge and be connected at the rafters with tie straps spaced a maximum of 32 inches (813 mm) on center and connected with 8 eight penny nails.</p>			
<p>K103.10 Gable-end walls. Gable-end wall studs shall be continuous between points of lateral support that are perpendicular to the plane of the wall. Gable-end wall studs shall be attached with approved mechanical fasteners at the top and bottom. Eight 8 penny nails shall be required for each fastener. Fasteners shall be spaced a maximum of 32 inches (813 mm) on center.</p>			

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SECTION K104

ROOFS

K104.1 Roof sheathing. Solid roof sheathing shall be applied and shall consist of a minimum 1-inch-thick (25.4 mm) nominal lumber applied diagonally or a minimum 15/32-inch-thick (11.9 mm) wood structural panel or particle board (OSB) or other approved sheathing applied with the long dimension perpendicular to supporting rafters. Sheathing shall be nailed to roof framing in an approved manner. The end joints of wood structural panels or particle board shall be staggered and shall occur over blocking, rafters, or other supports.

K104.2 Roof covering. Roof coverings shall be approved and shall be installed and fastened in accordance with Chapter 15 and with the manufacturer's instructions.

K104.3 Roof overhang. The roof eave overhang shall not exceed 3 feet (914 mm) unless an analysis is provided showing that the required resistance is provided to prevent uplift.

The roof overhang at gabled ends shall not exceed 2 feet (610 mm) unless an analysis showing that the required resistance to prevent uplift is provided.

SECTION K105

ELEVATED FOUNDATION

K105.1 General. When approved, elevated foundations supporting not more than one story and meeting the provisions of this section may be used. The *building official* shall require a foundation investigation prior to authorizing the final approval of such work.

K105.2 Material. All exposed wood-framing members shall be treated wood. All metal connectors and fasteners used in exposed locations shall be corrosion-resistant or noncorrosive steel.

K105.3 Wood piles. The spacing of wood piles shall not exceed 8 feet (2,438.4 mm) on center. Square piles shall not be less than 10 inches (254 mm), and tapered piles shall have a tip of not less than 8 inches (203 mm). Eight-inch-round (203 mm) piles shall have a minimum embedment length of 5 feet (1,524 mm) and shall project not more than 8 feet (2,438.4 mm) above undisturbed ground surface. Eight-inch (203 mm) taper piles shall have a minimum embedment length of 6 feet (1,828.8 mm) and shall project not more than 7 feet (2,133.6 mm) above undisturbed ground surface.

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<p>K105.4 Girders. Floor girders shall consist of solid sawn timber, built-up 2-inch-thick (51 mm) lumber, or trusses. Splices shall occur over wood piles. The floor girders shall span in the direction parallel to the potential floodwater and wave action.</p>			
<p>K105.5 Connections. Wood piles may be notched to provide a shelf for supporting the floor girders. The total notching shall not exceed 50 percent of the pile cross section. Approved bolted connections with 1/4-inch (6.4 mm) corrosion-resistant or noncorrosive steel plates and 3/4-inch-diameter (19 mm) bolts shall be provided. Each end of the girder shall be connected to the piles using a minimum of two 3/4-inch-diameter (19 mm) bolts.</p>			
<p>2015 Houston IBC – APPENDIX L</p>	<p>2021 IBC APPENDIX L EARTHQUAKE RECORDING INSTRUMENTATION</p>	<p>2021 Houston Amendments</p>	<p>Code Analysis</p>
	<p>SECTION L101 GENERAL</p> <p>L101.1 General. Every structure located where the 1-second spectral response acceleration, S1, determined in accordance with Section 1613.32, is greater than 0.40 that and either 1 exceeds six stories in height with an aggregate floor area of 60,000 square feet (5574 m²) or more, or 2 exceeds 10 stories in height regardless of floor area, shall be equipped with not less fewer than three approved recording accelerographs. The accelerographs shall be interconnected for common start and common timing.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
<p>2015 Houston IBC – APPENDIX M TSUNAMI-GENERATED FLOOD HAZARDS</p>	<p>2021 IBC APPENDIX M</p>	<p>2021 Houston Amendments</p>	<p>Code Analysis</p>
	<p>SECTION M101</p> <p>REFUGE STRUCTURES FOR VERTICAL EVACUATION FROM TSUNAMI-GENERATED FLOOD HAZARDS</p> <p>M101.1 General. The purpose of this appendix is to provide tsunami regulatory vertical evacuation planning criteria for those coastal communities that have a tsunami hazard inundation zone as shown in a Tsunami Design Zone Map.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>

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	<p>M101.2 Definitions. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.</p> <p>TSUNAMI HAZARD ZONE. The area vulnerable to being flooded or inundated by a design event tsunami as identified on a community's Tsunami Hazard Zone Map.</p> <p>TSUNAMI HAZARD DESIGN ZONE MAP. A map adopted by the community that designates the extent of inundation by a design event tsunami. This map shall be based on the tsunami inundation map that is developed and provided to a community by either the applicable state agency or the National Atmospheric and Oceanic Administration (NOAA) under the National Tsunami Hazard Mitigation Program, but shall be permitted to utilize a different probability or hazard level Maximum Considered Tsunami, as defined by Chapter 6 of ASCE 7.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>M101.3 Establishment of tsunami hazard design zone. Where applicable, if a community has adopted a Tsunami Hazard Zone Map, that map shall be used to establish a community's tsunami hazard zone the Tsunami Design Zone Map shall meet or exceed the inundation limit given by the ASCE 7 Tsunami Design Geodatabase.</p>		<p>Edits made to clarify code, no major changes to code requirements.</p>
	<p>M101.4 Construction within the tsunami hazard zone-Planning of tsunami vertical evacuation refuge structures within the tsunami design zone. Construction of structures designated Risk Categories III and IV as specified under Section 1604.5 shall be prohibited within a tsunami hazard zone Tsunami Vertical Evacuation Refuge Structures located within a tsunami hazard design zone shall be planned, sited, and developed in general accordance with the planning criteria of the FEMA P646 guidelines.</p> <p>Exceptions: These criteria shall not be considered mandatory for evaluation of existing buildings for evacuation planning purposes.</p> <ol style="list-style-type: none"> 1. A vertical evacuation tsunami refuge shall be permitted to be located in a tsunami hazard zone provided it is constructed in accordance with FEMA P646. 2. Community critical facilities shall be permitted to be located within the tsunami hazard zone when such a location is necessary to fulfill their function, providing suitable structural and emergency evacuation measures have been incorporated. 		<p>Edits made to clarify code, no major changes to code requirements.</p>

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2015 Houston IBC – Appendix N Airport Sound Attenuation Requirements	2021 IBC APPENDIX N REPLICABLE BUILDINGS	2021 Houston Amendments	Code Analysis
<p style="text-align: center;">SECTION N101 GENERAL</p> <p>N101.1 Purpose. The purpose of this appendix is to set forth sound attenuation specifications for buildings when such sound attenuation is required by Chapter 9, Article VI, of the <i>City Code</i> to achieve an interior sound level of 45 dBA or less.</p>	<p style="text-align: center;">SECTION N101 ADMINISTRATION</p> <p>N101.1 Purpose. The purpose of this appendix is to provide a format and direction regarding the implementation of a replicable building program.</p>	<p style="text-align: center;">APPENDIX N</p> <p style="text-align: center;">EDITORIAL NOTE: DELETE APPENDIX N TEXT IN ITS ENTIRETY AND REPLACE WITH THE FOLLOWING.]</p> <p style="text-align: center;">AIRPORT SOUND ATTENUATION REQUIREMENTS</p> <p style="text-align: center;">SECTION N101 GENERAL</p> <p>N101.1 Purpose. The purpose of this appendix is to set forth sound attenuation specifications for buildings when such sound attenuation is required by Chapter 9, Article VI, of the <i>City Code</i> to achieve an interior sound level of 45 dBA or less.</p>	<p>New requirements No change to Houston amendment.</p>
<p>N101.2 Applicability. These provisions shall apply under circumstances where an airport land use permit is required under Section 9-381(a)(2) and (3) of the <i>City Code</i> and are in addition to other applicable building standards set forth elsewhere in this code.</p>	<p>N101.2 Objectives. Such programs allow a jurisdiction to recover from a natural disaster faster and allow for consistent application of the codes for replicable building projects. It will result in faster turnaround for the end user, and a quicker turnaround through the plan review process.</p>	<p>N101.2 Applicability. These provisions shall apply under circumstances where an airport land use permit is required under Section 9-381(a)(2) and (3) of the <i>City Code</i> and are in addition to other applicable building standards set forth elsewhere in this code.</p>	<p>New requirements No change to Houston amendment.</p>
<p>N101.3 Alternate compliance. Alternative means or methods which equal or exceed the standards set forth in these provisions may be used when approved by the <i>building official</i> in accordance with Section 104.11.</p>			<p>Amendment removed as Alternate Methods for sound attenuation are no longer needed.</p>
<p style="text-align: center;">SECTION N102 DEFINITIONS</p> <p>N102.1 Definitions. The following terms, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2:</p> <p>SOUND TRANSMISSION CLASS (STC).</p>	<p style="text-align: center;">SECTION N102 DEFINITIONS</p> <p>N102.1 Definitions. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein.</p> <p>REPLICABLE BUILDING. A building or structure utilizing a replicable design.</p> <p>REPLICABLE DESIGN. A prototypical design developed for application in multiple locations with minimal variation or modification.</p>	<p style="text-align: center;">SECTION N102 DEFINITIONS</p> <p>N102.1 Definitions. The following terms, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2:</p> <p>SOUND TRANSMISSION CLASS (STC). An integer rating relating to the quality of sound attenuation for building partitions such as walls, ceiling, doors, and windows.</p>	<p>New requirements No change to Houston amendment.</p>
<p style="text-align: center;">SECTION N103 WALLS</p> <p>N103.1 General. The specific exterior wall assemblies set forth in Sections N103.2 and N103.3 shall include the interior finishes set forth therein.</p>	<p style="text-align: center;">SECTION N103 REPLICABLE DESIGN REQUIREMENTS</p> <p>N103.1 Prototypical construction documents. A replicable design shall establish prototypical construction documents for application at multiple locations. The construction documents shall include details appropriate to each wind region, seismic design</p>	<p style="text-align: center;">SECTION N103 WALLS</p> <p>N103.1 General. The specific exterior wall assemblies set forth in Sections N103.2 and N103.3 shall include the interior finishes set forth therein.</p>	<p>New requirements No change to Houston amendment.</p>

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<p><u>Exception: Exterior wall assemblies or materials that have been tested or listed with a minimum STC rating of 40.</u></p>	<p>category, and climate zone for locations in which the replicable design is intended for application. Application of replicable design shall not vary with regard to the following, except for allowable variations in accordance with Section N106.</p> <ol style="list-style-type: none"> 1. Use and occupancy classification. 2. Building heights and area limitations. 3. Type of construction classification. 4. Fire-resistance ratings. 5. Interior finishes. 6. Fire protection system. 7. Means of egress. 8. Accessibility. 9. Structural design criteria. 10. Energy efficiency. 11. Type of mechanical and electrical systems. 12. Type of plumbing system and number of fixtures. 	<p><u>Exception: Exterior wall assemblies or materials that have been tested or listed with a minimum STC rating of 40.</u></p>	
<p>N103.2 Brick veneer. When exterior walls are constructed using brick veneer, a minimum of 1/2-inch gypsum drywall shall be applied as the interior finish.</p>		<p>N103.2 Brick veneer. When exterior walls are constructed using brick veneer, a minimum of 1/2-inch gypsum drywall shall be applied as the interior finish.</p>	<p>No change to Houston amendment.</p>
<p>N103.3 Vinyl or cement sidings. When exterior walls are constructed using vinyl or cement sidings, a minimum of 3/8-inch gypsum drywall shall be applied as the interior finish.</p>		<p>N103.3 Vinyl or cement sidings. When exterior walls are constructed using vinyl or cement sidings, a minimum of 3/8-inch gypsum drywall shall be applied as the interior finish.</p>	<p>No change to Houston amendment.</p>
<p>N103.4 Other assemblies and materials. All other exterior wall assemblies or materials shall have a tested or listed minimum STC rating of 40.</p>		<p>N103.4 Other assemblies and materials. All other exterior wall assemblies or materials shall have a tested or listed minimum STC rating of 40.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION N104 WINDOWS</p> <p>N104.1 Windows. All windows shall have a minimum STC rating of 40 when tested in accordance with ASTM E 90.</p>	<p style="text-align: center;">SECTION N104 REPLICABLE DESIGN SUBMITTAL REQUIREMENTS</p> <p>N104.1 General. A summary description of the replicable design and related construction documents shall be submitted to an approved agency. Where approval is requested for elements of the replicable design that is not within the scope of the International Building Code, the construction documents shall specifically designate the codes for which review is sought. Construction documents shall be signed, sealed and dated by a registered design professional.</p>	<p style="text-align: center;">SECTION N104 WINDOWS</p> <p>N104.1 Windows. All windows shall have a minimum STC rating of 40, as determined by testing when tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than 45 if field tested in accordance with ASTM E336 for airborne noise. Windows shall be <i>labeled</i> to indicate STC rating.</p>	<p>New requirements No change to Houston amendment.</p>

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	<p>N104.1.1 Architectural plans and specifications. Where approval of the architectural requirements of the replicable design is sought, the submittal documents shall include architectural plans and specifications as follows:</p> <ol style="list-style-type: none"> 1. Description of uses and the proposed occupancy groups for all portions of the building. 2. Proposed type of construction of the building. 3. Fully dimensioned drawings to determine building areas and height. 4. Adequate details and dimensions to evaluate means of egress, including occupant loads for each floor, exit arrangement and sizes, corridors, doors and stairs. 5. Exit signs and means of egress lighting, including power supply. 6. Accessibility scoping provisions. 7. Description and details of proposed special occupancies such as a covered mall, high-rise, mezzanine, atrium and public garage. 8. Adequate details to evaluate fire-resistance-rated construction requirements, including data substantiating required ratings. 9. Details for plastics, insulation and safety glazing installation. 10. Details of required fire protection systems. 11. Material specifications demonstrating fire-resistance criteria. 		<p>New requirements</p>
	<p>N104.1.2 Structural plans, specifications and engineering details. Where approval of the structural requirements of the replicable design is sought, the submittal documents shall include details for each wind region, seismic design category and climate zone for which approval is sought; and shall include the following:</p> <ol style="list-style-type: none"> 1. Signed and sealed structural design calculations that support the member sizes on the drawings. 2. Design load criteria, including: frost depth, live loads, snow loads, wind loads, earthquake design date, and other special loads 3. Details of foundations and superstructure. 4. Provisions for special inspections. 		<p>New requirements</p>

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	<p>N104.1.3 Energy conservation details. Where approval of the energy conservation requirements of the replicable design is sought, the submittal documents shall include details for each climate zone for which approval is sought; and shall include the following:</p> <ol style="list-style-type: none"> 1. Climate zones for which approval is sought. 2. Building envelope details. 3. Building mechanical system details. 4. Details of electrical power and lighting systems. 5. Provisions for system commissioning. 		<p>New requirements</p>
<p>N104.2 Insulation at windows. The cavity between the framing and the window frame shall be insulated with fiberglass or foam insulation to the depth of the window frame.</p>		<p>N104.2 Insulation at windows. The cavity between the framing and the window frame shall be insulated with fiberglass or foam insulation to the depth of the window frame.</p>	<p>No change to Houston amendment.</p>
<p style="text-align: center;">SECTION N105 DOORS</p> <p>N105.1 Doors. All exterior doors shall be provided with a minimum STC rating of 40 when tested in accordance with ASTM E 90.</p> <p>Exception: An exterior door may have a tested or listed STC rating of less than 40 when installed with a storm door which when combined achieve a minimum tested or listed STC rating of 40.</p>	<p style="text-align: center;">SECTION N105 REVIEW AND APPROVAL OF REPLICABLE DESIGN</p> <p>N105.1 General. Proposed replicable designs shall be reviewed by an approved agency. The review shall be applicable only to the replicable design features submitted in accordance with Section N104. The review shall determine compliance with this code and additional codes specified in Section N104.1.</p>	<p style="text-align: center;">SECTION N105 DOORS</p> <p>N105.1 Doors. All exterior doors shall be provided with a minimum STC rating of 40, as determined by testing in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than 45 if field tested in accordance with ASTM E336 for airborne noise. Doors shall be labeled to indicate STC rating.</p> <p>Exception: An exterior door may have a tested or listed STC rating of less than 40 when installed with a storm door which when combined achieve a minimum tested or listed STC rating of 40.</p>	<p>New requirements</p> <p>Minor changes to Houston amendment that provides additional criteria to meet the sound attenuation requirements.</p>
	<p>N105.2 Documentation. The results of the review shall be documented indicating compliance with the code requirements.</p>		<p>New requirements</p>
	<p>N105.3 Deficiencies. Where the review of the submitted construction documents identifies elements where the design is deficient and will not comply with the applicable code requirements, the approved agency shall notify the proponent of the replicable design, in writing, of the specific areas of noncompliance and request correction.</p>		<p>New requirements</p>
	<p>N105.4 Approval. Where the review of the submitted construction documents determines that the design is in compliance with the codes designated in Section N104.1, and where deficiencies identified in Section N105.3 have been corrected the approved agency shall issue a summary report of Approved Replicable Design. The summary report shall include any limitations on the</p>		<p>New requirements</p>

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	approved replicable design including, but not limited to climate zones, wind regions and seismic design categories.		
SECTION N106 ROOF/CEILING ASSEMBLIES	SECTION N106 SITE-SPECIFIC APPLICATION OF APPROVED REPLICABLE DESIGN	SECTION N106 ROOF/CEILING ASSEMBLIES	New requirements No change to Houston amendment.
N106.1 General. Roof/ceiling assemblies shall be constructed in accordance with the requirements of Section N106.2 or N106.3. <u>Exception: Roof/ceiling assemblies or materials that have been tested or listed with a minimum STC rating of 40.</u>	N106.1 General. Where site-specific application of a replicable design that has been approved under the provisions of Section N105 is sought, the construction documents submitted to the building official shall comply with this section.	N106.1 General. Roof/ceiling assemblies shall be constructed in accordance with the requirements of Section N106.2 or N106.3. <u>Exception: Roof/ceiling assemblies or materials that have been tested or listed with a minimum STC rating of 40.</u>	
N106.2 Ceilings with unconditioned attic space above. Ceilings with unconditioned attic space above shall be insulated with a minimum of 1/2-inch gypsum drywall on the interior ceiling side covered with a minimum of 12 inches of blown-in fiberglass insulation.	N106.2 Submittal documents. A summary description of the replicable design and related construction document shall be submitted. Construction documents shall be signed, sealed and dated by the registered design professional. A statement, signed, sealed and dated by the registered design professional, that the replicable design submitted for local review is the same as the replicable design reviewed by the approved agency, shall be submitted.	N106.2 Ceilings with unconditioned attic space above. Ceilings with unconditioned attic space above shall be insulated with a minimum of 1/2-inch gypsum drywall on the interior ceiling side covered with a minimum of 12 inches of blown-in fiberglass insulation.	New requirements No change to Houston amendment.
	N106.2.1 Architectural plans and specifications. Architectural plans and specifications shall include the following: 1. Construction documents for variations from the replicable design. 2. Construction for portions that are not part of the replicable design. 3. Documents for local requirements as identified by the building official. 4. Construction documents detailing the foundation system.		New requirements
N106.3 Ceilings without attic space above. Ceilings without attic space above shall be insulated with a minimum of 5/8-inch gypsum drywall on the interior side filled with a minimum of 9 inches of fiberglass batt insulation with a 1-inch air space between the roof sheathing and the fiberglass.		N106.3 Ceilings without attic space above. Ceilings without attic space above shall be insulated with a minimum of 5/8-inch gypsum drywall on the interior side filled with a minimum of 9 inches of fiberglass batt insulation with a 1-inch air space between the roof sheathing and the fiberglass.	No change to Houston amendment.
	SECTION N107 SITE-SPECIFIC REVIEW AND APPROVAL OF REPLICABLE DESIGN		New requirements
	N107.1 General. Proposed site-specific application of replicable design shall be submitted to the building official in accordance with the provisions of Chapter 1 and Appendix N.		

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	<p>N107.2 Site-specific review and approval of replicable design. The building official shall verify that the replicable design submitted for site-specific application is the same as the approved replicable design reviewed by the approved agency. In addition, the building official shall review the following for code compliance.</p> <ol style="list-style-type: none"> 1. Construction documents for variations from the replicable design. 2. Construction for portions of the building that are not part of the replicable design. 3. Documents for local requirements as identified by the building official. 		<p>New requirements</p>
<p>2015 Houston IBC</p>	<p>2021 IBC [A] APPENDIX O PERFORMANCE-BASED APPLICATION</p>	<p>2021 Houston Amendments</p>	<p>Code Analysis</p>
	<p>The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.</p> <p>User notes:</p> <p>About this appendix: Appendix O provides an optional design, review and approval framework for use by the building official. Typical uses would include cases of alternate methods in Chapter 1, select areas of the code that require a rational analysis such as Section 909 and elsewhere. It simply extracts the relevant administrative provisions from the ICC Performance Code into a more concise, usable appendix format for a jurisdiction confronted with such a need. Currently there are multiple, varying jurisdictional rules and procedures in many communities regarding procedure and none in even more. The code official is often left alone to reach decisions not just on the merits of a design, but must first also decide on the submittal and review process. As an appendix, the provisions herein are entirely optional to a jurisdiction. This appendix can be adopted, adopted with local modifications, or even used on a case-by-case basis as part of a Memorandum of Understanding or similar legal agreement between the jurisdiction and the owner/design team. It simply represents another tool for the jurisdiction to reach for in cases of need; it neither encourages nor creates any additional opportunity for performance-based design. Code development reminder: Code change proposals to this appendix will be considered by the Administrative Code Development Committee during the 2022 (Group B) Code Development Cycle.</p>		<p>New requirements</p>
	<p>[A] SECTION O101 GENERAL</p> <p>O101.1 Introduction. The following administrative provisions are excerpted from the ICC Performance Code for Buildings and Facilities and can be used in conjunction with the Alternate Methods</p>		<p>New requirements</p>

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	provisions in Chapter 1, or for a review of submittals requiring a rational analysis or performance-based design. These provisions provide an established framework for the building official in terms of the design expertise needed, the necessary submittals, a review framework and related items.		
	O101.2 Qualifications. Registered design professionals shall possess the knowledge, skills and abilities necessary to demonstrate compliance with this code.		New requirements
	O101.3 Construction document preparation. Construction documents required by this code shall be prepared in adequate detail and submitted for review and approval in accordance with Section 107.		New requirements
	O101.3.1 Review. Construction documents submitted in accordance with this code shall be reviewed for code compliance with the appropriate code provisions in accordance with Section 107.		New requirements
	O101.4 Construction. Construction shall comply with the approved construction documents submitted in accordance with this code, and shall be verified and approved to demonstrate compliance with this code.		New requirements
	O101.4.1 Facility operating policies and procedures. Policies, operations, training and procedures shall comply with approved documents submitted in accordance with this code, and shall be verified and approved to demonstrate compliance with this code.		New requirements
	O101.4.2 Maintenance. Maintenance of the performance-based design shall be ensured throughout the life of the building or portion thereof.		New requirements
	O101.4.3 Changes. The owner or the owner's authorized agent shall be responsible to ensure that any change to the facility, process, or system does not increase the hazard level beyond that originally designed without approval and that changes shall be documented in accordance with the code.		New requirements
	O101.5 Documentation. The registered design professional shall prepare appropriate documentation for the project, clearly detailing the approach and rationale for the design submittal, the construction and the future use of the building, facility or process.		New requirements

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	<p>O101.5.1 Reports and manuals. The design report shall document the steps taken in the design analysis, clearly identifying the criteria, parameters, inputs, assumptions, sensitivities and limitations involved in the analysis. The design report shall clearly identify bounding conditions, assumptions and sensitivities that clarify the expected uses and limitations of the performance analysis. This report shall verify that the design approach is in compliance with the applicable codes and acceptable methods and shall be submitted for concurrence by the building official prior to the construction documents being completed. The report shall document the design features to be incorporated based on the analysis.</p> <p>The design report shall address the following:</p> <ol style="list-style-type: none"> 1. Project scope. 2. Goals and objectives. 3. Performance criteria. 4. Hazard scenarios. 5. Design fire loads and hazards. 6. Final design. 7. Evaluation. 8. Bounding conditions and critical design assumptions. 9. Critical design features. 10. System design and operational requirements. 11. Operational and maintenance requirements. 12. Commissioning testing requirements and acceptance criteria. 13. Frequency of certificate renewal. 14. Supporting documents and references. 15. Preliminary site and floor plans. 		<p>New requirements</p>
	<p>O101.5.2 Design submittal. Applicable construction documents shall be submitted to the building official for review. The documents shall be submitted in accordance with the jurisdiction's procedures and in sufficient detail to obtain appropriate permits.</p>		<p>New requirements</p>

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	O101.6 Review. Construction documents submitted in accordance with this code shall be reviewed for code compliance with the appropriate code provisions.		New requirements
	O101.6.1 Peer review. The owner or the owner's authorized agent shall be responsible for retaining and furnishing the services of a registered design professional or recognized expert, who will perform as a peer reviewer, where required and approved by the building official.		New requirements
	O101.6.2 Costs. The costs of special services, including contract review, where required by the building official, shall be borne by the owner or the owner's authorized agent.		New requirements
	O101.7 Permits. Prior to the start of construction, appropriate permits shall be obtained in accordance with the jurisdiction's procedures and applicable codes.		New requirements
	O101.8 Verification of compliance. Upon completion of the project, documentation shall be prepared that verifies performance and prescriptive code provisions have been met. Where required by the building official, the registered design professional shall file a report that verifies bounding conditions are met.		New requirements
	O101.9 Extent of documentation. Approved construction documents, the operations and maintenance manual, inspection and testing records, and certificates of occupancy with conditions shall be included in the project documentation of the building official's records.		New requirements
	O101.10 Analysis of change. The registered design professional shall evaluate the existing building, facilities, premises, processes, and contents, and the applicable documentation of the proposed change as it affects portions of the building, facility, premises, processes and contents that were previously designed for compliance under a performance-based code. Prior to any change that was not documented in a previously approved design, the registered design professional shall examine the applicable design documents, bounding conditions, operation and maintenance manuals, and deed restrictions.		New requirements

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2015 Houston IBC – Appendix R Reuse of Materials	2021 IBC APPENDIX R	2021 Houston Amendments	Code Analysis
<p align="center">SECTION R101 GENERAL</p> <p>R101.1 Scope. <u>The reuse of materials shall be allowed in accordance with the provisions of this section.</u></p>		<p align="center">SECTION R101 GENERAL</p> <p>R101.1 Scope. <u>The reuse of materials shall be allowed in accordance with the provisions of this section.</u></p>	<p>No changes to Houston amendment.</p>
<p>R101.2 Intent. <u>This appendix is intended to encourage the reuse of materials when possible and divert construction debris from landfills. This appendix is not mandatory but specifies parameters for when materials may be considered for reuse where integrity of the materials under consideration has not been compromised.</u></p>		<p>R101.2 Intent. <u>This appendix is intended to encourage the reuse of materials when possible and divert construction debris from landfills. This appendix is not mandatory but specifies parameters for when materials may be considered for reuse where integrity of the materials under consideration has not been compromised.</u></p>	<p>No changes to Houston amendment.</p>
<p>R101.3 General notice. <u>The user should be vigilant regarding lead, asbestos, radon, PCBs, and other potentially harmful substances that are no longer allowed in buildings. Buildings built before 1978 may have used lead paint. Asbestos may be found in the insulation, fireproofing, floors, walls, or roof. Newer buildings may have asbestos in the floors or roof. Any fluorescent light fixtures manufactured prior to 1979 may contain PCBs; new capacitors should be labeled: NO PCBs.</u></p>		<p>R101.3 General notice. <u>The user should be vigilant regarding lead, asbestos, radon, PCBs, and other potentially harmful substances that are no longer allowed in buildings. Buildings built before 1978 may have used lead paint. Asbestos may be found in the insulation, fireproofing, floors, walls, or roof. Newer buildings may have asbestos in the floors or roof. Any fluorescent light fixtures manufactured prior to 1979 may contain PCBs; new capacitors should be labeled: NO PCBs.</u></p>	<p>No changes to Houston amendment.</p>
<p align="center">SECTION R102 DEFINITIONS</p> <p>R102.1 General. <u>The following terms, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2:</u></p> <p>GOOD CONDITION.</p> <p>RECYCLING.</p> <p>REUSED MATERIALS.</p>		<p align="center">SECTION R102 DEFINITIONS</p> <p>R102.1 General. <u>The following terms, for the purposes of this appendix, shall have the meaning ascribed in Chapter 2:</u></p> <p>GOOD CONDITION.</p> <p>RECYCLING.</p> <p>REUSED MATERIALS.</p>	<p>No changes to Houston amendment.</p>
<p align="center">SECTION R103 ACCEPTABLE APPLICATIONS</p> <p>R103.1 Acceptable applications. <u>The reused materials are allowed as identified in Table R103.1.</u></p>		<p align="center">SECTION R103 ACCEPTABLE APPLICATIONS</p> <p>R103.1 Acceptable applications. <u>The reused materials are allowed as identified in Table R103.1.</u></p>	<p>No changes to Houston amendment.</p>
<p align="center">TABLE R103.1 REUSED MATERIALS – ACCEPTABLE APPLICATIONS FOR USED MATERIALS</p>		<p align="center">SECTION R103 ACCEPTABLE APPLICATIONS</p> <p>R103.1 Acceptable applications. <u>The reused materials are allowed as identified in Table R103.1.</u></p>	<p>No changes to Houston amendment.</p>

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**TABLE R103.1
 REUSED MATERIALS – ACCEPTABLE APPLICATIONS FOR USED MATERIALS**

CODE SECTION	ORIGINAL MATERIAL USE	PERMITTED REUSE APPLICATION	COMMENTS	EXCLUSIONS
CONCRETE ASPHALT				
3112	Asphalt	Reuse for driveways and sidewalks or road base	-	1, 2
3112	Concrete	As fill or aggregate for concrete mix, garden borders, driveways (as gravel), road base	-	1, 2
3112	Pilings	See concrete	-	3
MASONRY AND STONE				
-	Brick and stone veneer	Horizontal surfaces on site and interior floors, nonstructural walls, and veneer	-	3
-	Pavers	Nonstructural paving or floors and veneer	-	3
-	Concrete blocks and products	Finishes, interior walls, low fences, and base for porous paving	Reused in original structural capacity.	3
-	Stone-sandstone, slate, granite, and marble	Finishes, roofing (slate)	-	3
2103.6, exception	Glass block	Original use	-	5
METALS				
-	Cold-formed metal framing—studs, joists, rafters, purlins and girts	Repetitive members in original capacity, structural if identifiable	Steel with mill test certificates may be reused in original capacity; steel design values for materials manufactured after 1910 can be found in Design Guide 15. AISC Rehabilitation and Retrofit Guide, weldability for sections produced prior to the 1950s need testing.	4
-	Metal joists	If identifiable, can be used for structure	Rehabilitation and Retrofit Guide, weldability for sections produced prior to the 1950s need testing.	4
Chapter 17	Structural steel— columns, pillars, and posts	Reuse in structural capacity with special inspection	-	4
WOOD, AGRI-FIBER, AND PLASTIC MATERIALS				
-	Columns, pillars, and posts	Reuse in original capacity.	-	-
-	Dimensional lumber, 4-foot-long minimum unstamped (includes roughheav)	Install as one dimension higher than required, or: (1) Floor plates; (2) Second top plates; (3) Fillers, fire-blocking, and nailers; and (4) Strut-bracing, bridging, and ledgers (if ledger is one dimension larger than what otherwise might be used)	For species not easily recognized may need special inspection.	-
-	Dimensional lumber (stud capacity), with original stamp (includes roughheav)	Reuse in original capacity. (1) Studs (cripple, trim and jack), joists and rafters, or (2) Wind bracing	-	8
-	Glue-laminated beams, I-joists, laminated veneer lumber, parallel strand lumber and oriented strand lumber (unstamped)	Install as per dimensional lumber	-	-
-	Trusses	-	Trusses to be inspected by structural engineer as installed.	4
-	Utility poles (untreated)	-	-	3
-	Oriented strand board (OSB) and plywood	Reuse in original capacity	-	8
-	Plastic lumber	Reuse in original capacity	-	-
-	Masonite and chipboard	Reuse in original capacity	-	8
WINDOWS DOORS INSULATION SIDING AND ROOFING				

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Chapter 7	Insulation- batt, qentiv used	Reuse in horizontal capacities only, such as attics or sound attenuation in cavities.	25% reduction in R-value to be assumed.	2
Chapter 7	Insulation- board, qentiv used	Reuse in original capacity.	Polysocyanurate to be reduced by R-2 per board, extruded and/or expanded polystyrene to remain the same R-value and reused in the same orientation (horizontal or vertical).	2
-	Windows	Reuse in original capacity or as decor	-	2
-	Doors and door assemblies	Reuse in original capacity	-	2, 5
-	Glass sheet and plexiglass	Reuse in original capacity or as decor	-	2
-	Stained Glass	Reuse in original capacity	-	2
-	Siding- cement board, wood, vinyl, metal panels	Reuse in original capacity	-	5
-	Soffits- cement board, wood, perforated metal panels, aluminum panels	Reuse in original capacity	-	5
-	Roof tiles	Reuse in original capacity, or as fencing or ornamental decoration.	-	-
-	Metal roof panels	Reuse in original capacity	-	-
FINISHES				
Section 803	Acoustical ceiling tiles	Reuse in original capacity	-	5
Section 804	Carpet and carpet pad	Reuse in original capacity	-	-
Section 803	Drywall	Reuse in original capacity	-	-
Chapter 8	Flooring- wood	Reuse in original capacity	-	-
-	Cement board	Reuse in original capacity	-	-
-	Hinges and other hardware	Reuse in original capacity	-	1, 5
<p>General Exclusions.</p> <ol style="list-style-type: none"> 1. TAS – Texas Accessibility Standards. 2. Must comply with the <i>Energy Conservation Code</i>. 3. For structural reuse applications, review, and stamp of plans by an engineer. 4. For structural reuse of material, the material and its new application must be inspected and certified by an engineer. 5. Not allowed in fire assemblies, unless tested or marked for such use. 6. Energy Policy Act (EPA) of 1995 (water flush/flow rates). 7. In accordance with jurisdiction planning requirements, not permitted in driveway approach or sidewalks located in the right-of-way. 8. Material should be stamped. For structural steel, the material shall be identifiable. 				