

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
<div>COLOR CODE INDEX: Turquoise = NEW or Modified Text by IAPMO in 2015 Yellow Strikethrough = Text Deleted from the Code by COH</div> <div>Text Underlined = COH Amendment added (NEW) Green Text = NEW or Modified Text by COH in 2015</div> <div>Grey Text = Previous COH Amendment Brought Forward to 2015</div>		
2012 Houston UMC – Chapter 1 Administration	2015 Houston UMC – Chapter 1 Administration	Code Analysis
<p>101.1 Title. These regulations shall be known as the <u>Uniform City of Houston Mechanical Code</u>, may be cited as such, and will be referred to herein as "this code."</p> <p><u>The City of Houston Construction Code collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, City of Houston Ordinance No. 2015-1108, which appears in the preamble of the building code.</u></p>	<p>101.1 Title. This document <u>These regulations</u> shall be known as the “Uniform City of Houston Mechanical Code,” <u>may be cited as such, and will be referred to</u> herein <u>after referred to</u> as “this code,” <u>and also known as the Mechanical Code.</u></p> <p><u>The Construction Code collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, City of Houston Ordinance No. 2021-1037.</u></p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: COH amendment.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code & COH amendment modified during review process 10.12.21.</p>
<p>101.3.1 Conflicts. Where, in a specific case, different sections of <u>the City Code, the building code, the electrical code, the plumbing code, the energy conservation code, the residential code, the fire code, and this code,</u> or referenced standards, specify different materials, methods of construction, or other requirements, the most restrictive shall govern as determined by the Authority Having Jurisdiction. Where there is a conflict between a general requirement and a specific requirement, <u>in this code or another of the codes listed above,</u> the specific requirement shall prevail.</p>	<p>102.1 Conflicts Between Codes. <u>Where the requirements within the jurisdiction of this mechanical code conflict with the requirements of the plumbing code, the plumbing code shall prevail.</u> In instances where this code, applicable standards, or the manufacturer’s installation instructions conflict, the more stringent provisions shall prevail. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall prevail.</p> <p><u>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 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. 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 the Building 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.</u></p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: New COH amendment coordinates the Mechanical Code with other volumes of the <i>Houston Construction Code</i> which contain similar provision.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>101.3.3 Appendices. The provisions in the appendices are intended to supplement the requirements of this code and shall not be considered part of this code unless formally adopted as such. <u>Appendix D, containing conversion tables, and Appendix F shall be adopted as part of this code.</u></p>	<p>102.8 Appendices. The provisions in the appendices are intended to supplement the requirements of this code and shall not be considered part of this code unless formally adopted as such. <u>Appendix F shall be adopted as part of this code.</u></p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: Previous COH amendment moved from UMC 2012 Section 101.3.3 to UMC 2015 Section 102.8. Houston amendment modified to delete the adoption of Appendix D.</p>
<p>102.7 Retroactive provisions. <u>Notwithstanding any other provision of this section, those provisions of this code that are designated as being “retroactive” shall apply to existing installations and alterations thereof.</u></p>	<p>102.9 Retroactive Provisions. <u>Notwithstanding any other provision of this section, those provisions of this code that are designated as being “retroactive” shall apply to existing installations and alterations thereof.</u></p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: Previous COH amendment moved from UMC 2012 Section 102.7 to UMC 2015 Section 102.9. No changes to COH amendment.</p>
<p>101.3.4 Residential Code. <u>Mechanical systems for detached one- and two family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the City of Houston Residential Code, based on the International Residential Code for One- and Two-Family Dwellings, as adopted by the State of Texas in Subchapter G of Chapter 214 of the Texas Local Government Code, with amendments by this jurisdiction. Mechanical systems for residential occupancies</u></p>	<p>102.10 Residential Code. <u>Mechanical systems for detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height, each with separate means of egress, and their accessory structures shall comply with the Residential Code. Mechanical systems for residential occupancies to which the Residential Code does not apply shall be governed by this code.</u></p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: Previous COH amendment moved from UMC 2012 Section 101.3.4 to UMC 2015 Section 102.10. Minor editorial changes added for clarity.</p>

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to which the <i>City of Houston Residential Code</i> does not apply shall be governed by this code.		
101.3.5 Energy Conservation. The <i>energy conservation code</i> and Chapter 11 of the residential code and any amendments adopted as authorized by state law shall be enforced by this jurisdiction in accordance with state law.	102.11 Energy Conservation. The <i>Energy Conservation Code</i> and Chapter 11 of the <i>Residential Code</i>, as well as any amendments adopted thereto as authorized by state law, shall be enforced by this jurisdiction in accordance with state law.	City of Houston Amendment Analysis: No change to COH amendment. Previous COH amendment moved from UMC 2012 Section 101.3.5 to UMC 2015 Section 102.11. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. Brought forward from 2012 amendment Sections 102.7,101.3.4,101.3.5
110.3 Mechanical Integrity. All persons, firms, corporations and air-conditioning contractors installing, altering, repairing or demolishing systems, appliances, components and equipment regulated by this code must maintain the mechanical integrity of such work in accordance with the provisions of this code. Failure to maintain mechanical integrity shall constitute a violation of this code subject to the penalties set forth in Section 110.2.	102.3 Mechanical Integrity Maintenance. Mechanical systems, materials, and appurtenances, both existing and new, of a premise under the Authority Having Jurisdiction shall be maintained in operating condition. Devices or safeguards required by this code shall be maintained in accordance with the code edition under which installed. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems. To determine compliance with this subsection, the Authority Having Jurisdiction shall be permitted to cause a mechanical system to be reinspected.	City of Houston Amendment Analysis: The previous COH amendment was deleted and the title used with existing code provisions that address the same requirements and intent. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. Base code modified during review process 10.12.21.
102.4.1 Commercial HVAC Systems. Commercial HVAC systems both existing and new, and parts thereof shall be inspected and maintained in operating condition in accordance with ASHRAE/ ACCA 180. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems and equipment. To determine compliance with this subsection, the Authority Having Jurisdiction shall be permitted to cause a HVAC system to be reinspected.	102.3.1 Commercial HVAC Systems. Commercial HVAC systems both existing and new, and parts thereof shall be inspected and maintained in operating condition in accordance with ASHRAE/ACCA 180. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems and equipment. To determine compliance with this subsection, the Authority Having Jurisdiction shall be permitted to cause a HVAC system to be reinspected.	City of Houston Amendment Analysis: Previous amendment to delete these code provisions were not carried forward. No justification to delete these code provisions. The code provisions were relocated in the model code from UMC 2012 Section 102.4.1 to 2015 Section 102.3.1 Justification: No justification to keep deletion; will move forward with base code.
102.4.2 Residential HVAC Systems. Residential HVAC systems both existing and new, and parts thereof shall be inspected in accordance with ACCA 4 QM. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems and equipment. To determine compliance with this subsection, the Authority Having Jurisdiction shall be permitted to cause a HVAC system to be reinspected.	102.3.2 Residential HVAC Systems. Residential HVAC systems both existing and new, and parts thereof shall be inspected in accordance with ACCA 4 QM. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems and equipment. To determine compliance with this subsection, the Authority Having Jurisdiction shall be permitted to cause a HVAC system to be reinspected.	City of Houston Amendment Analysis: Previous amendment to delete these code provisions were not carried forward. No justification to delete these code provisions. The code provisions were relocated in the model code from UMC 2012 Section 102.4.2 to 2015 Section 102.3.2 Justification: No justification to keep deletion; will move forward with base code.
106.8 Liability. The Authority Having Jurisdiction charged with the enforcement of this code acting in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance shall not thereby be rendered personally liable for damages that accrues to persons or property as a result of an act or by reason of an act or omission in the discharge of such duties. A suit brought against the Authority Having Jurisdiction or employee because of such act or omission performed by the Authority Having Jurisdiction or employee in the enforcement of a provision of such codes or other pertinent laws or ordinances implemented through the enforcement of this code or enforced by the code enforcement agency shall be defended by this jurisdiction until formal termination of such proceedings, and a judgment resulting therefrom shall be assumed by this	103.2 Liability. The Authority Having Jurisdiction charged with the enforcement of this code, acting in good faith and without malice in the discharge of the Authority Having Jurisdiction's duties, shall not thereby be rendered personally liable for damage that accrues to persons or property as a result of an act or by reason of an act or omission in the discharge of such duties. A suit brought against the Authority Having Jurisdiction or employee because of such act or omission performed in the enforcement of provisions of this code shall be defended by legal counsel provided by this jurisdiction until final termination of such proceedings. Except as otherwise provided by law, the building official shall not personally be liable in damages for any act or omission arising out of any official action taken to implement and enforce the provisions of this code. Additionally, except as otherwise provided by law, the building official shall not	City of Houston Amendment Analysis: Previous COH amendment is kept with a few minor editorial changes provided by legal. The code provisions were relocated in the model code from UMC 2012 Section 106.8 to 2015 Section 103.2. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.

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<div><div>jurisdiction.</div><div>Except as otherwise provided by law, the Authority Having Jurisdiction 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 Authority Having Jurisdiction 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>, the jurisdiction shall provide legal representation and indemnification for any suit brought against the Authority Having Jurisdiction because of acts or omissions performed in the enforcement of this code.</div></div> <div><div></div><div>This code shall not be construed to relieve from or lessen the responsibility of a person owning, operating, or controlling an equipment regulated herein for damages to persons or property caused by defects, nor shall the code enforcement agency or its parent jurisdiction be held as assuming such liability by reason of the inspections authorized by this code, permits or certificates issued under this code.</div></div>	<div><div>personally be liable in damages for any act or omission taken in the course and scope of employment. Where and to the extent consistent with the provisions of Chapter 2, Article X, of the <i>City Code</i>, this jurisdiction shall provide legal representation and indemnification for any suit <div>or claim</div> brought against the <div>building official or any deputies</div> because of acts or omissions performed in the <div>implementation or</div> enforcement of this code.</div></div> <div><div></div><div>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 any member of the board of appeals, or the jurisdiction be held as assuming any such liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.</div></div>	<div><div>Base code modified. Last paragraph of base code in section 106.8 of 2012 UMC carried forward.</div><div>Amendment and base code modified during review process 10.12.21.</div></div>
<div><div>106.10 Hearing Procedures.</div><div><div>106.10.1 Hearing Notices.</div><div>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 delivery, by certified mail, return receipt requested.</div><div>If the notice is being given to an applicant for a jurisdiction license or to a licensee or to a state license registrant, the notice may be mailed to the address set out in the application for the registration or license unless the applicant or registrant has given the Authority Having Jurisdiction written notice of a change of address, under which circumstances any notice concerning a hearing shall be sent to the most recent address shown on the notice. If any notice mailed to an applicant for a license or to a licensee or registrant is returned without delivery, notice shall be effective if posted where the public may observe it in the Permit Office.</div><div>If notice is being given to a building owner or to a tenant therein and the Authority Having Jurisdiction is unable to determine the name or address of such person after checking the building and the applicable records of the jurisdiction's Public Works and Engineering Department, 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 company and the gas 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.</div></div></div>	<div><div>103.5 Hearing Procedures.</div><div><div>103.5.1 Hearing notices.</div><div>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 <div>hand</div> delivery, certified mail, <div>or private delivery service</div>, return receipt requested. <div>If there is documented proof that these methods are not successful, the written notice may be sent by email.</div></div><div>If the notice is being given to an applicant for a license or to a licensee or to a state license registrant, the notice may be mailed to the address set out in the application for the registration or license unless the applicant or registrant has given the Authority Having Jurisdiction written notice of a change of address, under which circumstances any notice concerning a hearing shall be sent to the most recent address shown on the notice. If any notice mailed to an applicant for a license or to a licensee or registrant is returned without delivery, notice shall be effective if posted where the public may observe it in the Permit Office.</div><div>If notice is being given to a building owner or to a tenant therein and the Authority Having Jurisdiction is unable to determine the name or address of such person after checking the building <div>records</div> and the applicable records of <div>Houston</div> Public Works, the County Appraisal District, the electrical company, the gas company, and <div>the water utility provider</div>, notice shall be <div>mailed to the billing addresses of the building as shown on the records of the electrical company and the gas company</div> 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.</div></div></div>	<div><div><div>City of Houston Amendment</div></div><div><div>Analysis:</div><div>COH amendment.</div></div><div><div>Justification:</div><div>Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div></div><div><div>COH amendment modified during review process 10.12.21. Brought forward from 2012 amendment Sections 106.10 & 106.10.1</div></div></div>
<div><div>106.10.2 Hearings.</div><div>Except where otherwise specifically provided, all hearings held pursuant to this code shall be conducted by the jurisdiction's Director of Public Works and Engineering 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 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 set forth in writing and shall be served on each party in the same manner as a notice of right to a hearing.</div></div>	<div><div>103.5.2 Hearings.</div><div>Except where otherwise specifically provided, all hearings held pursuant to this code shall be conducted by the jurisdiction's Director of <div>Houston</div> 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 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 set forth in writing and shall be served on each party in the same manner as a notice of right to a hearing.</div></div>	<div><div><div>City of Houston Amendment</div></div><div><div>Analysis:</div><div>COH amendment.</div></div><div><div>Justification:</div><div>Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div></div><div><div>COH amendment modified during review process 10.12.21. Brought forward from 2012 amendment Section 106.10.2.</div></div></div>

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<p>114.3 Plan Review Fees. Where plans or other data are required to be submitted in accordance with Section 112.2, a plan review fee shall be paid at the time of submitting plans and specifications for review. The plan review fees for mechanical work shall be determined and adopted by this jurisdiction.</p> <p>The plan review fees specified in this subsection are separate fees from the permit fees specified in Section 114.2 and are in addition to the permit fees.</p> <p>Where plans are incomplete or changed so as to require additional plan review, an additional plan review fee shall be charged at the rate shown in Table 114.1.</p> <p>When approved plans are lost or changed so as to require an additional plan review or when a plan review is required and there is no building permit required, a plan review fee shall be charged at the rate shown in the city fee schedule.</p>	<p>104.3.2 Plan review fees. Where a plan or other data is required to be submitted in accordance with Section 104.3.1, a plan review fee shall be paid at the time of submitting construction documents for review. The plan review fees for mechanical systems work shall be charged as described in Section 118.1.11 of the Building Code and the city fee schedule determined and adopted by this jurisdiction.</p> <p>The plan review fees specified in this subsection are separate fees from the permit fees specified in Section 104.5.</p> <p>Where plans are incomplete or changed so as to require additional review, a fee shall be charged at the rate shown in Table 104.5.</p> <p>When approved plans are lost or changed so as to require an additional plan review or when a plan review is required and there is no building permit required, a plan review fee shall be charged as described in Section 118.2.8 of the Building Code and the city fee schedule.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: New COH amendment.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21. Brought forward from 2012 amendment Section 114.3.</p>
<p>N/A</p>	<p>104.3.2.1 Deferred Submittal Plan Review Fees. A plan review fee shall be paid at the time of submitting construction documents for review of deferred submittal plans. The fee for any deferred submittal review shall be charged at the rate shown in the city fee schedule for a minimum permit fee plus applicable administrative fee. The plan review fees specified in this subsection are separate fees from the permit fees.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: New COH amendment.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p>
<p>114.4 Expiration of Plan Review. Applications for which no permit is issued within 180 days following the date of application shall expire by limitation, and plans and other data submitted for review shall be permitted to be returned to the applicant or destroyed by the Authority Having Jurisdiction. The Authority Having Jurisdiction shall be permitted to extend the time for action by the applicant for a period not exceeding 180 days upon request by the applicant showing that circumstances beyond the control of the applicant have prevented action from being taken. No application shall be extended more than once. In order to renew action on an application after expiration, the applicant shall resubmit plans and pay a new plan review fee.</p>	<p>104.3.3 Time Limitation of Application. An application for which no permit is issued within 180 days following the date of application shall become inactive, and plans and other data submitted for review thereafter shall be returned to the applicant or destroyed by the Authority Having Jurisdiction. 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. Applications for which no permit is issued within 180 days following the date of application shall expire by limitation, plans and other data submitted for review thereafter, shall be returned to the applicant or destroyed by the Authority Having Jurisdiction. The Authority Having Jurisdiction building official shall be permitted to extend the time for action by the applicant for a period not to exceed 180 days upon request by the applicant showing that circumstances beyond the control of the applicant have prevented action from being taken. No application shall be extended more than once. In order to renew action on an application after expiration, the applicant shall resubmit plans and pay a new plan review fee.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: New COH amendment is coordinated throughout all volumes of the Houston Construction Code to address permit application time limits.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>112.2.1 Amended construction documents. Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.</p>	<p>104.4.1 Approved Plans or Construction Documents. Where the Authority Having Jurisdiction issues the permit where plans are required, the Authority Having Jurisdiction shall endorse in writing or stamp the construction documents "APPROVED." Such approved construction documents shall not be changed, modified, or altered without authorization from the Authority Having Jurisdiction, and the work shall be done in accordance with approved plans.</p> <p>The Authority Having Jurisdiction shall be permitted to issue a permit for the construction of a part of a mechanical system before the entire construction</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: The provisions of the previous COH amendment was moved in the model code from the HMC 2012 Section 112.2.1 to UMC 2015 Section 104.4.1. The COH amendment was not needed due to modifications to the model code.</p>

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	<p>documents for the whole system have been submitted or approved, provided adequate information and detailed statements have been filed in accordance with pertinent requirements of this code. The holder of such permit shall be permitted to proceed at the holder's risk without assurance that the permit for the entire building, structure, or mechanical system will be granted.</p>	<p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during City Legal review process 10.12.21. Amendment added.</p>
<p>113.3 Validity of Permit. The issuance of a permit or approval of plans, specifications, and computations shall not be construed to be a permit for, or an approval of, a violation of the provisions of this code or other ordinances of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid.</p> <p>The issuance of a permit based upon plans, specifications, computations, and other data shall not prevent the Authority Having Jurisdiction from thereafter requiring the correction of errors in said plans, specifications, and other data or from preventing building operations being carried on thereunder where in violation of this code or of other ordinances of this jurisdiction.</p> <p><u>A permit shall be valid only for work performed under the licensee who signed the application. A new permit must be obtained if the individual who signed the application ceases to perform the work. Provided that a refund has not been issued and written authority to transfer the permit from the original permit holder has been given, the cost of the new permit shall be charged at the rate listed for the minimum fee as stated in the city fee schedule. In the case of the death of the original licensee, the permit will be transferred to the new licensed contractor at no fee except for the administrative fee established in the city fee schedule. Applicants who fail to re-permit any applicable work within the time frames established by this code shall be subject to permit fees in the amount stated in the city fee schedule.</u></p>	<p>104.4.2 Validity of Permit. The issuance of a permit or approval of <u>construction documents, plans and specifications</u> shall not be construed to be a permit for, or an approval of, a violation of the provisions of this code or other ordinance of the jurisdiction. No permit presuming to give authority to violate or cancel the provisions of this code shall be valid.</p> <p>The issuance of a permit based upon <u>plans, construction documents, specifications, or other data</u> shall not prevent the Authority Having Jurisdiction from thereafter requiring the correction of errors in <u>said plans, the construction documents, specifications, and other data</u> or from preventing building operations being carried on thereunder where in violation of this code or of <u>any other applicable law, ordinances of this jurisdiction.</u></p> <p><u>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. Where a Texas license is not required to obtain a mechanical permit or complete the proposed mechanical work, Section 105.4 of the <i>Building Code</i> shall apply. Where a Texas license is required to perform specific work, a permit shall be valid only for work performed under the licensed mechanical contractor or licensed HVAC contractor named on the application.</u></p> <p><u>A name change on an application or an existing permit must be obtained if the licensed mechanical contractor or licensed HVAC contractor 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 to amend the permit to designate a different licensed mechanical contractor or licensed HVAC contractor has been provided by the property owner to the building official, the building official shall issue an amended permit. A name change fee and an administrative fee shall be charged as provided in Section 118.1 of the <i>Building Code</i> and the city fee schedule.</u></p> <p><u>In the case of the death or dissolution of the original property owner or licensed mechanical contractor or licensed HVAC contractor, 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 licensed mechanical contractor or licensed HVAC contractor 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. A property owner, licensed mechanical contractor or licensed HVAC contractor requiring a re-permit who fails to re-permit any applicable work within the time frames established by this code shall be subject to 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.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: The provisions of this section were moved from the UMC 2012 Section 113.3 to UMC 2015 Section 104.4.2. A new COH amendment clarifies that the property owner owns the building permit regardless of who submits the application.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during City Legal review process 10.12.21. Amendment added.</p>
<p>113.4 Expiration. <u>A Every permit issued under the provisions of this code shall become inactive unless expire by limitation and become null and void where the work authorized by such permit is not commenced within 180 days after its issuance, or if from the date of such permit, or where the work authorized by such permit is suspended or abandoned at a time after the work is commenced for a period of 180</u></p>	<p>104.4.3 Expiration. <u>A Every permit issued by the Authority Having Jurisdiction under the provisions of this code shall become inactive unless expire by limitation and become null and void where the work authorized by such permit is not has commenced and been inspected by a city inspector within 180 days after its issuance, or if from the date of such permit, or where the work authorized by such</u></p>	<p>City of Houston Amendment</p> <p>Analysis: The provisions of this section were moved from the UMC 2012 Section 113.4 to UMC 2015 Section 104.4.3. COH amendment.</p>

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COLOR CODE INDEX: Turquoise = NEW or Modified Text by IAPMO in 2015 Yellow Strikethrough = Text Deleted from the Code by COH		Text Underlined = COH Amendment added (NEW) Green Text = NEW or Modified Text by COH in 2015	Grey Text = Previous COH Amendment Brought Forward to 2015
<p>days. The building official 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. Before such work is recommenced, a new permit shall be first obtained, and the fee therefore shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original plans and specifications for such work and provided further that such suspension or abandonment has not exceeded 1 year. No permit shall be extended more than once. To renew action on a permit after expiration, the permittee shall pay a new full permit fee.</p> <p>A permittee holding an unexpired permit shall be permitted to apply for an extension of the time within which work shall be permitted to be commenced under that permit where the permittee is unable to commence work within the time required by this section. The Authority Having Jurisdiction shall have the authority to extend the time for action by the permittee for a period not exceeding 180 days upon written request by the permittee showing that circumstances beyond the control of said permittee have prevented action from being taken.</p> <p>If work is not commenced under a permit within two years after the date of issuance or is abandoned at any time for a period of two years, the permit shall expire. In order to recommence work under an expired permit, the permit holder shall pay the full permit fee applicable and submit plans that comply with this code for the previously uninspected portion of the work.</p> <p>Exception: For the purpose of issuing a certificate of compliance, the building official may, upon request, reactivate a permit and perform a final inspection of work.</p>		<p>permit is suspended or abandoned at a time after the work is commenced for a period of 180 days after the time the work was commenced. Before such work is recommenced, a new permit shall first be obtained to do so, and the fee therefore shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded 1 year. If work has not commenced under a permit within two years after the date of issuance or is suspended or abandoned at any time for a period of two years, the permit shall expire and become null and void. To recommence work under an expired permit, the permit holder shall pay the full applicable permit fee and submit plans that comply with this code for the previously uninspected portion of the work.</p> <p>Exception: <u>For the purpose of issuing a certificate of occupancy or certificate of compliance, the building official may, upon request, reactivate a permit and perform a final inspection of work.</u></p>	<p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code & COH amendment modified during City Legal review process 10.12.21.</p>
<p>113.4 Expiration. A Every permit issued under the provisions of this code shall become inactive unless expire by limitation and become null and void where the work authorized by such permit is not commenced within 180 days after its issuance, or if from the date of such permit, or where the work authorized by such permit is suspended or abandoned at a time after the work is commenced for a period of 180 days. The building official 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. Before such work is recommenced, a new permit shall be first obtained, and the fee therefore shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original plans and specifications for such work and provided further that such suspension or abandonment has not exceeded 1 year. No permit shall be extended more than once. To renew action on a permit after expiration, the permittee shall pay a new full permit fee.</p> <p>A permittee holding an unexpired permit shall be permitted to apply for an extension of the time within which work shall be permitted to be commenced under that permit where the permittee is unable to commence work within the time required by this section. The Authority Having Jurisdiction shall have the authority to extend the time for action by the permittee for a period not exceeding 180 days upon written request by the permittee showing that circumstances beyond the control of said permittee have prevented action from being taken.</p> <p>If work is not commenced under a permit within two years after the date of issuance or is abandoned at any time for a period of two years, the permit shall expire. In order to recommence work under an expired permit, the permit holder shall pay</p>		<p>104.4.4 Extension. A permittee holding an unexpired permit shall be permitted to apply for an extension of the time within which work shall be permitted to commence under that permit where the permittee is unable to commence work within the time required by this section. The Authority Having Jurisdiction shall be permitted to extend the time for action by the permittee for a period not exceeding 180 days upon written request by the permittee showing that circumstances beyond the control of the permittee have prevented action from being taken. No permit shall be extended more than once. In order to renew action on a permit after expiration, the permittee shall pay a new full permit fee. <u>The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The permit holder shall request the extension in writing and demonstrate justifiable cause.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: The model code separated the requirements of permit expiration and permit extensions into separate sections in the 2015 UMC. The provisions for permit extensions were previously located in 2012 UMC Section 114.5 and will now be located in UMC 2015 Section 104.4.4. COH amendment correlates these provisions with the other volumes of the Houston Construction Code.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code and COH amendment modified during review process 10.12.21.</p>

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
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<p>the full permit fee applicable and submit plans that comply with this code for the previously uninspected portion of the work.</p> <p>Exception: For the purpose of issuing 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>113.5 Suspension or Revocation. The Authority Having Jurisdiction shall have the authority to suspend or revoke a permit issued under the provisions of this code where the permit is issued in error or on the basis of incorrect information supplied or in violation of other ordinances or regulations of the jurisdiction. Prior to taking such action, the Authority Having Jurisdiction shall provide notice of a right to a hearing on the matter pursuant to Section 106.10.</p>	<p>104.4.5 Suspension or Revocation. The After notice is provided of a right to a hearing pursuant to Section 103.5, the Authority Having Jurisdiction shall be permitted to, in writing, suspend or revoke a permit issued under the provisions of this code where the permit is issued in error, on the basis of incorrect information supplied, or in violation of other ordinance or regulation of the jurisdiction.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: The administrative provisions of Chapter 1 of the 2012 UMC have been reorganized. The provisions of UMC 2012 Section 113.5 have been relocated to UMC 2015 Section 104.4.5. The COH amendment is modified slightly to work with the 2015 Code text. No change to the requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>112.2 Plans and Specifications. Plans, engineering calculations, diagrams, and other data shall be submitted in one or more two sets with each application for a permit. Where such plans are not prepared by an architect or engineer, the Authority Having Jurisdiction shall be permitted to require an applicant submitting such plans or other data to demonstrate that state law does not require that the plans be prepared by an architect or engineer. The Authority Having Jurisdiction shall also be permitted to require plans, computations, and specifications to be prepared and designed by an engineer or architect licensed by the state to practice as such even where not required by state law.</p> <p>Exception: The Authority Having Jurisdiction shall be permitted to waive the submission of plans, calculations, or other data where it is found that the nature of the work applied for is such that review of plans is not necessary to obtain compliance with this code.</p>	<p>104.4.6 Retention of Plans. One set of approved construction documents, and computations shall be retained by the Authority Having Jurisdiction until final approval of the work is covered therein. One set of approved construction documents, computations, and manufacturer's installation instructions shall be returned to the applicant, and said set shall be kept on the site of the building or work at times during which the work authorized thereby is in progress.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: The administrative provisions of Chapter 1 of the 2012 UMC have been reorganized. The provisions of UMC 2012 Section 112.2 have been relocated to UMC 2015 Section 104.4.6. The COH amendment is deleted to correlate with current submittal practice. No change to the requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>114.0 Fees.</p> <p>114.1 General. Fees shall be assessed in accordance with the provisions of this section and as set forth in the fee schedule, Table 114.1. The fees are to be determined and adopted by this jurisdiction.</p>	<p>104.5 Fees. Fees shall be assessed in accordance with the provisions of this section and as set forth in the city fee schedule, Table 104.5. The fees are to be determined and adopted by this jurisdiction.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: The administrative provisions of Chapter 1 of the 2012 UMC have been reorganized. The provisions of UMC 2012 Section 114.2 have been relocated to UMC 2015 Section 104.5. The COH amendment is modified slightly to work with the 2015 Code text. No change to the requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>114.5 Investigation Fees - Work Without a Permit. Wherever work for which a permit is required by this code has been commenced without first obtaining said permit, a special investigation shall be made before a permit shall be permitted to be issued for such work.</p>	<p>104.5.1 Work Commencing Before Permit Issuance. Where work for which a permit is required by this code has been commenced without first obtaining said permit, a special investigation shall be made before a permit is issued for such work.</p>	<p><u>City of Houston Amendment</u></p> <p>Analysis: The code provisions of UMC 2012 Section 114.5 was relocated to UMC 2015 Section 104.5.1 and 104.5.2. New COH amendment to clarify minimum investigation fee.</p>

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<p>114.5.1 Fee. An investigation fee, in addition to the permit fee, shall be collected whether or not a permit is then or subsequently issued. The investigation fee shall be equal to the amount of the permit fee that is required by this code where a permit were to be issued. The payment of such investigation fee shall not exempt a person from compliance with other provisions of this code or from a penalty prescribed by law.</p>	<p>104.5.2 Investigation Fees. An investigation fee, in addition to the permit fee, shall be collected whether or not a permit is then or subsequently issued. The investigation fee shall be equal to the amount of the permit fee that is required by this code if a permit were to be issued, subject to applicable minimum investigation fees stated in the city fee schedule. The payment of such investigation fee shall not exempt a person from compliance with other provisions of this code, nor from a penalty prescribed by law.</p>	<p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>114.6 Fee Refunds. The Authority Having Jurisdiction shall be permitted to authorize the refunding of a fee paid hereunder that has been erroneously paid or collected due to an error by one or more city employees. This provision shall not be applicable if the error occurred due to incorrect information provided by the applicant.</p> <p>114.6.1 Authorization. The Authority Having Jurisdiction shall be permitted to authorize a refund not exceeding 90 percent of the amount in excess of the minimum permit fee stated in the city fee schedule a percentage, as determined by this jurisdiction, where 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.</p> <p>114.6.2 No Work. The Authority Having Jurisdiction shall be permitted to authorize refunding not exceeding a percentage, as determined by this jurisdiction, where an application for a permit for which a plan review fee has been paid is withdrawn or canceled before a plan review effort has been expended.</p>	<p>104.5.3 Fee Refunds. The Authority Having Jurisdiction shall be permitted to authorize the refunding of a fee as follows:</p> <p>(1) The amount paid hereunder that was erroneously paid or collected.</p> <p>(2) Refunding of not more than a percentage, as determined by this jurisdiction where no work has been done under a permit issued in accordance with this code.</p> <p>The building official may authorize the refund of any fee paid hereunder that was erroneously paid or collected due to an error by a city employee. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.</p> <p>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.</p> <p>The building official Authority Having Jurisdiction shall not authorize a refunding of any any fee paid except upon written application filed by the original permittee holder not to exceed later than 180 calendar days after the date of fee payment.</p>	<p>City of Houston Amendment</p> <p>Analysis: The administrative provisions of Chapter 1 of the 2012 UMC have been reorganized. The provisions of UMC 2012 Section 114.6 have been relocated to UMC 2015 Section 104.5.3. The COH amendment is modified slightly to work with the 2015 Code text and format and be coordinated with all other volumes of the Houston Construction Code. However, no change to the previous code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified during review process 10.12.21.</p>
<p>114.7 Annual Fee Increase. Notwithstanding any maximum fee established pursuant to the <i>City of Houston Construction Code</i>, the fees in this or in any volume of the <i>City of Houston 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>104.5.4 Annual Fee Increase. Notwithstanding any maximum fee established pursuant to the <i>Construction Code</i>, the fees in this 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>City of Houston Amendment</p> <p>Analysis: COH Amendment.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Brought forward from 2012 amendment Section 114.7.</p>
<p>{EDITORIAL NOTE: DELETE TABLE 114.1 IN ITS ENTIRETY.}</p>	<p>{EDITORIAL NOTE: DELETE TABLE 104.5 IN ITS ENTIRETY.}</p>	<p>City of Houston Amendment</p> <p>Analysis: The deletion of UMC 2012 Table 114.1 was previously identified in UMC 2012 Section 114.2. A new COH amendment is added as an editorial note that calls for the deletion of Table 104.5 which replaces previous Table 114.1.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p>
<p>115.2 Operation of Mechanical Equipment. The requirements of this section shall not be considered to prohibit the operation of mechanical systems installed to replace existing equipment or fixtures serving an occupied portion of the building in the event provided that a request for inspection of such equipment or fixture has been filed with the Authority Having Jurisdiction not exceeding 48 hours after such replacement work</p>	<p>105.2.1 Uncovering. Where a mechanical system, or part thereof, which is installed, altered, or repaired, is covered or concealed before being inspected, tested, and approved as prescribed in this code, it shall be uncovered for inspection after notice to uncover the work has been issued to the responsible person by the Authority Having Jurisdiction. The requirements of this section shall not be considered to prohibit the</p>	<p>City of Houston Amendment</p> <p>Analysis: Model code created new text for these code requirements and relocated them from UMC 2012 Section 115.2</p>

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<p>is completed equipment is made operational and before a portion of such mechanical system is concealed by a permanent portion of the building. It shall be a violation of this code, subject to the penalties set forth in Section 110.2, for a permit holder to fail to make all necessary arrangements for inspection so that this jurisdiction may perform the required inspection no later than the next work day immediately after the aforementioned 48 hour period expires.</p>	<p>operation of mechanical systems installed to replace existing equipment serving an occupied portion of the building in the event a request for inspection of such equipment has been fil ed with the Authority Having Jurisdiction not more than 72 hours after such replacement work is completed, and before a portion of such mechanical system is concealed by a permanent portion of the building.</p>	<p>to UMC 2015 Section 105.2.1. The previous COH amendment is deleted.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p>
<p>115.3 Testing of Equipment. Refrigeration equipment regulated by this code shall be tested and approved in accordance with Section 1124.0 of this code.</p> <p>Steam and hot water boilers and piping shall be tested and approved in accordance with Section 1021.1, Section 1201.3.9, and Section 1207.0 of this code.</p> <p>Where applicable (see Section 101.3), fuel gas piping shall be tested and approved in accordance with Section 1303.0 of this code the plumbing code.</p>	<p>105.3 Testing of Systems. Mechanical systems shall be tested and approved in accordance with this code or the Authority Having Jurisdiction. Tests shall be conducted in the presence of the Authority Having Jurisdiction or the Authority Having Jurisdiction's duly appointed representative. No test or inspection shall be required where a mechanical system, or part thereof, is set up for exhibition purposes and has no connection with water or an energy fuel supply. In cases where it would be impractical to provide the required water or air tests, or for minor installations and repairs, the Authority Having Jurisdiction shall be permitted to make such inspection as deemed advisable in order to be assured that the work has been performed in accordance with the intent of this code.</p>	<p>City of Houston Amendment</p> <p>Analysis: Model code created new text for these code requirements and relocated them from UMC 2012 Section 115.3 to UMC 2015 Section 105.3. The previous COH amendment is deleted.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p>
<p>115.6 Reinspections. The Authority Having Jurisdiction shall be permitted to assess a reinspection fee for each inspection or reinspection where such portion of work for which inspection is requested is not complete or where required corrections have not been made.</p> <p>This provision shall not be interpreted as requiring reinspection fees the first time a job is rejected for failure to be in accordance with the requirements of this code, but as controlling the practice of calling for inspections before the job is ready for inspection or reinspection.</p> <p>Reinspection fees may be assessed 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 requiring the approval of the Authority Having Jurisdiction.</p> <p>To obtain reinspection, the applicant shall file an application therefore in writing upon a form furnished for that purpose make a request and pay the reinspection fee in accordance with Table 114.1 or as set forth in the city fee schedule adopted by the jurisdiction.</p> <p>In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.</p>	<p>105.2.6 Reinspections. The building official may assess a A reinspection fee shall be permitted to be assessed for each inspection or reinspection when an inspector arrives to perform the inspection and finds the where such portion of work for which inspection is called is not complete or where required when corrections called for in a previous inspection report have not been made.</p> <p>This provision section shall not be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply be in accordance with the requirements of this code, but as controlling the practice of calling for inspections before the job is ready for inspection or reinspection.</p> <p>The building official may assess a reinspection fee Reinspection fees shall be permitted to be assessed where 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 the inspection is requested, or for deviating from plans requiring the approval of the Authority Having Jurisdiction.</p> <p>To obtain reinspection, the applicant shall file an application therefore in writing upon a form furnished for that purpose make a request and pay the reinspection fee in accordance with Table 104.5 Section 118 of the Building Code and the city fee schedule.</p> <p>In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.</p>	<p>City of Houston Amendment</p> <p>Analysis: Previous COH amendment UMC 2012 Section 115.6 was relocated to UMC 2015 Section 105.2.6. The previous COH amendment is modified to work with the model code text. No changes to the previous code requirements or code intent for this section.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code and COH amendment modified during review process 10.12.21.</p>
<p>116.2.1 Temporary Operation Inspection. For inspection of a boiler or 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 permit for temporary use shall be valid for a period longer than 30 calendar days. The Authority Having Jurisdiction is authorized to reissue a temporary permit</p>	<p>105.4.1 Temporary Operation Inspection. For inspection of a boiler or a heating, ventilation, refrigeration, or air-conditioning system to be used on a temporary basis, a licensed air-conditioning contractor shall request the inspection and pay the fee stated for this provision in the city fee schedule. If the system is not approved for temporary operation on the first inspection, the reinspection fee will be charged for each subsequent inspection for such purpose.</p> <p>No permit for temporary use shall be valid for a period longer than 30 calendar days. The Authority Having Jurisdiction is authorized to reissue a temporary permit upon payment of the fees stated for this provision in the city fee schedule for each successive period of not more than 30 days.</p>	<p>City of Houston Amendment</p> <p>Analysis: The previous COH amendment is relocated from UMC 2012 Section 116.2.1 to UMC 2015 Section 105.4.1 and is reorganized by city legal for clarity. No changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<p>upon payment of the fees stated for this provision in the city fee schedule for each successive period of not more than 30 days.</p>		<p>2012 amendment Section 116.2.1 carried forward.</p>
<p>110.2 Penalties. 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 and not more than \$2,000.00. Each day that any violation continues shall constitute and be punishable as a separate offense. Where any conduct in violation of this code also 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 Texas Penal Code, and instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the Texas Penal Code.</p>	<p>106.3 Penalties. A person, firm, or corporation violating or failing to comply with a provision of this code shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punishable by the following penalties: where no specific penalty is otherwise provided in this code, a fine, of not less than \$500.00 and not more than \$2,000.00; imprisonment; or both set forth by the governing laws of the jurisdiction. Each separate day, or a portion thereof, during which a violation of this code occurs or continues, shall be deemed to constitute a separate offense. Where any conduct in violation of this code also 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>City of Houston Amendment</p> <p>Analysis: The previous COH amendment is relocated from UMC 2012 Section 110.2 to UMC 2015 Section 106.3 and is reorganized by city legal for clarity, to work the model code text, and to be coordinated with other volumes of the <i>Houston Construction Code</i>. No changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code modified the during review process 10.12.21. 2012 amendment Section 110.2 carried forward.</p>
<p>106.4 Stop Orders. Where work is being done contrary to the provisions of this code, the Authority Having Jurisdiction shall have the authority to order the work stopped by notice in writing served on persons engaged in doing or causing such work to be done, and such persons shall forthwith stop work until authorized by the Authority Having Jurisdiction to proceed with the work.</p> <p>At the time a stop order is issued, the person performing the work and the permit holder shall be given notice of a right to a hearing on the matter by the Authority Having Jurisdiction, who shall deliver the notice to the persons performing the work, if present at the site, or otherwise conspicuously post the notice at the site. Upon request, a hearing shall be held within three business days unless the permit holder or person who was doing the work requests an extension of time. Any stop order that has been issued shall remain in effect pending any hearing that has been requested unless the stop order is withdrawn by the Authority Having Jurisdiction.</p>	<p>106.4 Stop Work Orders. Where work is being done contrary to the provisions of this code, the Authority Having Jurisdiction shall be permitted to order the work stopped by notice in writing served on persons engaged in the doing or causing such work to be done, and such persons shall forthwith stop work until authorized by the Authority Having Jurisdiction to proceed with the work.</p> <p>At the time a stop work order is issued, the person performing the work and the permit holder shall be given notice of a right to a hearing on the matter pursuant to Section 103.5. On written request from the permit holder, such a hearing shall be held within three business days from the issuance of 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 stop work order is withdrawn by the Authority Having Jurisdiction.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment and base code modified during review process 10.12.21. Brought forward from 2012 amendment Section 106.4.</p>
<p>106.5 Authority to Disconnect Utilities in Emergencies. The Authority Having Jurisdiction or authorized representative shall be permitted to disconnect fuel gas utility service or energy supplies to a building, structure, premises, or equipment regulated by this code in case of emergency where necessary to eliminate an immediate hazard to life or property. The Authority Having Jurisdiction shall, wherever possible, notify the serving utility, the owner, and the occupant of the building, structure, or premises of the decision to disconnect prior to taking such action, and shall notify such serving utility, owner, and occupant of the building, structure, or premises in writing of such disconnection immediately thereafter.</p> <p>The notice shall also inform the owner and the occupant of the building (or the user if the mechanical equipment is not within a building) of a right to a hearing on the matter pursuant to Section 106.10. On request, a hearing shall be conducted within three business days unless the owner requests an extension of time.</p>	<p>106.5 Authority to Disconnect Utilities in Emergencies. The Authority Having Jurisdiction shall have the authority to disconnect a mechanical system to a building, structure, or equipment regulated by this code in case of emergency where necessary to eliminate an immediate hazard to life or property. The Authority Having Jurisdiction shall, wherever possible, notify the serving utility, the owner, and the occupant of the building, structure, or premises of the decision to disconnect prior to taking such action, and shall notify such serving utility, owner, and occupant of the building, structure, or premises in writing of such disconnection immediately thereafter.</p> <p>The notice shall also inform the owner and the occupant of the building (or the user if the mechanical equipment is not within a building) of a right to a hearing on the matter pursuant to Section 103.5. On request, a hearing shall be conducted within three business days unless the owner or the owners authorized agent requests an extension of time.</p>	<p>City of Houston Amendment</p> <p>Analysis: Previous COH amendment is modified to require the AHJ to notify the utility company of any order for utility disconnection.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21. 2nd sentence brought forward from 2012 base code. 2012 amendment carried forward.</p>
<p>106.6 Authority to Condemn Equipment. Where the Authority Having Jurisdiction ascertains that an equipment, or portion thereof, regulated by this code has become hazardous to life, health, or property, it shall order in writing that the equipment either be removed or restored to a safe or sanitary condition. The written notice shall contain</p>	<p>106.6 Authority to Condemn. Where the Authority Having Jurisdiction ascertains that a mechanical system or portion thereof, regulated by this code, has become hazardous to life, health, or property, or has become insanitary, the Authority Having Jurisdiction shall order in writing that such mechanical system either be removed or placed in a</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment.</p>

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<p>a fixed time limit for compliance of not less than three days, with such order and shall inform the owner and the occupant of the right to a hearing on the matter pursuant to Section 106.10. Persons shall not use or maintain defective equipment after receiving a notice.</p> <p>Where equipment or an installation is to be disconnected, written notice of the disconnection and causes therefore shall be given within 24 hours to the serving utility, owner, and occupant of the building, structure, or premises. Where equipment is maintained in violation of this code, and in violation of a notice issued pursuant to the provisions of this section, the Authority Having Jurisdiction shall institute an action to prevent, restrain, correct, or abate the violation.</p>	<p>safe or sanitary condition. The order shall specify a reasonable time limit for compliance of not less than three days from the date of the order's issuance and shall inform the owner and the occupant of the right to a hearing on the matter pursuant to Section 103.5. No person shall use or continue using maintain a defective mechanical system after receiving such notice.</p> <p>Where such mechanical system is to be disconnected, written notice shall be given to the owner, or the occupant of the building as specified by Section 106.5. In cases of immediate danger to life or property, such disconnection shall be permitted to be made immediately without such notice.</p>	<p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Base code & COH amendment modified during review process 10.12.21.</p>
<p>108.0 Board of Appeals. Boards and Licenses.</p> <p>108.1 General. In order to hear and decide appeals of orders, decisions, or determinations made by the Authority Having Jurisdiction relative to the application and interpretations of this code, there shall be and is hereby created a Board of Appeals consisting of members who are qualified by experience and training to pass upon matters pertaining to mechanical design, construction, and maintenance and the public health aspects of mechanical systems and who are not employees of the jurisdiction. The Authority Having Jurisdiction shall be an ex-officio member and shall act as secretary to said board but shall have no vote upon a matter before the board. The Board of Appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business and shall render decisions and findings in writing to the appellant with a duplicate copy to the Authority Having Jurisdiction. The Mechanical Code Review Board or the Boiler Code Review and Licensing Board shall hear and decide appeals of orders, decisions or determinations made by the Authority Having Jurisdiction relative to the application and interpretations of this code. (See Sections 120 and 121.)</p>	<p>107.0 Board of Appeals Boards and Licenses.</p> <p>107.1 General. In order to hear and decide appeals of orders, decisions, or determinations made by the Authority Having Jurisdiction relative to the application and interpretations of this code, there shall be and is hereby created a Board of Appeals consisting of members who are qualified by experience and training to pass upon matters pertaining to mechanical system design, construction, and maintenance and the public health aspects of mechanical systems and who are not employees of the jurisdiction. The Authority Having Jurisdiction shall be an ex-officio member and shall act as secretary to said board but shall have no vote upon a matter before the board. The Board of Appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business and shall render decisions and findings in writing to the appellant with a duplicate copy to the Authority Having Jurisdiction. The Mechanical Code Review Board and the Boiler Code Review and Licensing Board shall hear and decide appeals of orders, decisions or determinations made by the Authority Having Jurisdiction relative to the application and interpretations of this code, as applicable. (See Sections 110 and 111.)</p>	<p>City of Houston Amendment</p> <p>Analysis: UMC 2012 model code relocates previous Section 108.1 to UMC 2015 Section 107.1. COH amendment. Amendment brought forward from 2012 Sections 108.0 & 108.1.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Title modified of section during review process 10.12.21. No changes to COH amendment.</p>
<p>108.2 Limitations of Authority. The Board of Appeals aforesaid boards shall have no authority relative to interpretation of the administrative provisions of this code, which shall be the purview of the General Appeals Board (see Section 113 of the building code), unless otherwise specified, nor shall the board be empowered to waive requirements of this code.</p>	<p>107.2 Limitations of Authority. The Board of Appeals aforesaid boards shall have no authority relative to interpretation of the administrative provisions of this code, <u>which shall be the purview of the General Appeals Board (see Section 113 of the <i>Building Code</i>), unless otherwise specified</u>, nor shall the <u>aforesaid boards</u> be empowered to waive requirements of this code.</p>	<p>City of Houston Amendment</p> <p>Analysis: UMC 2012 model code relocates previous Section 108.1 to UMC 2015 Section 107.1. COH amendment. Amendment brought forward from 2012 Sections 108.0 & 108.1.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Title modified of section during review process 10.12.21. No changes to COH amendment.</p>
<p>117.0 Emergency Work.</p> <p>117.1 General. It is an exception to any provision of this code or of the City of Houston Construction Code that requires the issuance of a permit under this code prior to commencing work or that imposes an additional fee for work commenced without a permit being first obtained that:</p> <ol style="list-style-type: none">The work involved the emergency repair or replacement of an existing air conditioning, heating, ventilation or refrigeration system;The work was required to be commenced immediately in order to protect property or to preserve the health of persons;Notice was given to the Authority Having Jurisdiction by mail, telephone, fax or other approved method when the work was commenced; and	<p>108.0 Emergency Work.</p> <p>108.1 General. Notwithstanding any requirement in this code or in the <i>Construction Code</i> that requires the issuance of a permit under this code prior to commencing work or that imposes an additional fee for work commenced without a permit being first obtained, a permit or additional fee is not required to commence work if:</p> <ol style="list-style-type: none">The work involves the emergency repair or replacement of an existing air-conditioning, heating, ventilation or refrigeration system;The work <u>needs</u> to be commenced immediately in order to protect property or to preserve the health of persons;Notice is given to the Authority Having Jurisdiction by mail, telephone, email, fax or other approved method when the work was commenced; and,	<p>City of Houston Amendment</p> <p>Analysis: UMC 2012 model code relocates previous Section 117.1 to UMC 2015 Section 108.1. COH amendment brought forward from 2012 Sections 117.1 with minor editorial changes for clarity.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<div><div>(4)</div> A permit was obtained as provided in Subsection 117.</div> <div>The Authority Having Jurisdiction shall promulgate regulations and forms as required to administer this section.</div>	<div><div>(4)</div> A permit is then obtained within 48-hours as provided in Subsection 108.2.</div> <div>The Authority Having Jurisdiction shall promulgate regulations and forms as required to administer this section.</div>	
<div>117.2 Time limit for obtaining permit. The licensed air-conditioning contractor, in order to avoid penalties for failure to obtain a permit prior to commencing such job, in addition to complying with Section 117.1, must also obtain a permit for the job within 48 hours after 8:00 a.m. of the first day that the city permit office is opened for business after the date on which the contractor commences such alteration or installation.</div>	<div>108.2 Time Limit for Obtaining Permit. The licensed contractor, in order to avoid penalties for failure to obtain a permit prior to commencing such emergency work, in addition to complying with Section 108.1, must also apply for a permit for the emergency work within 48 hours after 8:00 a.m. of the first day that the city permit office is opened for business after the date on which the contractor commences such repair or replacement.</div>	<div>City of Houston Amendment</div> <div>Analysis: UMC 2012 model code relocates previous Section 117.2 to UMC 2015 Section 108.2. COH amendment brought forward from 2012 Section 117.2 with minor editorial changes for clarity.</div> <div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>117.3 Operation of system. If the alteration or installation is completed prior to the time that the licensed air-conditioning contractor is required to obtain a permit under these provisions, at the contractor's sole risk and responsibility for all injuries and damages that might result therefrom to persons and property, the contractor may place the system or installation in operation, provided that the contractor remains at the job site and checks the operation for a period of at least 15 minutes before leaving the premises. The contractor shall instruct the occupant of the premises or the person in charge of the premises the manner in which the equipment or system may be immediately shut off in case of malfunction in its operation and shall provide the aforesaid occupant or person with a telephone number, or numbers, where the licensed contractor can be reached in case of an emergency resulting from operation of the system or installation prior to inspection by the jurisdiction.</div>	<div>108.3 Operation of System. If the repair or replacement is completed prior to the time that the licensed air-conditioning contractor is required to apply for a permit under these provisions, at the contractor's sole risk and responsibility for any and all injuries and damages that might result therefrom, the contractor may place the system or equipment in operation, provided that the contractor then remains at the job site and checks the operation for a period of at least 15 minutes before leaving the premises. The contractor shall instruct the occupant of the premises or the person in charge of the premises regarding the manner in which the system or equipment may be immediately shut off in case of malfunction in its operation and shall provide the aforesaid occupant or person with a telephone number(s), where the licensed contractor can be reached in case of an emergency resulting from operation of the system or equipment prior to inspection by the jurisdiction.</div>	<div>City of Houston Amendment</div> <div>Analysis: COH amendment brought forward from UMC 2012 Section 117.3 to UMC 2015 Section 108.3. Minor change to the previous Houston amendment with no change to the code requirements or code intent.</div> <div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>117.4 Emergency appeal. In the event of a dispute between the jurisdiction's inspector and the licensed air-conditioning and refrigeration contractor doing the job as to the existence of the emergency authorizing the commencing of the job without a permit, the dispute shall be first considered by the Authority Having Jurisdiction. The contractor may appeal the decision of the Authority Having Jurisdiction to the Mechanical Code Review Board or Boiler Code Licensing and Review Board, as applicable, for its consideration and decision. In reviewing the decision of the Authority Having Jurisdiction, the Board shall base its decision on the evidence and testimony presented by both parties.</div>	<div>108.4 Emergency Appeal. In the event of a dispute between the jurisdiction's inspector and the licensed air-conditioning and refrigeration contractor doing the job as to the existence of the emergency requiring the commencing of the job without a permit, the dispute shall be first considered by the Authority Having Jurisdiction. The contractor may appeal the decision of the Authority Having Jurisdiction to the Mechanical Code Review Board or Boiler Code Licensing and Review Board, as applicable, for its consideration and decision. In reviewing the decision of the Authority Having Jurisdiction, the Board shall base its decision on the evidence and testimony presented by both parties.</div>	<div>City of Houston Amendment</div> <div>Analysis: COH amendment brought forward from UMC 2012 Section 117.4 to UMC 2015 Section 108.4. No changes to the previous code requirements or code intent.</div> <div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>118.0 Temporary Operation Permit.</div> <div>118.1 General. Any heating, ventilating, refrigerating or air-conditioning system being altered or installed by authority of a permit issued under the provisions of this code may be operated for limited periods of time only for testing purposes prior to passing final inspection, on the following conditions:</div> <div><div>(1)</div> The licensed air-conditioning contractor in whose name said permit is issued shall request that the Authority Having Jurisdiction inspect the system.</div> <div><div>(2)</div> If, upon inspection, the system is approved for operation for testing purposes, the Authority Having Jurisdiction shall indicate the length of time that the system may be operated for testing purposes, this time to be determined based upon the size and type of system and the extent of the installation or alteration involved.</div>	<div>109.0 Temporary Operation Permit.</div> <div>109.1 General. Any heating, ventilating, refrigerating or air-conditioning system being altered or installed by authority of a permit issued under the provisions of this code may be operated for limited periods of time only for testing purposes prior to passing final inspection, on the following conditions:</div> <div><div>(1)</div> The licensed air-conditioning contractor in whose name said permit is issued shall request that the Authority Having Jurisdiction inspect the system.</div> <div><div>(2)</div> If, upon inspection, the system is approved for operation for testing purposes, the Authority Having Jurisdiction shall indicate the length of time that the system may be operated for testing purposes, based upon the size and type of system and the extent of the installation or alteration involved.</div>	<div>City of Houston Amendment</div> <div>Analysis: COH amendment brought forward from UMC 2012 Section 118.1 to UMC 2015 Section 109.1. No changes to the previous code requirements or code intent.</div> <div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div> <div>COH amendment modified during review process 10.12.21.</div>

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<div>(3) Upon expiration of the temporary operation permit for testing purposes, the system shall be given a final inspection. If the system is not approved, a reinspection fee will be charged on all subsequent inspections until the system is approved as complying with the requirements of the code.</div>	<div>(3) Upon expiration of the temporary operation permit for testing purposes, the system shall be given a final inspection. If the system is not approved, a reinspection fee will be charged on all subsequent inspections until the system is approved as complying with the requirements of the code, or is uninstalled.</div>	
<div>118.2 Extension of Time. The time period permitted for operating the system for testing purposes only may be extended by the Authority Having Jurisdiction when necessary to complete the testing of the system in order to determine that it is operating safely. The extension of such time period shall be noted in writing on the permit, and the system shall still be subject to Section 118.1(3). For the temporary operation permit fee, see the city fee schedule.</div>	<div>109.2 Extension of Time. The time period permitted for operating the system for testing purposes only may be extended by the Authority Having Jurisdiction when necessary to complete the testing of the system to determine that it is operating safely. The extension of such time period shall be noted in writing on the permit, and the system shall still be subject to Section 109.1(3). For the temporary operation permit fee, see the city fee schedule.</div>	<div>City of Houston Amendment Analysis: Previous COH amendment relocated and brought forward from UMC 2012 Section 118.2 to UMC 2015 108.2. No changes to the code requirements or code intent. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.</div>
<div>Part IV-Boards and Licensing 120.0 Mechanical Code Review Board. 120.1 Creation of Board. There is hereby created a Mechanical Code Review Board, hereinafter called "the board," consisting of seven members. Each member of the board except the members in Position Nos. 1 and 2 shall be appointed by the Mayor and confirmed by the City Council. The Mayor shall designate a member to be chairman. The contractor members filling Position Nos. 5 and 6 shall have been actively engaged in the air conditioning business in the jurisdiction for at least five years prior to the date of their appointment. The positions on said board shall be filled as follows: Position No. 1 shall be filled by the Authority Having Jurisdiction. Position No. 2 shall be filled by the fire marshal of the jurisdiction. Positions No. 3 and 4 shall each be filled by a registered professional engineer licensed by the State of Texas who is actively engaged in mechanical engineering. Position No. 5 shall be filled by a duly licensed Class A air conditioning and refrigeration contractor licensed under the Texas Air Conditioning and Refrigeration Contractor License Law. Position No. 6 shall be filled by a duly licensed Class B air conditioning and refrigeration contractor licensed under the Texas Air Conditioning and Refrigeration Contractor License Law. Position No. 7 shall be filled by a representative of the public generally. The Authority Having Jurisdiction and the fire marshal each, from time to time, may designate in writing a person under their supervision to act in their place as their duly authorized representative. The 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 Authority Having Jurisdiction or of the fire marshal, shall be filed with the minutes of the board. The terms of office for the appointees to Position Nos. 3, 5, and 7 on the board will expire on the second day of January of odd-numbered years. The terms of office for the appointees to Position Nos. 4 and 6 will expire on the second day of January on</div>	<div>110.0 Mechanical Code Review Board. 110.1 Creation of Board. There is hereby created a Mechanical Code Review Board, hereinafter in this section called the "board," consisting of seven members. Each member of the board except the members in Position Nos. 1 and 2 shall be appointed by the mayor and confirmed by the city council. The mayor shall designate a member to be chairperson. The contractor members filling Position Nos. 5 and 6 shall have been actively engaged in the air-conditioning business in the jurisdiction for at least five years prior to the date of their appointment. The positions on said board shall be filled as follows: Position No. 1 shall be filled by the Authority Having Jurisdiction. Position No. 2 shall be filled by the fire marshal of the jurisdiction. Position No. 3 and 4 shall each be filled by a registered professional engineer licensed by the State of Texas who is actively engage in mechanical engineering. Position No. 5 shall be filled by a duly licensed Class A air-conditioning and refrigeration contractor licensed under the Texas Air Conditioning and Refrigeration Contractor License Law. Position No. 6 shall be filled by a duly licensed Class B air-conditioning and refrigeration contractor licensed under the Texas Air Conditioning and Refrigeration Contractor License Law. Position No. 7 shall be filled by a representative of the public generally. The Authority Having Jurisdiction and the fire marshal each, from time to time, may designate in writing a person under their supervision to act in their place as their duly authorized representative. The 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 Authority Having Jurisdiction or of the fire marshal, shall be filed with the minutes of the board. The terms of office for the appointees to Position Nos. 3, 5 and 7 on the board will expire on the second day of January of odd-numbered years. The terms of office for the appointees to Position Nos. 4 and 6 will expire on the second day of January of even-numbered years. However, each member shall continue in office until a successor has been appointed and qualified.</div>	<div>City of Houston Amendment Analysis: The provisions of this section were relocated from the UMC 2012 Section 120 to UMC 2015 Section 110. COH amendment brought forward from 2012 amendment Sections 120.0 & 120.1 with minor editorial changes by legal. No changes to the requirements or code intent. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.</div>

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<p>even numbered years. However, each member shall continue in office until a successor has been appointed and qualified.</p> <p>Those members of the board in Position Nos. 1 and 2 shall serve ex officio.</p> <p>The amendment of this code section shall not terminate the term of office of any person currently serving on the board. Any person who is currently serving on the board shall continue to serve in the position for which he was appointed and confirmed until a successor is appointed and qualified.</p> <p>In addition to other qualifications hereinabove required, each member of the board shall be a citizen of the United States. All appointed members of the board shall be selected on the basis of their technical and professional qualifications, except that the appointee to Position No. 7 is not required to have the technical and professional qualifications required for other members of the board. Each member of the board shall be subject to removal by the Mayor. Four members of the board at any meeting shall constitute a quorum for transaction of all business of the board. A majority vote of the members present at any meeting at which a quorum is present shall prevail.</p> <p>Whenever any 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, with the approval of the City Council, another qualified person to serve the unexpired term of the vacancy.</p> <p>The board shall hold regular annual meetings in Houston, Texas, the exact time and place to be designated by the chairman of the board, who is also authorized to call special meetings when deemed necessary. The Authority Having Jurisdiction, or a duly authorized representative, shall act as secretary of the board. Each member of the board shall receive \$50.00 for each meeting the member attends (not to exceed three meetings in a calendar month) at which a quorum is present, provided, however, each member of the board who is an employee of the jurisdiction will be paid only for those meetings they attend that are neither held during nor continue beyond his regular working hours.</p> <p>The secretary of the board shall keep the minutes of the board meetings and other business of the board, including correspondence received and sent by the board. The minutes of the board shall be public records available for inspection by the public at all reasonable times.</p>	<p>Those members of the board in Position Nos. 1 and 2 shall serve ex officio.</p> <p>The amendment of this code section shall not terminate the term of office of any person currently serving on the board. Any person who is currently serving on the board shall continue to serve in the position for which he was appointed and confirmed until a successor is appointed and qualified.</p> <p>In addition to other qualifications hereinabove required, each member of the board shall be a citizen of the United States. All appointed members of the board shall be selected on the basis of their technical and professional qualifications, except that the appointee to Position No. 7 is not required to have the technical and professional qualifications required for other members of the board. Each member of the board shall be subject to removal by the mayor. Four members of the board at any meeting shall constitute a quorum for transaction of all business of the board. A majority vote of the members present at any meeting at which a quorum is present shall prevail.</p> <p>Whenever any 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, with the approval of the city council, another qualified person to serve the unexpired term of the vacancy.</p> <p>The board shall hold regular annual meetings in Houston, Texas, the exact time and place to be designated by the chairperson of the board, who is also authorized to call special meetings when deemed necessary. The Authority Having Jurisdiction, or a duly authorized representative, shall act as secretary of the board. Each member of the board shall receive \$50.00 for each meeting the member attends (not to exceed three meetings in a calendar month) at which a quorum is present, provided, however, each member of the board who is an employee of the jurisdiction will be paid only for those meetings the member attends that are neither held during nor continue beyond the member's regular working hours.</p> <p>The secretary of the board shall keep the minutes of the board meetings and other business of the board, including correspondence received and sent by the board. The minutes of the board shall be public records available for inspection by the public at all reasonable times.</p>	
<p>120.2 Duties. The board shall serve as the Board of Appeals for matters relating to the provisions of this code and shall serve in an advisory capacity to the Authority Having Jurisdiction in technical matters pertaining to provisions of this code. In addition, the board is hereby authorized to perform such other duties as specified in this division and to make recommendations to City Council regarding the provisions of this code pertaining to or affecting air conditioning, ventilation, or refrigeration.</p> <p>Exception: As provided by Section 121 of this code, matters within the jurisdiction of the Boiler Code Review and Licensing Board shall be heard by that board.</p>	<p>110.2 Duties. The board shall serve as the Board of Appeals for matters relating to the provisions of this code and shall serve in an advisory capacity to the Authority Having Jurisdiction in technical matters pertaining to provisions of this code. In addition, the board is hereby authorized to perform such other duties as specified in this division and to make recommendations to city council regarding the provisions of this code pertaining to or affecting air-conditioning, ventilation, or refrigeration.</p> <p>Exception: As provided by Section 111 of this code, matters within the jurisdiction of the Boiler Code Review and Licensing Board shall be heard by that board.</p>	<p>City of Houston Amendment</p> <p>Analysis: Previous COH amendment relocated and brought forward from UMC 2012 Section 120.2 to UMC 2015 Section 110.2. No changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>121.3 Restriction on Participation in Certain Matters. No board member shall vote on any matter or participate as a board member in the discussion of any matter in which the member has a personal or financial interest other than as a member of a class or group, of which each member will be affected substantially to the same extent by the board's action or decision in the matter as will the other members of the</p>	<p>110.3 Restriction on Participation in Certain Matters. No board member shall vote on any matter or participate as a board member in the discussion of any matter in which the member has a personal or financial interest other than as a member of a class or group, of which each member will be affected substantially to the same extent by the board's action or decision in the matter as will the other members of the class or group.</p>	<p>City of Houston Amendment</p> <p>Analysis: Previous COH amendment relocated and brought forward from UMC 2012 Section 121.3 to UMC 2015 Section 110.3. No changes to the code requirements or code intent.</p>

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<div><div>COLOR CODE INDEX:</div><div><div>Turquoise</div>= NEW or Modified Text by IAPMO in 2015</div><div><div>Text Underlined</div>= COH Amendment added (NEW)</div><div><div>Grey Text</div>= Previous COH Amendment Brought Forward to 2015</div><div><div>Yellow Strikethrough</div>= Text Deleted from the Code by COH</div><div><div>Green Text</div>= NEW or Modified Text by COH in 2015</div></div>		
class or group. (For restrictions on jurisdiction officials, see Chapter 171 of the Local Government Code.)	(For restrictions on jurisdiction officials, see Chapter 171 of the <i>Texas Local Government Code</i> .)	Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.
120.3 Approval of New Materials. A person, firm, or corporation (hereinafter called "person") desiring approval of any material, device, fixture, method of assemblage, installation, appurtenance, or appliance that is a part of or pertains to heating, air conditioning, ventilation, refrigeration or heat-producing appliances or systems (hereinafter individually and collectively referred to as "item") may submit the item to the Authority Having Jurisdiction for approval along with a written application containing such information as the Authority Having Jurisdiction may require for determination of approval under Section 103. If the Authority Having Jurisdiction denies a request for an approval, the person who made the request may appeal that decision by delivering a written notice of appeal to the secretary of the board within 10 days of the date that the notice of the decision of the Authority Having Jurisdiction was either hand delivered or mailed to such person. Upon receipt of the notice of appeal, the board shall set the matter for hearing. The board may request any additional tests be conducted that it finds are necessary to determine whether the decision of the Authority Having Jurisdiction should be upheld or overturned. All such tests shall be at the expense of the person requesting the approval. The burden shall be on that person to show that the decision of the Authority Having Jurisdiction should be overturned. The decision of the board upholding or overturning the decision of the Authority Having Jurisdiction shall be set out in the minutes of the board. If the board overturns the decision of the Authority Having Jurisdiction, it shall set forth in its minutes any conditions or limitations to which the approval is made subject.	110.4 Approval of New Materials. A person, firm, or corporation (hereinafter called "person") desiring approval of any material, device, fixture, method of assemblage, installation, appurtenance, or appliance that is a part of or pertains to heating, air-conditioning, ventilation, refrigeration or heat-producing appliances or systems (hereinafter individually and collectively referred to as "item") may submit the item to the Authority Having Jurisdiction for approval along with a written application containing such information as the Authority Having Jurisdiction may require for determination of approval under Section 302.2 . If the Authority Having Jurisdiction denies a request for an approval, the person who made the request may appeal that decision by delivering a written notice of appeal to the secretary of the board within 10 days of receipt of the notice of the decision of the Authority Having Jurisdiction. Upon receipt of the notice of appeal, the board shall set the matter for hearing. The board may request any additional tests be conducted that it finds are necessary to determine whether the decision of the Authority Having Jurisdiction should be upheld or overturned. All such tests shall be at the expense of the person requesting the approval. The burden shall be on that person to show that the decision of the Authority Having Jurisdiction should be overturned. The decision of the board upholding or overturning the decision of the Authority Having Jurisdiction shall be set out in the minutes of the board. If the board overturns the decision of the Authority Having Jurisdiction, it shall set forth in its minutes any conditions or limitations to which the approval is made subject.	City of Houston Amendment Analysis: Previous COH amendment relocated and brought forward from UMC 2012 Section 120.3 to UMC 2015 Section 110.4. Minor changes to the COH amendment to correlate with new referenced sections with no changes to the code requirements or code intent. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.
120.4 Appeals. Any owner, user, license applicant, license holder, or interested person who is affected and aggrieved by a decision of the board may appeal the board's decision to the City Council, pursuant to Rule 12 of Section 2-2 of the <i>City Code</i> . Upon appeal to the City Council from the board's decision, the board's secretary shall file with the City Secretary a copy of the minutes of the board setting forth the board's decision and a copy of any minutes of the board reflecting any discussion or motions concerning the matter. Upon receipt of all materials required by the City Secretary's Office, the City Secretary shall set the matter for consideration. All appeals to the City Council are subject to Rule 12 of Section 2-2 of the <i>City Code</i> . All orders or decisions of the Authority Having Jurisdiction shall be in writing and shall be and remain in full force and effect until reversed by the board, the City Council, or suspended, cancelled or annulled. The decision of the City Council shall be final.	110.5 Appeals. Any owner, user, license applicant, license holder, or interested person who is affected and aggrieved by a decision of the board may appeal the board's decision to the city council, pursuant to Rule 12 of Section 2-2 of the <i>City Code</i> . Upon appeal to the city council from the board's decision, the board's secretary shall file with the city secretary a copy of the minutes of the board setting forth the board's decision and a copy of any minutes of the board reflecting any discussion or motions concerning the matter. Upon receipt of all materials required by the city secretary's Office, the city secretary shall set the matter for consideration. All orders or decisions of the Authority Having Jurisdiction shall be in writing and shall be and remain in full force and effect until reversed, suspended, cancelled or annulled by the board or the city council. The decision of the city council shall be final.	City of Houston Amendment Analysis: Previous COH amendment relocated from UMC 2012 Section 120.4 to UMC 2015 Section 110.5. The COH amendment is brought forward with no changes to the code requirements or code intenet. Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.
120.5 License Required. Except as otherwise provided therein, a person who does not hold a current, valid and applicable license as required by the Texas Air Conditioning and Refrigeration Contractor License Law shall not install, alter or repair any heating, ventilating, air conditioning or refrigeration system, or any part thereof, or obtain any permit to do so.	110.6 License Required. Except as otherwise provided herein, a person who does not hold a current and applicable license as required by the Texas Air Conditioning and Refrigeration Contractor License Law shall not install, alter or repair any heating, ventilating, air-conditioning or refrigeration system, or any part thereof, or obtain any permit to do so.	City of Houston Amendment Analysis: COH amendment. Amendment brought forward from 2012 amendment Section 120.5.

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<div><div>Note:</div><div>The Texas Air Conditioning and Refrigeration Contractor Licensing Law, which is codified as Chapter 1302 of the Texas Occupations Code, includes certain exemptions from the requirement of obtaining a state license, which will be honored by this jurisdiction. These exemptions include: work performed by homeowners on their own homes, certain maintenance work by employees of the property owner or management company, certain work performed by employees of regulated electric and gas utility companies, and certain work performed by licensed professional engineers in connection with their business operations.</div></div>	<div><div>Note:</div><div>The Texas Air Conditioning and Refrigeration Contractor Licensing Law, which is codified as Chapter 1302 of the <u>Texas Occupations Code</u>, includes certain exemptions from the requirement of obtaining a state license, which will be honored by this jurisdiction. These exemptions include: work performed by homeowners on their own homes, certain maintenance work by employees of the property owner or management company, certain work performed by employees of regulated electric and gas utility companies, and certain work performed by licensed professional engineers in connection with their business operations.</div></div>	<div><div>Justification:</div><div>Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div>
<div><div>120.6 State License Notification Requirement.</div><div>Each person licensed under the Texas Air Conditioning and Refrigeration Contractor License Law shall notify and register his notification with the Authority Having Jurisdiction in a form and manner prescribed by the Authority Having Jurisdiction prior to performing any work pertaining to that license within the jurisdiction. The notification shall be duly registered and maintained on file within the jurisdiction offices of the Mechanical Inspections Section, Code Enforcement Branch, Department of Public Works and Engineering. The fee for initial notification registration shall be stated for this provision in the city fee schedule. A notification registration maintenance fee stated for this provision in the city fee schedule shall be paid annually thereafter as long as the notification registration is renewed. Each notification registration shall expire on December 31 of each year. Additionally, a notification registration shall expire upon the registrant's failure to provide proof of current insurance coverage or proof of license renewal.</div></div>	<div><div>110.7 State License Notification Requirement.</div><div>Each person licensed under the Texas Air Conditioning and Refrigeration Contractor License Law shall notify and register his notification with the Authority Having Jurisdiction in a form and manner prescribed by the Authority Having Jurisdiction prior to performing any work pertaining to that license within the jurisdiction. The notification shall be registered and maintained on file within the jurisdiction offices of the Mechanical Inspections Section, Code Enforcement Branch, <u>Houston</u> Public Works. <u>The fee for initial notification registration shall be stated for this provision in the city fee schedule. A notification registration maintenance fee stated for this provision in the city fee schedule shall be paid annually thereafter as long as the notification registration is renewed.</u> Each notification registration shall expire on December 31 of each year. Additionally, a notification registration shall expire upon the registrant's failure to provide proof of current insurance coverage or proof of license renewal.</div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>COH amendment brought forward from UMC 2012 Section 120.6 with minor modifications to correct the department name and to delete unnecessary text.</div><div><div>Justification:</div><div>Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div></div></div>
<div><div>120.7 Liability Insurance.</div><div>Each person who is required to register shall, upon registration and continuously thereafter for as long as the registration is renewed, maintain proof of current liability insurance coverage in the amount and form specified in applicable state laws and regulations. The proof shall be in the form of a copy of the certificate furnished to the state and evidence that the carrier of the insurance will provide 10 days' notice to the Authority Having Jurisdiction in the event that the policy is reduced or terminated prior to the expiration date specified on the certificate.</div></div>	<div><div>110.8 Liability Insurance.</div><div>Each person who is required to register shall, upon registration and continuously thereafter for as long as the registration is renewed, maintain proof of current liability insurance coverage in the amount and form specified in applicable state laws and regulations. The proof shall be in the form of a copy of the certificate furnished to the state and evidence that the carrier of the insurance will provide 10 days' notice to the Authority Having Jurisdiction in the event that the policy is reduced or terminated prior to the expiration date specified on the certificate.</div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>COH amendment brought forward from UMC 2012 Section 120.7 to UMC 2015 Section 110.8. No Change to code requirements or code intent.</div><div><div>Justification:</div><div>Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div></div></div>
<div><div>120.8 Violations.</div><div>It shall be unlawful for any person, partnership, firm or corporation who is not licensed under the Texas Air Conditioning and Refrigeration Contractor License Law to display a sign or advertise in any other manner that such person, partnership, firm or corporation is authorized to engage in business as an air conditioning and refrigeration contractor.</div><div>It shall be unlawful for a licensed air conditioning and refrigeration contractor to:</div><div><div>(1)</div><div>Permit a license to be used in any manner contrary to any of the provisions of this code;</div></div><div><div>(2)</div><div>Obtain a permit required under this code in another person's name or allow the use of his name by another person for the purpose of obtaining a permit when the licensed air conditioning and refrigeration contractor does not intend to or does not, in fact, do or supervise the work authorized by the permit; or</div></div><div><div>(3)</div><div>Take out permits for air conditioning work to be done by a person, firm, partnership or corporation other than the person, firm, partnership, or corporation by whom the permittee is employed.</div></div></div>	<div><div>110.9 Violations.</div><div>It shall be unlawful for any person, partnership, firm or corporation who is not licensed under the Texas Air Conditioning and Refrigeration Contractor License Law to display a sign or advertise in any other manner that such person, partnership, firm or corporation is authorized to engage in business as an air-conditioning and refrigeration contractor.</div><div>It shall be unlawful for a licensed air-conditioning and refrigeration contractor to:</div><div><div>(1)</div><div>Permit a license to be used in any manner contrary to any of the provisions of this code;</div></div><div><div>(2)</div><div>Obtain a permit required under this code in another person's name or allow the use of his name by another person for the purpose of obtaining a permit when the licensed air-conditioning and refrigeration contractor does not intend to or does not, in fact, do or supervise the work authorized by the permit; or,</div></div><div><div>(3)</div><div>Take out permits for air-conditioning work to be done by a person, partnership, firm or corporation other than the person, firm, partnership, or corporation by whom the permittee is employed.</div></div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>COH amendment brought forward from UMC 2012 Section 120.8 to UMC 2015 Section 110.9. No Change to code requirements or code intent.</div><div><div>Justification:</div><div>Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div></div></div>

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<p><u>Licensed air conditioning and refrigeration contractors shall not be simultaneously employed by, or work for, more than one business entity for the purpose of obtaining permits under this code or for the purpose of doing or supervising work that can be done only by authority of a permit obtained under the provisions of this code.</u></p>	<p><u>Licensed air-conditioning and refrigeration contractors shall not be simultaneously employed by, or work for, more than one business entity for the purpose of obtaining permits under this code or for the purpose of doing or supervising work that can be done only by authority of a permit obtained under the provisions of this code.</u></p>	
<p>120.9 Identification of Vehicles and Sites. <u>Each vehicle used in conjunction with air conditioning and refrigeration contracting shall be marked as required by Title 16 Texas Administration Code Section 75.70(i), which provides that "each licensee and air conditioning and refrigeration contracting company shall display the license number and company name in letters not less than two inches high on both sides of all vehicles used in conjunction with air conditioning and refrigeration contracting. When an unlicensed subcontractor is at a job site not identified by a marked vehicle, the site shall be identified either by a temporary sign on the subcontractor's vehicle or on a sign visible and readable from the nearest public street containing the contractor's license number and company name.</u></p>	<p>110.10 Identification of Vehicles and Sites. <u>Each vehicle used in conjunction with air-conditioning and refrigeration contracting shall be marked as required by Title 16 Texas Administration Code Section 75.71(d). When an unlicensed subcontractor is at a job site not identified by a marked vehicle, the site shall be identified either by a temporary sign on the subcontractor's vehicle or on a sign visible and readable from the nearest public street containing the contractor's license number and company name.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 120.9 to UMC 2015 Section 110.10. No Change to code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>120.10 Contractor Records. <u>Each time that a licensed air conditioning and refrigeration contractor or any employee thereof does any installation, replacement, or repair of any type on any air conditioning, refrigeration, ventilation or heating system, or combination of such systems, the contractor shall make a record of the work. The records shall be readily made available upon request for inspection and copying by the Authority Having Jurisdiction and must be held on file for at least two years. Before leaving the premises where the work is performed, the contractor shall deliver one copy of the record to the owner or the owner's representative. These records shall contain the following information:</u></p> <div><div>(1) <u>Name and address of licensed contractor.</u></div><div>(2) <u>License number of licensed contractor.</u></div><div>(3) <u>Name of owner.</u></div><div>(4) <u>Date.</u></div><div>(5) <u>General nature of work performed.</u></div><div>(6) <u>Any other information required by applicable provisions of the Texas Air Conditioning and Refrigeration Contractor License Law and regulations issued thereunder.</u></div></div>	<p>110.11 Contractor Records. <u>Each time that a licensed air-conditioning and refrigeration contractor or any employee thereof does any installation, replacement, or repair of any type on any air-conditioning, refrigeration, ventilation or heating system, or combination of such systems, the contractor shall make a record of the work. The contractor shall readily make available the records, upon request, for inspection and copying by the Authority Having Jurisdiction and the contractor must hold the records on file for at least two years. Before leaving the premises where the work is performed, the contractor shall deliver one copy of the record to the owner or the owner's representative. These records shall contain the following information:</u></p> <div><div>(1) <u>Name and address of licensed contractor.</u></div><div>(2) <u>License number of licensed contractor.</u></div><div>(3) <u>Name of owner.</u></div><div>(4) <u>Date.</u></div><div>(5) <u>General nature of work performed.</u></div><div>(6) <u>Any other information required by applicable provisions of the Texas Air Conditioning and Refrigeration Contractor License Law and regulations issued thereunder.</u></div></div>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment. Amendment brought forward from 2012 amendment Section 120.10.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>121.0 Boiler Code Review and Licensing Board.</p> <p>121.1 Creation and Composition. <u>There is hereby created a Boiler Code Review and Licensing Board consisting of five members, which is herein referred to as the "board." The members in Position Nos. 1 through 4 of the board shall be appointed by the Mayor and confirmed by the City Council. The Mayor shall designate a member to be chairman. Each of the five positions shall be filled as follows:</u></p> <div><div>Position No. 1 <u>shall be filled by a registered professional engineer licensed by the State of Texas who is actively engaged in the design of mechanical systems using boilers as a source of heat energy.</u></div><div>Position No. 2 <u>shall be filled by an owner, partner, officer, or manager of a firm that is actively engaged in the manufacture, sale, repair or installation (or combination thereof) of boilers.</u></div><div>Position No. 3 <u>shall be filled by a licensed stationary engineer who has held a first grade license issued by the jurisdiction for not less than 10 years.</u></div></div>	<p>111.0 Boiler Code Review and Licensing Board.</p> <p>111.1 Creation and Composition. <u>There is hereby created a Boiler Code Review and Licensing Board consisting of five members, hereinafter in this section called the "board." The members in Position Nos. 1 through 4 of the board shall be appointed by the mayor and confirmed by the city council. The mayor shall designate a member to be chairperson. Each of the five positions shall be filled as follows:</u></p> <div><div>Position No. 1 <u>shall be filled by a registered professional engineer licensed by the State of Texas who is actively engaged in the design of mechanical systems using boilers as a source of heat energy.</u></div><div>Position No. 2 <u>shall be filled by an owner, partner, officer, or manager of a firm that is actively engaged in the manufacture, sale, repair or installation (or combination thereof) of boilers.</u></div><div>Position No. 3 <u>shall be filled by a licensed stationary engineer who has held a first-grade license issued by the jurisdiction for not less than 10 years.</u></div></div>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.0 and 121.1 to UMC 2015 Section 111.0 and 111.1 with one minor edit by legal. No change to the previous code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<p>Position No. 4 shall be filled by a person who is an owner, partner, officer, or manager of a firm that is the user of a boiler.</p> <p>Position No. 5 shall be filled by the Authority Having Jurisdiction.</p> <p>The Authority Having Jurisdiction, from time to time, may designate in writing a member of the jurisdiction's Boiler Inspection Section to act in his place as a duly authorized representative. The representative shall enjoy all rights and privileges of the position. A copy of the designation, specifying the dates such a person shall act as representative of the Authority Having Jurisdiction, shall be filed with the minutes of the board.</p>	<p>Position No. 4 shall be filled by a person who is an owner, partner, officer, or manager of a firm that is the user of a boiler.</p> <p>Position No. 5 shall be filled by the Authority Having Jurisdiction.</p> <p>The Authority Having Jurisdiction, from time to time, may designate in writing a member of the jurisdiction's Boiler Inspection Section to act in his place as a duly authorized representative. The representative shall enjoy all rights and privileges of the position. A copy of the designation, specifying the dates such a person shall act as representative of the Authority Having Jurisdiction, shall be filed with the minutes of the board.</p>	
<p>121.2 Appointments, Removals, etc. The terms of office for the appointees to Position Nos. 1 and 3 shall expire on the second day of January of odd-numbered years, and the terms of the appointees to Position Nos. 2 and 4 shall expire on the second day of January of even-numbered years. However, each member shall continue in office until a successor is appointed and qualified. The amendment of this code section shall not terminate the term of office of any person currently serving in any position of the board. Any appointed member who is currently serving on the board shall continue to serve in the position to which he was appointed and confirmed until a successor is appointed and confirmed by City Council under this code. Each appointed member of the board shall be subject to removal at any time by the Mayor. Each member of the board shall receive \$50.00 for services for each meeting of the board the member attends at which a quorum is present, provided, however, each member of the board who is an employee of the jurisdiction shall be paid only for those meetings that are neither held during nor continue beyond his regular working hours.</p> <p>Three members of the board present at any meeting shall constitute a quorum for the transaction of all business of the board. A majority vote of board members present at any meeting at which a quorum is present shall prevail.</p> <p>The board shall meet regularly twice each month. The chairman shall have the power to call a special session of the board when deemed necessary, but no more than three meetings may be held in any month. In the absence of the chairman at any meeting, the board members present may select a temporary chairman for that meeting.</p>	<p>111.2 Appointments, Removals, Etc. The terms of office for the appointees to Position Nos. 1 and 3 shall expire on the second day of January of odd-numbered years, and the terms of the appointees to Position Nos. 2 and 4 shall expire on the second day of January of even-numbered years. However, each member shall continue in office until a successor is appointed and qualified. The amendment of this code section shall not terminate the term of office of any person currently serving in any position of the board. Any appointed member who is currently serving on the board shall continue to serve in the position to which he was appointed and confirmed until a successor is appointed and confirmed by city council under this code. Each appointed member of the board shall be subject to removal at any time by the mayor. Each member of the board shall receive \$50.00 for services for each meeting of the board the member attends at which a quorum is present, provided, however, each member of the board who is an employee of the jurisdiction shall be paid only for those meetings that are not held during the board member's regular working hours.</p> <p>Three members of the board present at any meeting shall constitute a quorum for the transaction of all business of the board. A majority vote of board members present at any meeting at which a quorum is present shall prevail.</p> <p>The board shall meet twice each month. The chairperson shall have the power to call a special session of the board when deemed necessary, but no more than three meetings may be held in any month. In the absence of the chairperson at any meeting, the board members present may, by majority vote, select a temporary chairperson for that meeting.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.2 to UMC 2015 Section 111.2 with minor editorial changes. No change to previous code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>Modified during review process 10.12.21.</p>
<p>121.3 Restriction on Participation in Certain Matters. No board member shall vote on any matter or participate as a board member in the discussion of any matter in which the member has a personal or financial interest other than as a member of a class or group, of which each member will be affected substantially to the same extent by the board's action or decision in the matter as will the other members of the class or group. (For restrictions on jurisdiction officials, see Chapter 171 of the Local Government Code.)</p>	<p>111.3 Restriction on Participation in Certain Matters. No board member shall vote on any matter or participate as a board member in the discussion of any matter in which the member has a personal or financial interest other than as a member of a class or group, of which each member will be affected substantially to the same extent by the board's action or decision in the matter as will the other members of the class or group. (For restrictions on jurisdiction officials, see Chapter 171 of the <i>Texas Local Government Code</i>.)</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.3 to UMC 2015 Section 111.3. No changes to the previous code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>121.4 Records. The board shall keep or cause to be kept a written record of its meetings. The records shall be open to inspection by the public at all reasonable times.</p>	<p>111.4 Records. The board shall keep or cause to be kept a written record of its meetings. The records shall be open to inspection by the public at all reasonable times.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.4 to UMC 2015 Section 111.4. No changes to the previous code requirements or code intent.</p>

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		<p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>121.5 Authority Having Jurisdiction. The Authority Having Jurisdiction is hereby charged with determining compliance with the provisions of this code. The Authority Having Jurisdiction shall prepare and maintain a record of all persons qualified to install and operate boilers under the provisions of this code. The Authority Having Jurisdiction or duly appointed representative shall act as secretary to the board at all meetings.</p>	<p>111.5 Authority Having Jurisdiction. The Authority Having Jurisdiction is hereby charged with determining compliance with the provisions of this code. The Authority Having Jurisdiction shall prepare and maintain a record of all persons qualified to install and operate boilers under the provisions of this code. The Authority Having Jurisdiction or duly appointed representative shall act as secretary to the board at all meetings.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.5 to UMC 2015 Section 111.5. No changes to the previous code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>121.6 Examinations. The board shall develop and administer examinations for stationary engineer's licenses. The examinations shall determine the applicants' capacity and ability to understand and safely operate boilers, steam equipment and the various auxiliary machinery, appliances and appurtenances in conjunction with the operation of such boilers and steam equipment. The board shall perform such other duties as may be required of it by the governing body and Mayor of the jurisdiction. The board shall adopt rules and regulations which, insofar as they relate to boilers, shall conform to the ASME Code and shall not be inconsistent with the terms and provisions of this code.</p>	<p>111.6 Examinations. The board shall develop and administer examinations for stationary engineer's licenses. The examinations shall determine the applicant's capacity and ability to understand and safely operate boilers, steam equipment and the various auxiliary machinery, appliances and appurtenances in conjunction with the operation of such boilers and steam equipment. The board shall perform such other duties as may be required of it by the governing body and mayor of the jurisdiction. The board shall adopt rules and regulations which, insofar as they relate to boilers, shall conform to the ASME Code and shall not be inconsistent with the terms and provisions of this code.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.6 to UMC 2015 Section 111.6. No changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>121.7 Review and Action of the Boiler Board. Disputes arising between inspectors and any person or persons concerning the application of the provisions of this code to the installation of boiler facilities serving the property of such person or persons may be submitted to the Authority Having Jurisdiction. An interested party (other than an inspector) who is dissatisfied with the decision of the Authority Having Jurisdiction in the matter may appeal that decision to the board. Upon such an appeal, each party to the dispute shall be entitled to present his side of the matter to the board, and the board shall render its decision on the matter based on the information presented by both sides and the board's interpretation of applicable provisions of this code.</p> <p>The board shall have the power by a majority vote to revoke or cancel a stationary engineer's license, operator's license, or operator's permit for dishonesty, incompetency, or misconduct by the license or permit holder while discharging his duties or for neglect of his duties.</p> <p>No license or permit shall be permanently revoked or canceled without first giving the license or permit holder an opportunity to be heard by the board. The Authority Having Jurisdiction shall provide notice of a right to a hearing on the matter pursuant to Section 106.10.</p> <p>The Authority Having Jurisdiction of the jurisdiction shall have the authority to suspend for just cause a stationary engineer's license, operator's license, or operator's permit. The holder of a suspended license or permit shall not engage in activities authorized by the license or permit while such license or permit is suspended, but shall be given an opportunity to be heard by the board within five working days after delivering to the Authority Having Jurisdiction a written request for a hearing.</p>	<p>111.7 Review and Action of the Boiler Board. Disputes arising between inspectors and any person or persons concerning the application of the provisions of this code to the installation of boiler facilities serving the property of such person or persons may be submitted to the Authority Having Jurisdiction. An interested party (other than an inspector) who is dissatisfied with the decision of the Authority Having Jurisdiction in the matter may appeal that decision to the board. Upon such an appeal, each party to the dispute shall be entitled to present its side of the matter to the board, and the board shall render its decision on the matter based on the information presented by both sides and the board's interpretation of applicable provisions of this code.</p> <p>The board shall have the power, by a majority vote, to revoke or cancel a stationary engineer's license, operator's license, or operator's permit for dishonesty, incompetency, or misconduct by the license or permit holder while discharging his duties or for neglect of his duties.</p> <p>No license or permit shall be permanently revoked or canceled without first giving the license or permit holder an opportunity to be heard by the board. The Authority Having Jurisdiction shall provide notice of a right to a hearing on the matter pursuant to Section 103.5.</p> <p>The Authority Having Jurisdiction shall have the authority to suspend for just cause a stationary engineer's license, operator's license, or operator's permit. The holder of a suspended license or permit shall not engage in activities authorized by the license or permit while such license or permit is suspended but shall be given an opportunity to be heard by the board within five working days after delivering to the Authority Having Jurisdiction a written request for a hearing.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 121.7 to UMC 2015 Section 111.7. No changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<div><div>121.8 Review of New Materials, Methods and Revisions to the Code.</div><div>Any person, firm, or corporation whose boiler products are not specifically approved by this code may file a petition in writing for approval thereof. The petition shall be delivered to the Authority Having Jurisdiction, who shall determine whether the material or method should be approved pursuant to Section 103 of this code. If the Authority Having Jurisdiction denies approval of the material or method, the person who made the request may appeal that decision by delivering a written notice of appeal to the secretary of the board within 10 days of the date that the notice of the decision of the Authority Having Jurisdiction was either hand delivered or mailed to such person. Upon receipt of the notice of appeal, the board shall set the matter for hearing. The board may request any additional tests be conducted that it finds are necessary to determine whether the decision of the Authority Having Jurisdiction should be upheld or overturned. All such tests shall be at the expense of the person requesting the approval. The burden shall be on that person to show that the decision of the Administrative Authority Having Jurisdiction should be overturned.</div><div>The decision of the board upholding or overturning the decision of the Authority Having Jurisdiction shall be set out in the minutes of the board. If the board overturns the decision of the Authority Having Jurisdiction, it shall set forth in its minutes any conditions or limitations to which the approval is made subject.</div><div>The board shall receive requests for revisions to those provisions of this code that affect matters relating to boilers, and it shall be the duty of the board to recommend to the City Council any changes to this code that the board deems necessary. The board shall make a report to the City Council annually stating its recommended changes.</div></div>	<div><div>111.8 Review of New Materials, Methods and Revisions to the Code.</div><div>Any person whose boiler products are not approved under this code may file a petition in writing for approval thereof. The petition shall be delivered to the Authority Having Jurisdiction, who shall determine whether the material or method should be approved pursuant to Section 302.2 of this code. If the Authority Having Jurisdiction denies approval of the material or method, the person who made the request may appeal that decision by delivering a written notice of appeal to the secretary of the board within 10 days of receipt of the notice of the decision of the Authority Having Jurisdiction. Upon receipt of the notice of appeal, the board shall set the matter for hearing. The board may request any additional tests be conducted that it finds are necessary to determine whether the decision of the Authority Having Jurisdiction should be upheld or overturned. All such tests shall be at the expense of the person requesting the approval. The burden shall be on that person to show that the decision of the Authority Having Jurisdiction should be overturned.</div><div>The decision of the board upholding or overturning the decision of the Authority Having Jurisdiction shall be set out in the minutes of the board. If the board overturns the decision of the Authority Having Jurisdiction, it shall set forth in its minutes any conditions or limitations to which the approval is made subject.</div><div>The board shall receive requests for revisions to those provisions of this code that affect matters relating to boilers, and it shall be the duty of the board to recommend to the city council any changes to this code that the board deems necessary. The board shall make a report to the city council annually stating its recommended changes.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: COH amendment brought forward from UMC 2012 Section 121.8 to UMC 2015 Section 111.8. No changes to the code requirements or code intent.</div><div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div>
<div><div>121.9 Appeals.</div><div>Any owner, user, license applicant, license holder, or interested person who is affected and aggrieved by a decision of the board may appeal the board's decision to the City Council, pursuant to Rule 12 of Section 2-2 of the City Code.</div><div>Upon appeal to the City Council from the board's decision, the board's secretary shall file with the City Secretary a copy of the minutes of the board setting forth the board's decision and a copy of any minutes of the board reflecting any discussion or motions concerning the matter. Upon receipt of all materials required by the City Secretary's Office, the City Secretary shall set the matter for consideration. All appeals to the City Council are subject to Rule 12 of Section 2-2 of the City Code.</div><div>All orders or decisions of the Authority Having Jurisdiction shall be in writing and shall be and remain in full force and effect until reversed by the board, the City Council, or suspended, cancelled or annulled.</div><div>The decision of the City Council shall be final.</div></div>	<div><div>111.9 Appeals.</div><div>Any owner, user, license applicant, license holder, or interested person who is affected and aggrieved by a decision of the board may appeal the board's decision to the city council, pursuant to Rule 12 of Section 2-2 of the City Code.</div><div>Upon appeal to the city council from the board's decision, the board's secretary shall file with the city secretary a copy of the minutes of the board setting forth the board's decision and a copy of any minutes of the board reflecting any discussion or motions concerning the matter. Upon receipt of all materials required by the city secretary's Office, the city secretary shall set the matter for consideration.</div><div>All orders or decisions of the Authority Having Jurisdiction shall be in writing and shall be and remain in full force and effect until reversed by the board or the city council or suspended, cancelled or annulled.</div><div>The decision of the city council shall be final.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: COH amendment brought forward from UMC 2012 Section 121.9 to UMC 2015 Section 111.9. No changes to the code requirements or code intent.</div><div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div>
<div><div>122.0 Stationary Engineer's License.</div><div>122.1 License.</div><div>Persons who desire to secure a stationary engineer's license shall apply to the board and pay to the Authority Having Jurisdiction the applicable fee stated in the city fee schedule.</div><div>Licenses shall be granted in three grades:</div><div>(1) A first-grade stationary engineer's license authorizes the licensee to have direct charge of, operate or supervise any power boiler of any size.</div></div>	<div><div>112.0 Stationary Engineer's License.</div><div>112.1 License.</div><div>Persons who desire to secure a stationary engineer's license shall apply to the board and pay to the Authority Having Jurisdiction the applicable fee stated in the city fee schedule.</div><div>Licenses shall be granted in three grades:</div><div>(1) A first-grade stationary engineer's license authorizes the licensee to have direct charge of, operate or supervise any power boiler of any size.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: COH amendment brought forward from UMC 2012 Sections 122.0 and 122.1 to UMC 2015 Section 112.0 and 112.1. No changes to the Code requirements or code intent..</div><div>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</div><div>COH amendment modified during review process 10.12.21.</div></div>

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<p>(2) A second-grade stationary engineer's license authorizes the licensee to have direct charge of, operate, and supervise any power boiler having an aggregate amount of heat output not to exceed 8,380,000 Btu per hour and to act as assistant or watch engineer under the charge and supervision of the holder of a first-grade stationary engineer's license of any power boiler.</p> <p>(3) A third-grade stationary engineer's license authorizes the licensee to have direct charge of, operate, or supervise any power boiler having an aggregate amount of heat output not to exceed 3,352,000 Btu per hour and to act as assistant or watch engineer under the charge and supervision of the holder of a first or second-grade stationary engineer's license of any power boiler having an aggregate amount of heat output not to exceed 8,380,000 Btu per hour.</p>		<p>(2) <u>A second-grade stationary engineer's license authorizes the licensee to have direct charge of, operate, and supervise any power boiler having an aggregate amount of heat output not to exceed 8,380,000 Btu per hour and to act as assistant or watch engineer under the charge and supervision of the holder of a first-grade stationary engineer's license of any power boiler.</u></p> <p>(3) <u>A third-grade stationary engineer's license authorizes the licensee to have direct charge of, operate, or supervise any power boiler having an aggregate amount of heat output not to exceed 3,352,000 Btu per hour and to act as assistant or watch engineer under the charge and supervision of the holder of a first- or second-grade stationary engineer's license of any power boiler having an aggregate amount of heat output not to exceed 8,380,000 Btu per hour.</u></p>		
<p>122.2 Stationary Engineer Examination Application. An applicant for a first-grade stationary engineer's license shall present to the board service letters showing that he has either the following specified experience or combination of experience and education: (i) at least four years of hands-on boiler operating experience on boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; (ii) a graduation certificate from an accredited engineering school and at least two years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; or (iii) a United States Department of Labor diploma showing the applicant finished a full three-year course as an apprentice stationary engineer and two years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat.</p> <p>An applicant for a second-grade stationary engineer's license shall present to the board service letters showing that he has: (i) at least three years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; or (ii) a graduation certificate from an accredited engineering school and at least one year of hands-on boiler operating experience on boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat.</p> <p>An applicant for a third-grade stationary engineer's license shall present to the board service letters showing that he has: (i) at least two years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; or (ii) a graduation certificate from an accredited engineering school and at least six months of hands-on boiler operating experience on boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat.</p> <p>No person may take an examination for a stationary engineer's license unless he has submitted the service letters, certificates, and/or diplomas to the board as required by this section and the submitted documents have been accepted by the board.</p> <p>Applicants will be required to correctly answer at least 70 percent of the questions comprising the examination in order to qualify for a stationary engineer's license of any grade. All questions and answers will be written in the English language.</p>		<p>112.2 Stationary Engineer Examination Application. <u>An applicant for a first-grade stationary engineer's license shall present to the board service letters showing that he has: (i) at least four years of hands-on boiler operating experience on boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; (ii) a graduation certificate from an accredited engineering school and at least two years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; or (iii) a United States Department of Labor diploma showing the applicant finished a full three-year course as an apprentice stationary engineer and two years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat.</u></p> <p><u>An applicant for a second-grade stationary engineer's license shall present to the board service letters showing that he has: (i) at least three years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; or (ii) a graduation certificate from an accredited engineering school and at least one year of hands-on boiler operating experience on boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat.</u></p> <p><u>An applicant for a third-grade stationary engineer's license shall present to the board service letters showing that he has: (i) at least two years of hands-on boiler operating experience with boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat; or (ii) a graduation certificate from an accredited engineering school and at least six months of hands-on boiler operating experience on boilers used to heat water or liquid for environmental heating or commercial processing purposes or for generating steam or vapor by direct application of heat.</u></p> <p><u>No person may take an examination for a stationary engineer's license unless he has submitted the service letters, certificates, and/or diplomas to the board as required by this section and the submitted documents have been accepted by the board.</u></p> <p><u>Applicants will be required to correctly answer at least 70 percent of the questions comprising the examination to qualify for a stationary engineer's license of any grade. All questions and answers will be written in the English language.</u></p> <p><u>An applicant for a stationary engineer's license who fails to satisfactorily pass an examination shall not be entitled to a refund of the examination fee paid to the</u></p>		<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 122.2 to UMC 2015 Section 112.2. No changes to the code requirements or code intent</p> <p>Previous amendment not carried forward; provisions covered in base code.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<p><u>An applicant for a stationary engineer's license who fails to satisfactorily pass an examination shall not be entitled to a refund of the examination fee paid to the jurisdiction and shall not be reexamined for the grade in which the applicant failed, or examined for a higher grade, within a period of less than 90 days.</u></p> <p><u>Each applicant shall pay the examination fee stated for this provision in the city fee schedule for each examination for which the applicant applies. The fee is to be paid to the Authority Having Jurisdiction at the time the application is filed. Service letters shall be filed with the application. An applicant shall be eligible for examination on the date of the next regularly scheduled examination that is held at least seven days after the date of application.</u></p> <p><u>Applicants who have successfully passed the examination shall pay the license fee stated for this provision in the city fee schedule to the jurisdiction prior to the issuance of the license. The license shall expire on December 31 of the year of issuance, unless suspended or <i>revoked</i>. Thereafter, the license may be renewed annually pursuant to the provisions set forth below. The receipt for payment of a license renewal fee shall be displayed with the license. Failure to do so shall constitute grounds for the suspension or <i>revocation</i> of the license.</u></p>	<p><u>jurisdiction and shall not be reexamined for the grade in which the applicant failed, or examined for a higher grade, within a period of less than 30 days.</u></p> <p><u>Each applicant shall pay the examination fee stated for this provision in the city fee schedule for each examination for which the applicant applies. The fee is to be paid to the Authority Having Jurisdiction at the time the application is filed. Service letters shall be filed with the application. An applicant shall be eligible for examination on the date of the next regularly scheduled examination that is held at least seven days after the date of application.</u></p> <p><u>Applicants who have successfully passed the examination shall pay the license fee stated for this provision in the city fee schedule to the Authority Having Jurisdiction prior to the issuance of the license. The license shall expire on December 31 of the year of issuance, unless suspended or <i>revoked</i>. Thereafter, the license may be renewed annually pursuant to the provisions set forth below. The receipt for payment of a license renewal fee shall be displayed with the license. Failure to do so shall constitute grounds for the suspension or <i>revocation</i> of the license.</u></p>	
<p>122.3 License Renewals. <u>License renewals shall be granted without reexamination upon payment of the fee stated for this provision in the city fee schedule, provided such fee is paid within 30 days after the expiration date of the license and not thereafter. When a renewal application is filed more than 30 days after the expiration of the license, the fee for renewal shall be as stated for this provision in the city fee schedule. When the annual license renewal fee has not been paid for a period of five consecutive years, the license shall not be renewed until the applicant has successfully passed a reexamination.</u></p> <p><u>Each certificate or license issued under the terms and provisions of this section shall be signed by the person to whom it was issued as required by the board.</u></p>	<p>112.3 License Renewals. <u>License renewals shall be granted without reexamination upon payment of the fee stated for this provision in the city fee schedule, provided such fee is paid within 30 days after the expiration date of the license and not thereafter. When a renewal application is filed more than 30 days after the expiration of the license, the fee for renewal shall be as stated for this provision in the city fee schedule. When the annual license renewal fee has not been paid for a period of five consecutive years, the license shall not be renewed until the applicant has successfully passed a reexamination.</u></p> <p><u>Each certificate or license issued under the terms and provisions of this section shall be signed by the person to whom it was issued as required by the board.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 122.3 to UMC 2015 Section 112.3. No changes to the code requirements or code intent</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>122.4 Validity, Replacement of License. <u>When the holder of a license is examined by the board and granted a license in a higher grade, the higher grade license shall not be issued until the license of the lower grade is surrendered and all required fees are paid to the Authority Having Jurisdiction.</u></p> <p><u>When a license becomes lost or destroyed, the board shall grant a new license in the same grade, provided proof of such loss or destruction is presented to the satisfaction of the board. The fee for a replacement license shall be stated for this provision in the city fee schedule. If the proof of such loss or destruction is not satisfactory to the board, reexamination in the same grade shall be required, and the fee for the reexamination shall be as provided in Section 122.2.</u></p>	<p>112.4 Validity, Replacement of License. <u>When the holder of a license is examined by the board and granted a license in a higher grade, the higher-grade license shall not be issued until the license of the lower grade is surrendered and all required fees are paid to the Authority Having Jurisdiction.</u></p> <p><u>When a license becomes lost or destroyed, the board shall grant a new license in the same grade, provided proof of such loss or destruction is presented to the satisfaction of the board. The fee for a replacement license shall be stated for this provision in the city fee schedule. If the proof of such loss or destruction is not satisfactory to the board, reexamination in the same grade shall be required, and the fee for the reexamination shall be as provided in Section 112.2.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 122.4 to UMC 2015 Section 112.4. No changes to the code requirements or code intent</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>122.5 Reciprocity. <u>A person who holds a current and valid marine engineer's license issued by the United States Coast Guard shall be qualified for examination by the board for a stationary engineer's license of equal or lower grade, provided the license fee set forth in Section 122.2 has been paid.</u></p> <p><u>A person who holds a current and valid stationary engineer's or a steam engineer's license issued by a state, municipality, or government agency shall be qualified for examination by the board in the grade of the equivalent license in this jurisdiction, as determined by the board, provided the holder of the license presents proof to the satisfaction of the board that the license was granted as a result of boiler operating experience and a passing grade on a written examination on the operation.</u></p>	<p>112.5 Reciprocity. <u>A person who holds a current and valid marine engineer's license issued by the United States Coast Guard shall be qualified for examination by the board for a stationary engineer's license of equal or lower grade, provided the license fee set forth in Section 112.2 has been paid.</u></p> <p><u>A person who holds a current and valid stationary engineer's or a steam engineer's license issued by a state, municipality, or government agency shall be qualified for examination by the board in the grade of the equivalent license in this jurisdiction, as determined by the board, provided the holder of the license presents proof to the satisfaction of the board that the license was granted as a result of boiler operating experience and a passing grade on a written examination on the operation.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 122.5 to UMC 2015 Section 112.5. No changes to the code requirements or code intent</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<u>maintenance and repair of boilers and boiler accessories and safety rules for the boilers.</u>	<u>maintenance and repair of boilers and boiler accessories and safety rules for the boilers.</u>	
<u>No license issued by a foreign government, graduation certificate from a foreign school, college, or university, or any service letter from an employer in a foreign country shall qualify the holder thereof to be examined by the board for a stationary engineer's license of any grade unless the submitted document and the information contained therein are determined valid by the board and equivalent to the standards prescribed above. Upon examination of the information presented, the board shall designate the grade in which the applicant may be examined, if such evidence is found by the board to be valid.</u>	<u>No license issued by a foreign government, graduation certificate from a foreign school, college, or university, or any service letter from an employer in a foreign country shall qualify the holder thereof to be examined by the board for a stationary engineer's license of any grade unless the submitted document and the information contained therein are determined valid by the board and equivalent to the standards prescribed above. Upon examination of the information presented, the board shall designate the grade in which the applicant may be examined, if such evidence is found by the board to be valid.</u>	
122.6 Expiration of License. <u>Each license issued for stationary engineers that was in effect immediately preceding the adoption of this code by City Council shall expire on the 31st day of December of the year in which this code is adopted. Any such license may be renewed as though it had been originally issued pursuant to this code.</u>	112.6 Expiration of License. <u>Each license issued for stationary engineers that was in effect the day prior to the adoption of this code by city council shall expire on the 31st day of December of the year in which this code is adopted. Any such license may be renewed as though it had been originally issued pursuant to this code.</u>	<u>City of Houston Amendment</u> Analysis: COH amendment brought forward from UMC 2012 Section 122.6 to UMC 2015 Section 112.6. No changes to the code requirements or code intent Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.
122.7 Limitations of Operator. <u>Except as provided in Section 123, no person shall:</u> <u>(1) Have direct charge, control, or supervision of any power boiler; or</u> <u>(2) Act as or perform the duties of a stationary engineer or assistant watch engineer on any power boiler.</u> <u>Nor shall any owner, user or person operate or use, or cause or permit any boiler to be operated or used unless the persons responsible for the operation of the boiler have current and valid licenses for the applicable classes as required in Section 122.1.</u>	112.7 Limitations of Operator. <u>Except as provided in Section 113.1, no person shall:</u> <u>(1) Have direct charge, control, or supervision of any power boiler; or,</u> <u>(2) Act as or perform the duties of a stationary engineer or assistant watch engineer on any power boiler.</u> <u>Nor shall any owner, user or person operate or use, or cause or permit any boiler to be operated or used unless the persons responsible for the operation of the boiler have current and valid licenses for the applicable classes as required in Section 112.1.</u>	<u>City of Houston Amendment</u> Analysis: COH amendment brought forward from UMC 2012 Section 122.7 to UMC 2015 Section 112.7. No changes to the code requirements or code intent Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.
122.8 Duties of the Certificate Holder. <u>Each holder of a certificate of stationary engineer's license shall file with the board the name of the employer, the plant location, and the aggregated amount of Btu-per-hour heat output of the boiler that the holder is operating. Each holder of a stationary engineer's license shall enclose his license certificate under glass in a dustproof frame and shall display it in a conspicuous place in the plant where the holder is employed.</u> <u>The operator's permit issued under Section 123 designating the person in charge of the boiler shall be enclosed under glass in a dustproof frame and prominently displayed as near as possible to the boiler to which the operator's permit applies.</u>	112.8 Duties of the Certificate Holder. <u>Each holder of a certificate of stationary engineer's license shall file with the board the name of the employer, the plant location, and the amount of Btu-per-hour heat output of the boiler that the holder is operating. Each holder of a stationary engineer's license shall enclose his license certificate under glass in a dustproof frame and shall display it in a conspicuous place in the plant where the holder is employed.</u> <u>The operator's permit issued under Section 113.1 designating the person in charge of the boiler shall be enclosed under glass in a dustproof frame and prominently displayed as near as possible to the boiler to which the operator's permit applies.</u>	<u>City of Houston Amendment</u> Analysis: COH amendment brought forward from UMC 2012 Section 122.8 to UMC 2015 Section 112.8. Minor editorial changes to reference updated code sections. No changes to the code requirements or code intent Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.
122.9 Responsibility of the Boiler Owner or User. <u>Every owner or user of a power boiler that has an aggregate heat output that exceeds 1,676,000 Btu per hour shall establish a method of operation utilizing one or more full time employed licensed stationary engineers of the herein-required license grade. The operating method shall include direct physical examination of the boiler by the licensed stationary engineer at reasonable time intervals to ensure its safe operation. The owner or user shall establish the operating method based on accepted boiler industry practices commensurate with load characteristics, use, and configuration of the boiler.</u>	112.9 Responsibility of the Boiler Owner or User. <u>Every owner or user of a power boiler that has heat output that exceeds 2,100,000 Btu per hour shall establish a method of operation utilizing one or more licensed stationary engineers of the herein required license grade. The operating method shall include direct physical examination of the boiler by the licensed stationary engineer at reasonable time intervals to ensure its safe operation. The owner or user shall establish the operation method based on accepted boiler industry practices commensurate with load characteristics, use, and configuration of the boiler.</u>	<u>City of Houston Amendment</u> Analysis: COH amendment brought forward from UMC 2012 Section 122.9 to UMC 2015 Section 112.9. No changes to the code requirements or code intent Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department. COH amendment modified during review process 10.12.21.

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
<div>COLOR CODE INDEX: Turquoise = NEW or Modified Text by IAPMO in 2015 Yellow Strikethrough = Text Deleted from the Code by COH</div> <div>Text Underlined = COH Amendment added (NEW) Green Text = NEW or Modified Text by COH in 2015</div> <div>Grey Text = Previous COH Amendment Brought Forward to 2015</div>		
<p>123.0 Boiler Operator's Permit. An owner or user of any hot-water-heating boiler, low-pressure hot-water-heating boiler, or steam-heating boiler at pressure of 15 pounds per square inch or less used to heat water or liquid for environmental heating or commercial processing purposes or a power boiler having an aggregate heat output that does not exceed 1,676,000 Btu per hour, may apply to the board for a permit to allow the boiler to be operated by the owner or user or by a person knowledgeable in the operation of the boiler, instead of by a licensed stationary engineer. The person who is to operate the boiler shall be the owner of the boiler or his bona fide employee and shall demonstrate competency to do so in a manner determined by the board. The board shall establish the method of testing and the minimum knowledge, ability, and qualifications such person must demonstrate to show competency to operate the distinctive types of boilers. If a person demonstrates competency in the operation of the type of boiler for which the permit is sought, the permit shall be granted upon the payment of the permit fee stated in the city fee schedule. The permit shall expire on December 31 st of each year, unless suspended or revoked before the expiration date.</p> <p>Renewal of such permits shall be granted upon the payment of the renewal fee stated for this provision in the city fee schedule if the renewal is applied for within 30 days after the expiration of such permit. If the renewal is not applied for within 30 days, the applicant may renew the permit upon payment of the regular fee stated for this provision in the city fee schedule .</p> <p>A permit shall be valid only for the specific location and for the boilers at the location named on the permit. Separate permits may be issued for a person to operate boilers at two or more locations owned by the employer of the boiler operator listed on the permit. When a permit is issued for boiler operation at two or more locations, the applicant must file for a separate boiler operator permit for each location and pay the fee for each boiler operator permit received.</p> <p>When an operator's permit becomes lost or destroyed, the board may grant a replacement permit in the same manner as set forth for a stationary engineer's license in Section 122.4.</p> <p>All permits issued for the operation of boilers that were in effect immediately preceding the adoption of this code by City Council shall expire on the 31st day of December of the year in which this code is adopted. Any such permit may be renewed as though it had been originally issued pursuant to this code.</p>	<p>113.0 Boiler Operator's Permit.</p> <p>113.1 Application, Issuance, Fee and Expiration. An owner or user of any hot-water-heating boiler, low-pressure hot-water-heating boiler, or steam-heating boiler at pressure of 15 pounds per square inch or less used to heat water or liquid for environmental heating or commercial processing purposes or a power boiler having an heat output that does not exceed 2,100,000 Btu per hour, may apply to the Authority Having Jurisdiction for a permit to allow the boiler to be operated by the owner or user or by a person knowledgeable in the operation of the boiler, instead of by a licensed stationary engineer. The person who is to operate the boiler shall be the owner of the boiler or his bona fide employee and shall demonstrate competency to do so in a manner determined by the board. The board shall establish the method of testing and the minimum knowledge, ability, and qualifications such person must demonstrate to show competency to operate the distinctive types of boilers. If a person demonstrates competency in the operation of the type of boiler for which the permit is sought, the permit shall be granted upon the payment of the permit fee stated in the city fee schedule. The permit shall expire on December 31st of each year, unless suspended or revoked before the expiration date.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 123.0 to UMC 2015 Section 113.0. Minor editorial change. No changes to the code requirements or code intent</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>
<p>123.0 Boiler Operator's Permit. An owner or user of any hot-water-heating boiler, low-pressure hot-water-heating boiler, or steam-heating boiler at pressure of 15 pounds per square inch or less used to heat water or liquid for environmental heating or commercial processing purposes or a power boiler having an aggregate heat output that does not exceed 1,676,000 Btu per hour, may apply to the board for a permit to allow the boiler to be operated by the owner or user or by a person knowledgeable in the operation of the boiler, instead of by a licensed stationary engineer. The person who is to operate the boiler shall be the owner of the boiler or his bona fide employee and shall demonstrate competency to do so in a manner determined by the board. The board shall establish the method of testing and the minimum knowledge, ability, and qualifications such person must demonstrate to show competency to operate the distinctive types of boilers. If a person demonstrates competency in the operation of the type of boiler for which the permit is sought, the permit shall be granted upon the payment of the permit fee stated in the city fee</p>	<p>113.2 Renewal Application and Fee. Renewal of such permits shall be granted upon the payment of the renewal fee stated for this provision in the city fee schedule if the renewal is applied for within 30 days after the expiration of such permit. If the renewal is not applied for within 30 days after the expiration of such permit, the applicant may renew the permit upon payment of the regular fee stated for this provision in the city fee schedule.</p> <p>113.3 Permit Specific to Location and Boilers at the Location. A permit shall be valid only for the specific location and for the boilers at the location named on the permit. Separate permits may be issued for a person to operate boilers at two or more locations owned by the employer of the boiler operator listed on the permit. When a permit is issued for boiler operation at two or more locations, the applicant must file for a separate boiler operator permit for each location and pay the fee for each boiler operator permit received.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 123.0 to UMC 2015 Sections 113.2, 113.3, 113.4, and 113.5. Minor editorial change to two sections. However, no changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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<p>schedule. The permit shall expire on December 31 st of each year, unless suspended or revoked before the expiration date.</p> <p>Renewal of such permits shall be granted upon the payment of the renewal fee stated for this provision in the city fee schedule if the renewal is applied for within 30 days after the expiration of such permit. If the renewal is not applied for within 30 days, the applicant may renew the permit upon payment of the regular fee stated for this provision in the city fee schedule .</p> <p>A permit shall be valid only for the specific location and for the boilers at the location named on the permit. Separate permits may be issued for a person to operate boilers at two or more locations owned by the employer of the boiler operator listed on the permit. When a permit is issued for boiler operation at two or more locations, the applicant must file for a separate boiler operator permit for each location and pay the fee for each boiler operator permit received.</p> <p>When an operator's permit becomes lost or destroyed, the board may grant a replacement permit in the same manner as set forth for a stationary engineer's license in Section 122.4.</p> <p>All permits issued for the operation of boilers that were in effect immediately preceding the adoption of this code by City Council shall expire on the 31st day of December of the year in which this code is adopted. Any such permit may be renewed as though it had been originally issued pursuant to this code.</p>	<p>113.4 Replacement of Lost or Destroyed Permit. When an operator's permit becomes lost or destroyed, the Authority Having Jurisdiction may grant a replacement permit in the same manner as set forth for a stationary engineer's license in Section 112.4.</p> <p>113.5 Expiration After Adoption of Code. All permits issued for the operation of boilers that were in effect the day prior to the adoption of this code by city council shall expire on the 31st day of December of the year in which this code is adopted. Any such permit may be renewed as though it had been originally issued pursuant to this code.</p>	
<p>124.0 Boiler Related Inspections and Liabilities. The Authority Having Jurisdiction shall periodically inspect each location where a boiler is installed to determine if the boiler is being operated by an authorized person in accordance with all applicable laws. Such inspections shall be made annually or at such other intervals as the Authority Having Jurisdiction determines is necessary to ensure compliance with applicable laws.</p> <p>Exception: Boilers used solely for the production of domestic water.</p> <p>If there is a conflict between this code and the State of Texas Boiler Law in Chapter 755 of the Texas Health and Safety Code and any amendments thereto, then state law will apply.</p> <p>The provisions of this code shall not be construed to relieve from responsibility or lessen the responsibility of any person, firm, corporation, master plumber, appliance dealer, or installer owning, operating, or installing any boiler or other equipment described in this section for damages to persons or property caused by any defect therein, nor shall the jurisdiction be held responsible for any such liability as a result of an inspection authorized or an approval issued by this code.</p>	<p>114.0 Boiler Related Inspections and Liabilities. The Authority Having Jurisdiction shall periodically inspect each location where a boiler is installed to determine if the boiler is being operated by an authorized person in accordance with all applicable laws. Such inspections shall be made annually or at such other intervals as the Authority Having Jurisdiction determines is necessary to ensure compliance with applicable laws.</p> <p>Exception: Boilers used solely for the production of domestic water are exempted from 114.0.</p> <p>If there is a conflict between this code and the State of Texas Boiler Law in Chapter 755 of the <i>Texas Health and Safety Code</i> and any amendments thereto, then state law will apply.</p> <p>The provisions of this code shall not be construed to relieve from responsibility or lessen the responsibility of any person, firm, corporation, master plumber, appliance dealer, or installer owning, operating, or installing any boiler or other equipment described in this section for damages to persons or property caused by any defect therein, nor shall the jurisdiction be held responsible for any such liability as a result of an inspection authorized or an approval issued by this code.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment brought forward from UMC 2012 Section 124.0 to UMC 2015 Sections 114.0. Minor editorial change to the exception for clarity. However, no changes to the code requirements or code intent.</p> <p>Justification: Chapter 1 is the legal administration and enforcement chapter governed by local and state law, and separately reviewed by the City Legal Department.</p> <p>COH amendment modified during review process 10.12.21.</p>

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2012 Houston UMC – Chapter 2 Definitions	2015 Houston UMC – Chapter 2 Definitions	Code Analysis
N/A	201.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.	<u>City of Houston Amendment</u> Analysis: New COH amendment added by legal to correlate with other volumes of the <i>Houston Construction Code</i> . Justification: Provides clarification on intent and application of the definitions found in both this code and other editions of the <i>Houston Construction Code</i> .
N/A	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</i> , such terms or specific constructions herein shall have the meanings ascribed to them in those other volumes, as applicable to the construction and proposed scope of work hereunder.	<u>City of Houston Amendment</u> Analysis: New COH amendment added by legal to correlate with other volumes of the <i>Houston Construction Code</i> . Justification: Provides clarification on intent and application of the definitions found in both this code and other editions of the <i>Houston Construction Code</i> .
203.0 Alteration – N/A - A - Authority Having Jurisdiction. The jurisdiction’s Director of the Public Works and Engineering Department, who is appointed to administer and enforce the provisions of this code. organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, installations, or procedures. The Authority Having Jurisdiction shall be a federal, state, local, or other regional department or an individual such as a plumbing official, mechanical official, labor department official, health department official, building official, or others having statutory authority. In the absence of a statutory authority, the Authority Having Jurisdiction may be some other responsible party. This definition shall include the Authority Having Jurisdiction’s duly authorized representative.	203.0 Alteration. Any change in an original design or configuration. - A – Authority Having Jurisdiction. The Director of Public Works, who is appointed to administer and enforce the provisions of this code. organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, installations, or procedures. The Authority Having Jurisdiction shall be a federal, state, local, or other regional department or an individual such as a plumbing official, mechanical official, labor department official, health department official, building official, or others having statutory authority. In the absence of a statutory authority, the Authority Having Jurisdiction may be some other responsible party. This definition shall include the Authority Having Jurisdiction’s duly authorized representatives.	<u>City of Houston Amendment</u> Analysis: COH amendment. Justification: Definition for alteration included to provide clarity on changes in design and/or configuration. COH amendment modified during review process 10.12.21.
204.0 Building Code. The building code City of Houston Building Code, as that is adopted by this jurisdiction. Building Official. See Authority Having Jurisdiction. Building Thermal Envelope. The basement walls, exterior walls, floor, roof, and any other building elements that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space.	204.0 Building Code. The building code City of Houston Building Code, as that is adopted and amended by this jurisdiction. Building Official. The 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. Building Thermal Envelope – Deleted from UMC. (See Houston Energy Code)	<u>City of Houston Amendment</u> Analysis: COH amendment. New definition for Building Official. Justification: To provide clarity on Houston adopted codes and the requirements of a building thermal envelope. COH amendment modified during review process 10.12.21.

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
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<div>205.0 - C -</div> <div>Certificate of Compliance – N/A</div> <div>City Code. The Code of Ordinances, Houston, Texas.</div> <div>City Fee Schedule – N/A</div> <div>Code Official – N/A</div> <div>Construction Code – N/A</div>	<div>205.0 – C –</div> <div>Certificate of Compliance. A certificate stating that materials and products meet specified standards or that the scope of work under a specific permit was done in compliance with approved construction documents. Any reference in the 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.</div> <div>City Code. The Code of Ordinances, City of Houston, Texas.</div> <div>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.</div> <div>Code Official. The Houston Fire Department and Building Code Enforcement employees, including but not limited to, plan analysts, field inspectors, and other technical staff charged with the administration and enforcement of this code as specifically delegated by the Authority Having Jurisdiction. The code official is authorized to approve designs, construction, equipment, materials, installations, processes, procedures, practices, and other duties necessary to 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.</div> <div>Construction Code. Has the meaning ascribed in Section 1-2 of the City Code.</div>	<div>City of Houston Amendment</div> <div>Analysis: New COH amendments.</div> <div>New definitions for Certificate of Compliance, City Fee Schedule, Code Official, Construction Code; no remaining changes</div> <div>Justification: To provide clarity on Houston adopted codes and ordinances.</div>
<div>206.0 - D -</div> <div>Design Flood Elevation. See Chapter 19 of the City Code for provisions regarding the flood plain. The elevation of the "design flood," including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as Zone AO, the design flood elevation is the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number is taken as being equal to 2 feet (610 mm).</div> <div>Detached Boiler – N/A</div>	<div>206.0 – D –</div> <div>Design Flood Elevation. See Chapter 19 of the City Code for provisions regarding the flood plain. The elevation of the “design flood,” including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as Zone AO, the design flood elevation is the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number is taken as being equal to 2 feet (610 mm).</div> <div>Detached Boiler. Any class of boiler that remains in its original installed location and is permanently disconnected from its energy source (i.e. natural gas, electricity, etc.).</div>	<div>City of Houston Amendment</div> <div>Analysis: COH amendment. Definition for Detached Boiler brought forward from 2012 amendment Ch. 10.</div> <div>Justification: To provide clarity on Houston adopted codes and ordinances, and boiler state law.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>207.0 - E -</div> <div>Electrical Code. The National Electrical Code promulgated by the National Fire Protection Association, as adopted by this jurisdiction, and the City of Houston Electrical Code.</div> <div>Energy Conservation Code. The City of Houston Residential Energy Conservation Code or the City of Houston Commercial Energy Conservation Code, both based on the International Energy Conservation Code, as adopted by the State of Texas, or on an alternate code that has been determined to be more stringent than the International Energy Conservation Code, as provided in Chapter 388 of the Texas Health & Safety Code, both as adopted and amended by this jurisdiction.</div>	<div>207.0 – E –</div> <div>Electrical Code. The National Electrical Code promulgated by the National Fire Protection Association, as adopted by this jurisdiction. The City of Houston Electrical Code, as adopted and amended by this jurisdiction.</div> <div>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.</div>	<div>City of Houston Amendment</div> <div>Analysis: COH amendment.</div> <div>Justification: To provide clarity on Houston adopted codes.</div> <div>COH amendment modified during review process 10.12.21.</div>

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<div>218.0 - P -</div> <div>Plumbing Code. The Uniform Plumbing Code promulgated by the International Association of Plumbing and Mechanical Officials, <u>City of Houston Plumbing Code,</u> as adopted by this jurisdiction.</div> <div><i>(Previously located in Chapter 10 of the UMC 2012)</i></div> <div>Portable Boiler. <u>A boiler primarily intended for temporary use at a location.</u></div>	<div>218.0 - P -</div> <div>Plumbing Code. The Uniform Plumbing Code promulgated by the International Association of Plumbing and Mechanical Officials, <u>City of Houston Plumbing Code,</u> as adopted by this jurisdiction.</div> <div>Portable Boiler. A boiler primarily <u>designed and</u> intended for temporary use <u>by anyone</u> at any location.</div>	<div><u>City of Houston Amendment</u></div> <div>Analysis: COH amendment. Boiler definition moved from Ch. 10.</div> <div>Justification: To provide clarity on Houston adopted codes.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>220.0 - R -</div> <div><i>(Previously located in Chapter 10 of the UMC 2012)</i></div> <div>Repair (Boilers). <u>The work necessary to restore a boiler or a pressure vessel to a safe and satisfactory operating condition, provided there is no deviation from the original design.</u></div> <div>Residential Code. <u>The City of Houston Residential Code, based on the International Residential Code for One- and Two-Family Dwellings, as adopted by the State of Texas in Subchapter G of Chapter 214 of the Texas Local Government Code, with amendments adopted by this jurisdiction.</u></div>	<div>220.0 - R -</div> <div>Repair (Boilers). <u>The work necessary to restore a boiler or a pressure vessel to a good and sound operating condition, provided there is no deviation from the original design.</u></div> <div>Residential Code. <u>The City of Houston Residential Code, as adopted and amended by this jurisdiction.</u></div>	<div><u>City of Houston Amendment</u></div> <div>Analysis: COH amendment. Boiler related definitions moved from Ch. 10.</div> <div>Justification: To provide clarity on Houston adopted codes and coincide with boiler state law requirements.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>221.0 - S -</div> <div><i>(Previously located in Chapter 10 of the UMC 2012)</i></div> <div>Safety Appliances. <u>Safety devices such as safety valves or safety relief valves (within the jurisdictional limits as prescribed by the Authority Having Jurisdiction) provided for the purposes of diminishing the danger of accidents.</u></div> <div><i>(Previously located in Chapter 10 of the UMC 2012)</i></div> <div>Secondhand Boiler. <u>A boiler for which both the location and ownership have changed.</u></div> <div><i>(Previously located in Chapter 10 of the UMC 2012)</i></div> <div>Standard Boiler. <u>A boiler that bears the Texas stamp, the ASME stamp, or the stamp of any jurisdiction that has adopted a standard of construction equivalent to that required by the State of Texas.</u></div>	<div>221.0 - S -</div> <div>Safety Appliances. <u>Safety devices such as safety valves or safety relief valves (within the jurisdictional limits as prescribed by the Authority Having Jurisdiction) provided for the purposes of diminishing the danger of accidents.</u></div> <div>Secondhand Boiler. <u>A boiler for which both the location and ownership have changed.</u></div> <div>Standard Boiler. <u>A boiler that bears the Texas stamp, the ASME stamp, or the stamp of any jurisdiction that has adopted a standard of construction equivalent to that required by the State of Texas.</u></div>	<div><u>City of Houston Amendment</u></div> <div>Analysis: COH amendment. Boiler related definitions brought forward from 2012 amendment Ch. 10, Swimming Pool and Spa Code added.</div> <div>Justification: To coincide with boiler state law requirements and provide clarity on types of boilers.</div> <div>COH amendment modified during review process 10.12.21.</div>
<div>*(EDITORIAL NOTE: ALL OTHER PORTIONS OF CHAPTER 2 REMAIN AS SET FORTH IN THE 2012 UNIFORM MECHANICAL CODE.)</div>	<div>{EDITORIAL NOTE: ALL OTHER PORTIONS OF CHAPTER 2 REMAIN AS SET FORTH IN THE 2015 UMC.}</div>	
2012 Houston UMC – Chapter 3 General Regulations	2015 Houston UMC – Chapter 3 General Regulations	Code Analysis
<div>310.1 General. Equipment regulated by this code requiring electrical connections of more than 50 volts shall have a positive means of disconnect <u>in accordance with the electrical code.</u> adjacent to and in sight from the equipment served. A 120-volt receptacle shall be located within 25 feet (7620 mm) of the equipment for service and maintenance purposes. The receptacle need not be located on the same level as the equipment. Low-voltage wiring of 50 volts or less within a structure shall be installed in a manner to prevent physical damage.</div>	<div>301.4 Electrical Connections. Equipment regulated by this code requiring electrical connections of more than 50 volts shall have a positive means of discom1ect adjacent to and in sight from the equipment served. A 120-volt receptacle shall be located within 25 feet (7620 mm) of the equipment for service and maintenance purposes. The receptacle need not be located on the same level as the equipment. Low voltage wiring of 50 volts or less within a structure shall be installed in a manner to prevent physical damage. <u>Electrical wiring, controls, and connections to equipment and appliances regulated by this code shall be in accordance with NFPA 70.</u></div>	<div><u>City of Houston Amendment</u></div> <div>Analysis: 2012 Houston amendment deleted. The code provisions were relocated in the model code from UMC 2012 Section 310.1 to UMC 2015 Section 301.4. Deletion of the COH amendment reverts the requirements back to model code provisions. Change now requires a 120-volt receptacle located within 25 feet (7620 mm) of this equipment.</div> <div>Justification: There was no record of a justification provided for the amendment to the 2012 UMC for this section.</div>

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
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303.9 Equipment on Roofs. Equipment on roofs shall be designed or enclosed so as to withstand climatic conditions in the areas in which it is installed. Where enclosures are provided, each enclosure shall be of reasonable height, and shall have not less than a 30 inch (762 mm) clearance between the entire service access panel(s) of the equipment and the wall of the enclosure. [NFPA 54:9.4.1.1]	303.8 Equipment and Appliances on Roofs. Equipment and appliances on roofs shall be designed or enclosed so as to withstand climatic conditions in the area in which they are installed. Where enclosures are provided, each enclosure shall permit easy entry and movement, shall be of reasonable height, and shall have not less than a 30 inch (762 mm) clearance between the entire service access panel(s) of the equipment and appliance, and the wall of the enclosure. [NFPA 54:9.4.1.1]	City of Houston Amendment Analysis: New COH amendment. Justification: Deleted portion of suggestive language that could potentially mislead the public; Section 304.1 covers the minimum req's needed for roof access. COH amendment modified during review process 10.12.21.
303.9.3 Roof Drainage and Rails. Equipment shall be installed on a well-drained surface of the roof. Not less than 6-10 feet (1829-3048 mm) between a part of the equipment and the edge of a roof or similar hazard, or rigidly fixed rail, guards, parapets, or other building structures not less than 42 inches (1067 mm) in height shall be provided on the exposed side. [NFPA 54:9.4.2.2]	303.8.4 Clearance. Equipment and appliances shall be installed on a well-drained surface of the roof. Not less than 6-10 feet (1829-3048 mm) of clearance shall be between a part of the equipment and appliance and the edge of a roof or similar hazard, or rigidly fixed rails, guards, parapets, or other building structures not less than 42 inches (1067 mm) in height shall be provided on the exposed side. [NFPA 54:9.4.2.2]	City of Houston Amendment Analysis: 2015 model code relocates these code provisions from UMC 2012 Section 303.9.3 to UMC 20015 Section 303.8.4. Houston amendment is carried forward to correlate with other volumes of the <i>Houston Construction Code</i> . Justification: Amendment needed to ensure conformity with established provisions of the IBC.
802.7.3.4 Clearances. Minimum clearances from single-wall metal pipe to combustible material shall be in accordance with Table 802.7.3.4(1). Reduced clearances from single-wall metal pipe to combustible material shall be as specified for vent connectors in Table 802.7.3.4(2). [NFPA 54:12.8.4.5]	303.10.1 Clearance Reduction. Reduced clearances to combustible construction for listed equipment and appliances shall comply with the listing and Table 303.10.1. Where permitted by the manufacturer, and not provided in this code, reduced clearances to combustible construction for unlisted equipment and appliances shall comply with Table 303.10.1. <u>Unlisted equipment and appliances shall comply with Table 303.10.1.</u>	City of Houston Amendment Analysis: UMC 2012 Section 802.7.3.4 references Table 802.7.3.4(2) which is the same Table as the UMC 2015 Table 303.10.1. The 2015 model code is modified and relocated from UMC 2012 Section 802.7.3.4 to UMC 2015 Section 303.10.1. Justification: Amendment needed to ensure conformity with established provisions of the IBC. Base code modified during review process 10.12.21.
304.0 Service and Access to Equipment and Appliances. 304.1 General. Equipment and appliances shall be accessible for inspection, service, repair, and replacement without removing permanent construction. Clearance shall be maintained to: <ol style="list-style-type: none"> (1) Clean heating surfaces. (2) Replace filters, blowers, motors, burners, controls, and vent connections. (3) Lubricate moving parts. (4) Adjust and clean burners, pilots, and the proper functioning of explosion vents, where provided. [NFPA 54:9.2.1] <p>Unless otherwise specified, not less than 30 inches (762 mm) in depth, width, and height of working space shall be provided.</p> <p>Exception: Unit heaters and room heaters shall be permitted to be installed with an 18 inches (457 mm) minimum depth working space. A platform shall not be required for unit heaters or room heaters. The operating instructions shall be attached to the appliance where they are capable of being read easily.</p>	304.1 General. Appliances shall be located with respect to building construction and other equipment so as to permit access to the appliance. Sufficient clearance shall be maintained to permit cleaning of heating surfaces; the replacement of filters, blowers, motors, burners, controls, and vent connections; the lubrication of moving parts where necessary; the adjustment and cleaning of burners and pilots; and the proper functioning of explosion vents, where provided. For attic installation, the passageway and servicing area adjacent to the appliance shall be floored. [NFPA 54:9.2.1] <p>Unless otherwise specified, not less than 30 inches (762 mm) in depth, width, and height of working space shall be provided.</p> <p>Exception: A platform shall not be required for unit heaters or room heaters.</p>	City of Houston Amendment Analysis: UMC 2015 is reorganized with many sections merging with others and relocated in the model code. The provisions of UMC 2012 Section 304.1 have been rewritten for clarity in UMC 2015 Section 304.1. Justification: Amendment needed to ensure conformity with established provisions of the IBC. Base code modified during review process 10.12.21.
304.2 Access to Equipment and Appliances on Roofs, or in Attics and Under Floor Spaces. Appliances located on roofs or other elevated locations, or in attics or underfloor spaces, shall be accessible. [NFPA 54:9.4.3.1]	304.3 Access to Equipment and Appliances on Roofs. Equipment and appliances located on roofs or other elevated locations shall be accessible. [NFPA 54:9.4.3.1]	City of Houston Amendment Analysis: 2012 Houston amendment deleted. Justification: Amendment covered in 2015 base code Section 304.4.

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304.2.1 Access to Roof from Inside. Buildings exceeding 15 feet (4572 mm) in height shall have an inside means of access to the roof in accordance with this section, unless other means acceptable to the Authority Having Jurisdiction are used. [NFPA 54:9.4.3.2]	304.3.1 Access. Buildings exceeding 15 feet (4572 mm) in height shall have an inside means of access to the roof in accordance with this section, unless other means acceptable to the Authority Having Jurisdiction are used. [NFPA 54:9.4.3.2]	City of Houston Amendment Analysis: 2015 base code modified. Justification: Amendment needed to ensure conformity with established provisions of the IBC. Base code modified during review process 10.12.21.
304.2.1.1 Door or Scuttle. The inside means of access to a roof, attic or underfloor space shall be a permanent or foldaway inside stairway or ladder, with a clear opening not less than 22 inches in width and a load capacity of not less than 350 pounds, terminating in an enclosure, scuttle, or trap door. Such scuttles or trap doors shall be not less than 22 inches by 24 inches (559 mm by 610 mm) in size, shall open easily and safely under all conditions, especially snow, and shall be constructed so as to permit access on the inside. Not less than 6-10 feet (1829-3048 mm) of clearance shall be between the access opening and the edge of the roof or similar hazard, or rigidly fixed rails or guards not less than 42 inches (1067 mm) in height shall be provided on the exposed side. Where parapets or other building structures are utilized in lieu of guards or rails, they shall be not less than 42 inches (1067 mm) in height. [NFPA 54:9.4.3.3]	304.3.1.1 Access Type. The inside means of access shall be a permanent, or foldaway inside stairway, or ladder, terminating in an enclosure, scuttle, or trap door. Such scuttles or trap doors shall be not less than 22 inches by 24 inches (559 mm by 610 mm) in size, shall open easily and safely under all conditions, especially snow; and shall be constructed so as to permit access from the roof side unless deliberately locked on the inside. Not less than 6-10 feet (1829-3048 mm) of clearance shall be between the access opening and the edge of the roof or similar hazard, or rigidly fixed rails or guards not less than 42 inches (1067 mm) in height shall be provided on the exposed side. Where parapets or other building structures are utilized in lieu of guards or rails, they shall be not less than 42 inches (1067 mm) in height. [NFPA 54:9.4.3.3]	City of Houston Amendment Analysis: 2015 model code reorganizes these sections and redistributes the code provisions from UMC 2012 304.2.1.1 and 304.2.1.2 to UMC 2015 304.3.11 and 304.4. COH amendment is brought forward into the updated sections. No change to the requirements or code intent. Justification: Amendment needed to ensure conformity with established provisions of the IBC. Base code modified during review process 10.12.21.
304.2.1.2 Permanent Ladders. Permanent ladders required by Section 304.2.1.1 shall be constructed in accordance with the following: <ol style="list-style-type: none"> (1) Have side railings which extend not less than 30 inches (762 mm) above the roof or parapet wall. (2) Landings shall not exceed 18 feet (5486 mm) apart measured from the finished grade. (3) Width shall be not less than 14 inches (356 mm) on center. (4) Rungs shall not exceed 14 inches (356 mm) on center. (5) Toe space shall be not less than 7-6 inches (177-152 mm). 	304.4 Appliances in Attics and Under-Floor Spaces. An attic or under-floor space in which an appliance is installed shall be accessible through an opening and passageway not less than the largest component of the appliance, and or not less than 22 inches by 30 inches (559 mm by 762 mm) whichever is more restrictive. Where an appliance is located within the attic a pull down stair shall be provided that is not less than 22 inches (559 mm) in width at its narrowest point with a load capacity of not less than 350 pounds.	City of Houston Amendment Analysis: 2012 Houston amendment deleted. Justification: No justification or reasoning to keep either amendment; provisions now covered in UMC base code.
304.2.1.3 Platform. A furnace located on a roof shall be installed on a substantial, level platform. When the roof has a slope greater than 1 in 12, a level working platform at least 30 inches (762 mm) in depth and width shall be provided along the firebox and control sides of the furnace. Sides of a working platform facing the roof edge below shall be protected by a substantial railing 42 inches (1067 mm) in height with vertical rails not more than 21 inches (533 mm) apart, except that parapets at least 24 inches (610 mm) in height may be utilized in lieu of rails or guards.	N/A	City of Houston Amendment Analysis: New COH amendment. Base code modified. Justification: Amendment needed to comply with IBC and ensure fire and life-safety; change requested by industry due to potential accidents/issues with worker injuries. Base code modified during review process 10.12.21.
308.1 Protection Against Damage. Gas utilization appliances in garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that burners, ignition sources and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1]	305.1 Installation in Garages. Appliances in garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that burners and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1]	City of Houston Amendment Analysis: 2012 Houston amendment deleted with this section returning to model code provisions. Justification: Provision covered in base code Section 305.1.
308.2 Protection Against Flood Damage. For buildings located in flood hazard areas, heating, ventilating, air-conditioning, refrigeration, miscellaneous heat-producing, and energy-utilizing equipment and appliances shall be elevated at or above the elevation required by the building code for utilities and attendant equipment	305.2 Flood Hazard Areas. See Chapter 19 of the City Code. For buildings located in flood hazard areas, heating, ventilating, air-conditioning, refrigeration, miscellaneous heat-producing, and energy-utilizing equipment and appliances shall be elevated at or above the elevation in accordance with the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher.	City of Houston Amendment Analysis: Model code provisions relocated from UMC 2012 Section 308.2 to UMC 2015 Section 305.2. No change to the code requirements or code intent.

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<p>or the elevation of the lowest floor, whichever is highis higher. See Chapter 19 of the City Code for provisions regarding the flood plain.</p> <p>Exception: Equipment and appliances are permitted to be located below elevation required by the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher, 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 such flood elevation in accordance with the flood-resistant construction requirements of the building code.</p> <p>308.2.1 Walls Below Buildings in Flood Hazard Areas Subject to High Velocity Wave Action. In flood hazard areas subject to high velocity wave action, equipment and appliances, including piping, shall not be mounted on or penetrate walls intended to break away under flood loads.</p> <p>308.2.2 Air Exhaust and Intake Openings. Outside air exhaust openings and air intake openings shall be located at or above the elevation required by the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher.</p>	<p>Exception: Equipment and appliances shall be permitted to be located below the elevation in accordance with the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher, provided that the systems 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 to such elevation.</p> <p>305.2.1 Coastal High Hazard Areas. Mechanical systems in buildings located in coastal high hazard areas shall be in accordance with the requirements of Section 305.2, and mechanical systems, pipes, and appurtenances shall not be mounted on or penetrate through walls that are intended to breakaway under flood loads in accordance with the building code.</p> <p>305.2.2 Air Exhaust and Intake Openings. Outside air exhaust openings and air intake openings shall be located at or above the elevation required by the building code for utilities and attendant equipment or the elevation of the lowest floor, whichever is higher.</p>	<p>Justification: Amendment needed to ensure conformity with state and local government policy.</p> <p>Base code modified during review process 10.12.21.</p>
<p>303.1 Installation Practices. Mechanical systems shall be installed in a manner in accordance with this code, applicable standards, and the manufacturer's installation instructions. Where the requirements of referenced standards or manufacturer's instructions do not conform to minimum provisions of this code, the provisions of this code shall apply.</p>	<p>309.3 Installation Practices. Mechanical systems shall be installed in a manner that is in accordance with this code, applicable standards, and the manufacturer's installation instructions.</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 Houston amendment deleted.</p> <p>Justification: Amendment covered in base code Section 102.1.</p>
<p>310.1 General. Equipment regulated by this code requiring electrical connections of more than 50 volts shall have a positive means of disconnect in accordance with the electrical code. adjacent to and in sight from the equipment served. A 120-volt receptacle shall be located within 25 feet (7620 mm) of the equipment for service and maintenance purposes. The receptacle need not be located on the same level as the equipment. Low-voltage wiring of 50 volts or less within a structure shall be installed in a manner to prevent physical damage.</p>	<p>301.4 Electrical Connections. Equipment regulated by this code requiring electrical connections of more than 50 volts shall have a positive means of discom1ect adjacent to and in sight from the equipment served. A 120-volt receptacle shall be located within 25 feet (7620 mm) of the equipment for service and maintenance purposes. The receptacle need not be located on the same level as the equipment. Low voltage wiring of 50 volts or less within a structure shall be installed in a manner to prevent physical damage. Electrical wiring, controls, and connections to equipment and appliances regulated by this code shall be in accordance with NFPA 70.</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 Houston amendment deleted. The code provisions were relocated in the model code from UMC 2012 Section 310.1 to UMC 2015 Section 301.4. Deletion of the COH amendment reverts the requirements back to model code provisions. Change now requires a 120-volt receptacle located within 25 feet (7620 mm) of this equipment.</p> <p>Justification: There was no record of a justification provided for the amendment to the 2012 UMC for this section.</p>
<p>312.2 Condensate Control. Where a cooling coil or cooling unit is located in an attic or furred space, or in any area where damage is capable of resulting from condensate overflow, an additional watertight pan of corrosion-resistant metal shall be installed beneath the cooling coil or unit top to catch the overflow condensate due to a clogged primary condensate drain, or one pan with a standing overflow and a separate secondary drain shall be permitted to be provided in lieu of the secondary drain pan. The additional pan or the standing overflow shall be provided with a drain pipe, not less than ¾ of an inch (20 mm) nominal pipe size, discharging at a point that is readily observed.</p> <p>Exception: The additional watertight pan may be of corrosion resistant material other than metal, when approved by the Authority Having Jurisdiction.</p> <p>This requirement is in addition to the requirements in Section 312.3 and Section 312.4.</p> <p>312.2.1 Water-Level Sensing Devices. On units and other coils on a roof or above a ceiling that do not have a secondary drain or means to install a secondary drain pan, a water-level sensing device shall be installed inside the primary drain pan.</p>	<p>310.2 Condensate Control. Where an equipment or appliance is installed in a space where damage is capable of resulting from condensate overflow, other than damage to replaceable lay in ceiling tiles, a secondary drain line shall be provided and shall be drained to a readily observed location in accordance with Section 310.1. An additional protection method for condensate overflow shall be provided in accordance with one of the following:</p> <ol style="list-style-type: none">(1) A water level detecting device that will shut off the equipment or appliance in the event the primary drain is blocked.(2) An additional watertight pan of corrosion-resistant material, with a separate drain line, installed beneath the cooling coil, unit, or the appliance to catch the overflow condensate due to a clogged primary condensate drain.(3) An additional drain line at a level that is higher than the primary drain line connection of the drain pan.(4) An additional watertight pan of corrosion-resistant material with a water level detection device installed beneath the cooling coil, unit, or the appliance to catch the overflow condensate due to a clogged primary condensate drain and to shut off the equipment.	<p>City of Houston Amendment</p> <p>Analysis: COH amendment & base code modified to maintain consistency in code application and enforcement. Provisions for a required water-level sensor is now provided in the model code in this section. Previous COH amendment UMC 2012 Section 312.2.1 is deleted.</p> <p>Justification: Due to past City of Houston experience with clogged overflow drains the requirement for a secondary drain to be installed to drain to a location that provides the occupant the ability to readily observe any drainage from the drainpipe is needed to prevent damage to the structure and to prevent the possibility of health problems due to mold and mildew growth. Exception for lay in ceiling tiles makes no sense in this application; stricken to prevent damage and replacement of tiles.</p> <p>Base code modified during review process 10.12.21.</p>

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<div>This device shall shut off the appliance in the event that the primary drain becomes restricted. Inline overflow devices installed in the primary drain line shall not be permitted.</div>		<div>The additional pan or the additional drain line collection shall be provided with a drain pipe of not less than ¾ of an inch (20 mm) nominal pipe size, discharging at a point that is readily observed.</div> <div>[EDITORIAL NOTE: THE REMAINDER OF THIS SECTION REMAINS AS SET FORTH IN THE 2015 UMC.]</div>																																																
<div>1106.10 Condensate. Condensate from air-cooling coils shall be collected and drained to an approved location. Drain pans and coils shall be arranged to allow thorough drainage and access for cleaning. Where temperatures drop below freezing, heat tracing and insulation of condensate drains shall be installed. Primary drain piping inside buildings shall be insulated for the first 15 feet (4572 mm) horizontally from the drain pan. The insulation shall be a minimum of ½ inch (12.7 mm) in thickness.</div>		<div>310.3.2 Insulation. Primary drain piping inside buildings shall be insulated for the first 15 feet (4572 mm) horizontally from the drain pan. The insulation shall be a minimum of ½ inch (12.7 mm) in thickness.</div> <div><i>(1105.7 Condensate. Condensate from air-cooling coils shall be collected and drained to an approved location. Drain pans and coils shall be arranged to allow thorough drainage and access for cleaning. Where temperatures drop below freezing, heat tracing and insulation of condensate drains shall be installed.)</i></div>		<div>City of Houston Amendment</div> <div>Analysis: Model code text relocated from UMC 2012 Section 1106.10 to UMC 2015 Section 1105.7. Previous COH amendment is NOT modified. However, it is relocated to the general requirements in Chapter 3.</div> <div>Justification: Amendment relocated to the general requirements of Chapter 3 in Section 310.3.2.</div> <div>Base code modified during review process on 10.12.21.</div>																																														
<div>314.5 Wood members in plenum. Floor joists or trusses that serve dwelling units shall not be located within a return air plenum.</div>		<div>602.2 Combustibles Within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 1723.</div> <div>Exceptions:<ul style="list-style-type: none">(1) Return-air and outside-air ducts, plenums, or concealed spaces that serve a dwelling unit shall be permitted to be of combustible construction.(2) Air filters in accordance with the requirements of Section I 3 11.2.(3) Water evaporation media in an evaporative cooler.(4) Charcoal filters where protected with an approved fire suppression system.(5) Products listed and labeled for installation within plenums in accordance with Section 602.2.1 through Section 602.2.4.(6) Smoke detectors.(7) Duct insulation, coverings, and linings and other supplementary materials installed in accordance with Section 604.0.(8) Materials in a hazardous fabrication area including the areas above and below the fabrication area sharing a common air recirculation path with the fabrication area.</div>		<div>City of Houston Amendment</div> <div>Analysis: COH amendment UMC 2012 Section 314.5 is deleted. Model code Section 602.2 (Exception #1) permits the use of combustible materials for return-air, outside-air ducts, plenums, or concealed spaces that serve a dwelling unit.</div> <div>Justification: Amendment no longer needed and is covered in IRC Section M1601.1.1.</div>																																														
2012 Houston UMC – Chapter 4 Ventilation Air Supply		2015 Houston UMC – Chapter 4 Ventilation Air		Code Analysis																																														
<div>TABLE402.1 MINIMUM VENTILATION RATES IN BREATHING ZONE 1, 2 [ASHRAE 62.1: TABLE 6-1]</div> <table><tr><th>OCCUPANCY CATEGORY 4</th><th>PEOPLE OUTDOOR Air Rate R_p (cfm/person)</th><th>AREA OUTDOOR Air Rate R_A (cfm/ft 2)</th><th>DEFAULT OCCUPANT Density 3 (people/1000 ft 2)</th></tr><tr><td>CORRECTIONAL FACILITIES</td><td></td><td></td><td></td></tr><tr><td>Booking/waiting</td><td>7.5</td><td>0.06</td><td>50</td></tr><tr><td>Cell</td><td>5</td><td>0.12</td><td>25</td></tr><tr><td>Day room</td><td>5</td><td>0.06</td><td>30</td></tr></table>		OCCUPANCY CATEGORY 4	PEOPLE OUTDOOR Air Rate R _p (cfm/person)	AREA OUTDOOR Air Rate R _A (cfm/ft 2)	DEFAULT OCCUPANT Density 3 (people/1000 ft 2)	CORRECTIONAL FACILITIES				Booking/waiting	7.5	0.06	50	Cell	5	0.12	25	Day room	5	0.06	30	<div>TABLE 402.1 MINIMUM VENTILATION RATES IN BREATHING ZONE 1, 2, 4 [ASHRAE 62.1: TABLE 6.2.2.1]</div> <table><tr><th>OCCUPANCY CATEGORY 4</th><th>PEOPLE OUTDOOR Air Rate R_p (cfm/person)</th><th>AREA OUTDOOR Air Rate R_A (cfm/ft 2)</th><th>DEFAULT OCCUPANT Density 3 (people/1000 ft 2)</th><th>AIR CLASS</th></tr><tr><td>CORRECTIONAL FACILITIES</td><td></td><td></td><td></td><td></td></tr><tr><td>Booking/waiting</td><td>7.5</td><td>0.06</td><td>50</td><td>2</td></tr><tr><td>Cell</td><td>5</td><td>0.12</td><td>25</td><td>2</td></tr><tr><td>Day room</td><td>5</td><td>0.06</td><td>30</td><td>1</td></tr></table>		OCCUPANCY CATEGORY 4	PEOPLE OUTDOOR Air Rate R _p (cfm/person)	AREA OUTDOOR Air Rate R _A (cfm/ft 2)	DEFAULT OCCUPANT Density 3 (people/1000 ft 2)	AIR CLASS	CORRECTIONAL FACILITIES					Booking/waiting	7.5	0.06	50	2	Cell	5	0.12	25	2	Day room	5	0.06	30	1	<div>City of Houston Amendment</div>	
OCCUPANCY CATEGORY 4	PEOPLE OUTDOOR Air Rate R _p (cfm/person)	AREA OUTDOOR Air Rate R _A (cfm/ft 2)	DEFAULT OCCUPANT Density 3 (people/1000 ft 2)																																															
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Guard stations	5	0.06	15
DRY CLEANERS / LAUNDRIES			
Coin-operated dry cleaner	15	—	20
Coin-operated laundries	7.5	—	20
Commercial dry cleaner	30	0.06	30
Commercial laundry	25	—	10
Storage, pick up	7.5	0.12	30
EDUCATIONAL FACILITIES			
Art classroom	10	0.18	20
Classrooms (ages 5-8)	10	0.12	25
Classrooms (age 9 plus)	10	0.12	35
Computer lab	10	0.12	25
Day care (through age 4)	10	0.18	25
Day care sickroom	10	0.18	25
Lecture classroom	7.5	0.06	65
Lecture hall (fixed seats)	7.5	0.06	150
Media center ^a	10	0.12	25
Music/theater/dance	10	0.06	35
Multi-use assembly	7.5	0.06	100
Science laboratories ^e	10	0.18	25
University/college laboratories	10	0.18	25
Wood/metal shop	10	0.18	20
FOOD AND BEVERAGE SERVICE			
Bars, cocktail lounges	7.5	0.18	100
Cafeteria/fast food dining	7.5	0.18	100
Kitchen (cooking) ^l	7.5	0.12	20
Restaurant dining rooms	7.5	0.18	70
GENERAL			
Break rooms	5	0.06	25
Coffee stations	5	0.06	20
Conference/meeting	5	0.06	50
Corridors	—	0.06	—
Occupiable storage rooms for liquids or gels ^b	5	0.12	2
HOSPITALS, NURSING AND CONVALESCENT HOMES			
Autopsy rooms	—	—	0.5
Medical Procedure rooms	15	20	—

Guard stations	5	0.06	15	1
DRY CLEANERS / LAUNDRIES				
Coin-operated dry cleaner	15	—	20	
Coin-operated laundries	7.5	0.12	20	2
Commercial dry cleaner	30	0.06	30	
Commercial laundry	25	—	10	
Storage, pick up	7.5	0.12	30	
EDUCATIONAL FACILITIES				
Art classroom	10	0.18	20	2
Classrooms (ages 5-8)	10	0.12	25	1
Classrooms (age 9 plus)	10	0.12	35	1
Computer lab	10	0.12	25	1
Day care (through age 4)	10	0.18	25	2
Day care sickroom	10	0.18	25	3
Lecture classroom	7.5	0.06	65	1
Lecture hall (fixed seats)	7.5	0.06	150	1
Media center ^a	10	0.12	25	1
Multi-use assembly	7.5	0.06	100	1
Music/theater/dance	10	0.06	35	1
Science laboratories ^e	10	0.18	25	2
University/college laboratories	10	0.18	25	2
Wood/metal shop	10	0.18	20	2
FOOD AND BEVERAGE SERVICE				
Bars, cocktail lounges	7.5	0.18	100	2
Cafeteria/fast food dining	7.5	0.18	100	2
Kitchen (cooking) ^l	7.5	0.12	20	2
Restaurant dining rooms	7.5	0.18	70	2
GENERAL				
Break rooms	5	0.06	25	1
Coffee stations	5	0.06	20	1
Conference/meeting	5	0.06	50	1
Corridors	—	0.06	—	1
Occupiable storage rooms for liquids or	5	0.12	2	2

Analysis: New Model code added a new column in UMC 2015 Table 402.1. A new COH amendment is included in the new column. Previous 2012 COH amendments are also carried forward.

Justification: Amendment needed to match the requirements of the IRC and maintain conformity between local policies.

COH amendment modified during review process 10.12.21

City of Houston Amendment

Analysis: New Model code added a new column in UMC 2015 Table 402.1. A new COH amendment is included in the new column. Previous 2012 COH amendments are also carried forward.

Justification: Amendment needed to match the requirements of the IRC and maintain conformity between local policies.

COH amendment modified during review process 10.12.21

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Operating rooms	30	20	—
Patient rooms	25	10	—
Physical therapy	15	20	—
Recovery and ICU	15	20	—
HOTELS, MOTELS, RESORTS, DORMITORIES			
Bedroom/living room	5	0.06	10
Barracks sleeping areas	5	0.06	20
Dormitory sleeping areas	5	0.06	—
Gambling casinos	7.5	0.16	—
Laundry rooms, central	5	0.12	10
Laundry rooms within dwelling units	5	0.12	10
Lobbies/pre-function	7.5	0.06	30
Multipurpose assembly	5	0.06	120
OFFICE BUILDINGS			
Breakrooms	5	0.12	50
Occupiable storage rooms for dry materials	5	0.06	2
Office space	5	0.06	5
Main entry lobbies	5	0.06	10
Reception areas	5	0.06	30
Telephone/data entry	5	0.06	60
MISCELLANEOUS SPACES			
Bank or bank lobbies	7.5	0.06	15
Bank vaults/safe deposit	5	0.06	5
Computer (not printing)	5	0.06	4
General manufacturing (excludes heavy industrial and processes using chemicals)	10	0.18	7
Pharmacy (prep. area)	5	0.18	10
Photo studios	5	0.12	10
Shipping/receiving b	10	0.12	2
Sorting, packing, light assembly	7.5	0.12	7
Telephone closets	—	0.00	—
Transportation waiting	7.5	0.06	100
Warehouses b	10	0.06	—
PUBLIC ASSEMBLY SPACES			
Auditorium seating area	5	0.06	150
Courtrooms	5	0.06	70

gels b				
HOSPITALS, NURSING AND CONVALESCENT HOMES				
Autopsy rooms	—	0.5	20	
Medical procedure rooms	15	—	20	
Operating rooms	30	—	20	
Patient rooms	25	—	10	
Physical therapy	15	—	20	
Recovery and ICU	15	—	20	
HOTELS, MOTELS, RESORTS, DORMITORIES				
Barracks sleeping areas	5	0.06	20	1
Bedroom/living room	5	0.06	10	1
Dormitory sleeping areas	5	0.06	—	
Gambling casinos	7.5	0.16	—	
Laundry rooms, central	5	0.12	10	2
Laundry rooms within dwelling units	5	0.12	10	1
Lobbies/pre-function	7.5	0.06	30	1
Multipurpose assembly	5	0.06	120	1
OFFICE BUILDINGS				
Breakrooms	5	0.12	50	1
Main entry lobbies	5	0.06	10	1
Occupiable storage rooms for dry materials	5	0.06	2	1
Office space	5	0.06	5	1
Reception areas	5	0.06	30	1
Telephone/data entry	5	0.06	60	1
MISCELLANEOUS SPACES				
Bank or bank lobbies	7.5	0.06	15	1
Bank vaults/safe deposit	5	0.06	5	2
Computer (not printing)	5	0.06	4	1
Freezer and refrigerated spaces (<50°F) e	10	—	—	2
General manufacturing (excludes heavy industrial and	10	0.18	7	3

City of Houston Amendment

Analysis: New Model code added a new column in UMC 2015 Table 402.1. A new COH amendment is included in the new column. Previous 2012 COH amendments are also carried forward.

Justification: Amendment needed to match the requirements of the IRC and maintain conformity between local policies. COH amendment modified during review process 10.12.21.

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Legislative chambers	5	0.06	50
Libraries	5	0.12	10
Lobbies	5	0.06	150
Museums (children's)	7.5	0.12	40
Museums/galleries	7.5	0.06	40
Places of religious worship	5	0.06	120
RESIDENTIAL			
Common corridors	—	0.06	—
Dwelling unit f, g	5	0.06	See footnote f
RETAIL			
Sales (except as below)	7.5	0.12	15
Barber shop	7.5	0.06	25
Beauty and nail salons h	20-25	0.12-0.25	25
Coin-operated laundries	7.5	0.12	20
Mall common areas	7.5	0.06	40
Pet shops (animal areas)	7.5	0.18	10
Supermarket	7.5	0.06	8
SPORTS AND ENTERTAINMENT			
Bowling alley (seating)	10	0.12	40
Disco/dance floors	20	0.06	100
Gambling casinos	7.5	0.18	120
Game arcades	7.5	0.18	20
Gym, stadium (play area)	—	0.30	30
Health club/aerobics room	20	0.06	40
Health club/weight rooms	20	0.06	10
Sports arena (play area)	—	0.30	—
Spectator areas	7.5	0.06	150
Stages, studios d	10	0.06	50
Swimming (pool & deck) c	—	0.48	—

For SI units: 1 cubic foot per minute = 0.0283 m³/min, 1 square foot = 0.0929 m²**Notes:**

- 1 This table applies to no-smoking areas. Rates for smoking-permitted spaces must be determined using other methods.
- 2 Volumetric airflow rates are based on an air density of 0.075 pounds of dry air per cubic foot (lb_{da}/ft³) (1.201 kg_{da}/m³), which corresponds to dry air at a barometric pressure of 1 atm (101 kPa) and an air temperature of 70°F (21°C). Rates shall be permitted to be adjusted for actual density but such adjustment is not required for compliance with this chapter.

processes using chemicals)				
Pharmacy (prep. area)	5	0.18	10	2
Photo studios	5	0.12	10	1
Shipping/receiving b	10	0.12	2	2
Sorting, packing, light assembly	7.5	0.12	7	2
Telephone closets	—	—	—	1
Transportation waiting	7.5	0.06	100	1
Warehouses b	10	0.06	—	2
PUBLIC ASSEMBLY SPACES				
Auditorium seating area	5	0.06	150	1
Courtrooms	5	0.06	70	1
Legislative chambers	5	0.06	50	1
Libraries	5	0.12	10	1
Lobbies	5	0.06	150	1
Museums (children's)	7.5	0.12	40	1
Museums/galleries	7.5	0.06	40	1
Places of religious worship	5	0.06	120	1
RESIDENTIAL				
Common corridors	—	0.06	—	1
Dwelling unit f, g	5	0.06	See footnote f	1
RETAIL				
Sales (except as below)	7.5	0.12	15	2
Barber shop	7.5	0.06	25	2
Beauty and nail salons h	20-25	0.12-0.25	25	2
Coin-operated laundries	7.5	0.12	20	2
Mall common areas	7.5	0.06	40	1
Pet shops (animal areas)	7.5	0.18	10	2
Supermarket	7.5	0.06	8	1
SPORTS AND ENTERTAINMENT				
Bowling alley (seating)	10	0.12	40	1
Disco/dance floors	20	0.06	100	2
Gambling casinos	7.5	0.18	120	1

2012 Houston UMC Amendments		2015 Houston UMC Amendments					Code Change Summary																																				
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<p>3 The default occupant density shall be used where actual occupant density is not known.</p> <p>4 Where the occupancy category for a proposed space or zone is not listed, the requirements for the listed occupancy category that is most similar in terms of occupant density, activities, and building construction shall be used.</p> <p>ITEM-SPECIFIC NOTES FOR TABLE 402.1</p> <p>a For high school and college libraries, use values shown for Public Spaces- Library.</p> <p>b Rate is capable of not being sufficient where stored materials include those having potentially harmful emissions.</p> <p>c Rate does not allow for humidity control. Additional ventilation or dehumidification shall be permitted to be required to remove moisture.</p> <p>d Rate does not include special exhaust for stage effects, (e.g., dry ice vapors, smoke).</p> <p>e No class of air has been established for this occupancy category.</p> <p>f Default occupancy for dwelling units shall be two persons for studio and one-bedroom units, with one additional person for each additional bedroom.</p> <p>g Air from one residential dwelling shall not be recirculated or transferred to other space outside of that dwelling.</p> <p>h Provide minimum 80% outdoor makeup air to A/C System through fixed openings.</p> <p>i Where the hood is eliminated for enclosed single batch low temperature chemical dishwashers , the ventilation shall be designed by a licensed design professional to accommodate the latent and sensible heat load emitted from such appliances</p>		<table><tr><td>Game arcades</td><td>7.5</td><td>0.18</td><td>20</td><td>1</td></tr><tr><td>Gym, sports arena (play area) e</td><td>20</td><td>0.18</td><td>7</td><td>2</td></tr><tr><td>Health club/aerobics room</td><td>20</td><td>0.06</td><td>40</td><td>2</td></tr><tr><td>Health club/weight rooms</td><td>20</td><td>0.06</td><td>10</td><td>2</td></tr><tr><td>Spectator areas</td><td>7.5</td><td>0.06</td><td>150</td><td>1</td></tr><tr><td>Stages, studios d</td><td>10</td><td>0.06</td><td>70</td><td>1</td></tr><tr><td>Swimming (pool & deck) c</td><td>—</td><td>0.48</td><td>—</td><td>2</td></tr></table> <p>For SI units: 1 cubic foot per minute = 0.0283 m³/min, 1 square foot = 0.0929 m²</p> <p>Notes:</p> <p>1 This table applies to no-smoking areas. Rates for smoking-permitted spaces shall must be determined using other methods.</p> <p>2 Volumetric airflow rates are based on an air density of 0.075 pounds of dry air per cubic foot (lb_{da}/ft³) (1.201 kg_{da}/m³), which corresponds to dry air at a barometric pressure of 1 atm (101 kPa) and an air temperature of 70°F (21°C). Rates shall be permitted to be adjusted for actual density but such adjustment is not required for compliance with this chapter.</p> <p>3 The default occupant density shall be used where actual occupant density is not known.</p> <p>4 Where the occupancy category for a proposed space or zone is not listed, the requirements for the listed occupancy category that is most similar in terms of occupant density, activities, and building construction shall be used.</p> <p>ITEM-SPECIFIC NOTES FOR TABLE 402.1</p> <p>a For high school and college libraries, use values shown for Public Assembly Spaces – Libraries.</p> <p>b Rate is capable of not being sufficient where stored materials include those having potentially harmful emissions.</p> <p>c Rate does not allow for humidity control. Additional ventilation or dehumidification shall be permitted to be required to remove moisture. “Deck area” refers to the area surrounding the pool that would be expected to be wetted during normal pool use, i.e., where the pool is occupied. Deck area that is not expected to be wetted shall be designated as a space type (for example, “spectator area”).</p> <p>d Rate does not include special exhaust for stage effects, e.g., dry ice vapors, smoke.</p> <p>e Where combustion equipment is intended to be used on the playing surface or in the space, additional dilution ventilation, source control, or both shall be provided.</p> <p>f Default occupancy for dwelling units shall be two persons for studio and one-bedroom units, with one additional person for each additional bedroom.</p> <p>g Air from one residential dwelling shall not be recirculated or transferred to other space outside of that dwelling.</p> <p>h Provide minimum 80% outdoor makeup air to air conditioning system through fixed openings.</p> <p>i Where the hood is eliminated for enclosed single batch low temperature chemical dishwashers, the ventilation shall be designed by a licensed design professional to accommodate the latent and sensible heat load emitted from such appliances.</p>							Game arcades	7.5	0.18	20	1	Gym, sports arena (play area) e	20	0.18	7	2	Health club/aerobics room	20	0.06	40	2	Health club/weight rooms	20	0.06	10	2	Spectator areas	7.5	0.06	150	1	Stages, studios d	10	0.06	70	1	Swimming (pool & deck) c	—	0.48	—	2
Game arcades	7.5	0.18	20	1																																							
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MINIMUM EXHAUST RATES
[ASHRAE 62.1: TABLE 6.4]

OCCUPANCY CATEGORY 6	EXHAUST RATE (cfm/unit)	EXHAUST RATE (cfm/ft ²)
Arenas 2	–	0.50
Art classrooms	–	0.70
Auto repair rooms 1	–	1.50
Barber shops	–	0.50
Beauty and nail salons	–	0.60
Cells with toilet	–	1.00
Copy, printing rooms	–	0.50
Darkrooms	–	1.00
Educational science laboratories	–	1.00
Janitor closets, trash rooms, recycling	–	1.00
Kitchens – commercial	–	0.70
Kitchenettes	–	0.30
Locker rooms	–	0.50
Locker/dressing rooms	–	0.25
Parking garages 3, 7	–	0.75
Pet shops (animal areas)	–	0.90
Residential – kitchens 8	50/100	–
Soiled laundry storage rooms	–	1.00
Storage rooms, chemical	–	1.50
Toilets – private 5	25/50	–
Toilets – public 4	50/70	–
Woodwork shop/classrooms	–	0.50

For SI units: 1 cubic foot per minute = 0.0283 m³/min, 1 square foot = 0.0929 m²

Notes:

- 1 Stands where engines are run shall have exhaust systems that directly connect to the engine exhaust and prevent escape of fumes.
- 2 The rates do not include exhaust from vehicles or equipment with internal combustion engines.
- 3 Exhaust rate is not required for open parking garages as defined in accordance with the building code.
- 4 Rate is per water closet or urinal. Provide the higher rate where periods of heavy use are expected to occur, e.g., toilets in theatres, schools, and sports facilities.
- 5 Rate is for a toilet room intended to be occupied by one person at a time. For continuous system operation during normal hours of use, the lower rate shall be used. Otherwise use the higher rate.
- 6 For unlisted occupancies for a proposed space not listed in the table, the requirements for the listed occupancy that is most similar in terms of occupant density and occupancy type shall be used.
- 7 Exhaust rate is not required for enclosed parking garages having a floor area of 1000 square feet (92.9 m²) or less and used for the storage of five or less motorized vehicles.

TABLE 403.7
MINIMUM EXHAUST RATES
[ASHRAE 62.1: TABLE **6.5]**

OCCUPANCY CATEGORY 4	EXHAUST RATE (cfm/unit)	EXHAUST RATE (cfm/ft ²)	AIR CLASS
Arenas 2	–	0.50	1
Art classrooms	–	0.70	2
Auto repair rooms 1	–	1.50	2
Barber shops	–	0.50	2
Beauty and nail salons	–	0.60	2
Cells with toilet	–	1.00	2
Copy, printing rooms	–	0.50	2
Darkrooms	–	1.00	2
Educational science laboratories	–	1.00	2
Janitor closets, trash rooms, recycling	–	1.00	3
Kitchens – commercial	–	0.70	2
Kitchenettes	–	0.30	2
Locker rooms	–	0.50	2
Locker/dressing rooms	–	0.25	2
Paint spray booths	–	–	4
Parking garages 3	–	0.75	2
Pet shops (animal areas)	–	0.90	2
Refrigerating machinery rooms 6	–	–	3
Residential – kitchens 7	25/50	–	2
Soiled laundry storage rooms	–	1.00	3
Storage rooms, chemical	–	1.50	4
Toilets – private 5, 9	20/25	–	2
Toilets – public 4, 9	50/70	–	2
Woodwork shop/classrooms	–	0.50	2

For SI units: 1 cubic foot per minute = 0.0283 m³/min, 1 square foot = 0.0929 m²

Notes:

- 1 Stands where engines are run shall have exhaust systems that directly connect to the engine exhaust and prevent escape of fumes.
- 2 Where combustion equipment is intended to be used on the playing surface, additional dilution ventilation, source control, or both shall be provided.
- 3 Exhaust rate is not required for open parking garages as defined in accordance with the building code.
- 4 Rate is per water closet, urinal, or both. Provide the higher rate where periods of heavy use are expected to occur, e.g., toilets in theatres, schools, and sports facilities. Otherwise the lower rate shall be permitted to be used.
- 5 Rate is for a toilet room intended to be occupied by one person at a time. For continuous system operation during normal hours of use, the lower rate shall be permitted to be used. Otherwise the lower rate shall be permitted to be used.
- 6 For refrigeration machinery rooms, the exhaust rate shall comply with Chapter 11.
- 7 For continuous system operation, the lower rates shall be permitted. Otherwise the higher rate shall be used.

City of Houston Amendment

Analysis: New Model code added a third column to the table to address the “AIR CLASS” which is now included in the provisions of the mechanical code. UMC 2015 Table 403.7 include two minor COH amendments to reduce the exhaust rates specified in the table for residential kitchens and private toilets.

Justification: Amendment needed to match the requirements of the IRC and maintain conformity between local policies.

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
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<div><div>8</div>For continuous system operation, the lower rates shall be permitted. Otherwise the higher rate shall be used.</div>	<div><div>8</div>For unlisted occupancies for a proposed space not listed in the table, the requirements for the listed occupancy that is most similar in terms of occupant density and occupancy type shall be used.</div> <div><div>9</div>Exhaust air that has been cleaned in accordance with the criteria of Class 1 shall be permitted to be recirculated.</div>	
<div><div>Houston IBC 2015 Excerpts:</div><div>909 Smoke Control Systems.</div><div>909.1 Scope and Purpose. This section applies to mechanical and passive smoke control systems that are required by the <i>Building Code</i> or the <i>Fire Code</i>. 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 provisions in Section 910 of the <i>Building Code</i> or the <i>Fire Code</i>.</div></div>	<div><div>405.0 Smoke Control Systems.</div><div>405.1 Scope and Purpose. This section applies to mechanical and passive smoke control systems that are required by the <i>Building Code</i> or the <i>Fire Code</i>. 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 provisions in Section 910 of the <i>Building Code</i> or the <i>Fire Code</i>.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</div></div>
<div><div>909.2 General Design Requirements. Buildings, structures, or parts thereof required by the <i>Building Code</i> or the <i>Fire Code</i> to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 of the <i>Building Code</i> and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.</div></div>	<div><div>405.2 General Design Requirements. Buildings, structures, or parts thereof required by the <i>Building Code</i> or the <i>Fire Code</i> to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 of the <i>Building Code</i> and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</div></div>
<div><div>909.3 Special Inspection and Test Requirements. In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 of the <i>Building Code</i> shall undergo special inspections and acceptance testing by a Houston registered special inspector, sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms as found in Section 1704 of the <i>Building Code</i>.</div></div>	<div><div>405.3 Special Inspection and Test Requirements. In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 of the <i>Building Code</i> shall undergo special inspections and acceptance testing by a Houston registered special inspector, sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms as found in Section 1704 of the <i>Building Code</i>.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</div></div>
<div><div>909.4 Analysis. A rational analysis supporting the types of smoke control systems to be employed, their methods of operation, the systems supporting them and the methods of construction to be utilized shall accompany the submitted construction documents and shall include, but not be limited to, the items indicated in Sections 405.4.1 through 405.4.7.</div></div>	<div><div>405.4 Analysis. A rational analysis supporting the types of smoke control systems to be employed, their methods of operation, the systems supporting them and the methods of construction to be utilized shall accompany the submitted construction documents and shall include, but not be limited to, the items indicated in Sections 405.4.1 through 405.4.7.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section</div></div>

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		405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.1 Stack Effect. <u>The system shall be designed such that the maximum probable normal or reverse stack effects will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.</u>	405.4.1 Stack Effect. <u>The system shall be designed such that the maximum probable normal or reverse stack effects will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.</u>	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.2 Temperature Effect of Fire. <u>Buoyancy and expansion caused by the design fire in accordance with Section 405.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.</u>	405.4.2 Temperature Effect of Fire. <u>Buoyancy and expansion caused by the design fire in accordance with Section 405.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.</u>	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.3 Wind Effect. <u>The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of the <i>Building Code</i>.</u>	405.4.3 Wind Effect. <u>The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of the <i>Building Code</i>.</u>	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.4 HVAC Systems. <u>The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems' status. The design shall consider the effects of fire on the HVAC systems.</u>	405.4.4 HVAC Systems. <u>The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems' status. The design shall consider the effects of fire on the HVAC systems.</u>	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All

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		references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.5 Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.	405.4.5 Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.6 Duration of Operation. All portions of active or engineered smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than either 20 minutes or 1.5 times the calculated egress time, whichever is greater.	405.4.6 Duration of Operation. All portions of active or engineered smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than either 20 minutes or 1.5 times the calculated egress time, whichever is greater.	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.4.7 Smoke Control System Interaction. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios.	405.4.7 Smoke Control System Interaction. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios.	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
909.5 Smoke Barrier Construction. Smoke barriers required for passive smoke control and a smoke control system using the pressurization method shall comply with the <i>Building Code</i> . Smoke barriers shall be constructed and sealed to limit leakage areas exclusive of protected openings. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios: (1) Walls: $A/A_w = 0.00100$ (2) Interior exit stairways and ramps and exit passageways: $A/A_w = 0.00035$	405.5 Smoke Barrier Construction. Smoke barriers required for passive smoke control and a smoke control system using the pressurization method shall comply with the <i>Building Code</i> . Smoke barriers shall be constructed and sealed to limit leakage areas exclusive of protected openings. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios: (1) Walls: $A/A_w = 0.00100$ (2) Interior exit stairways and ramps and exit passageways: $A/A_w = 0.00035$	City of Houston Amendment Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes.. Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All

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<p>(3) Enclosed exit access stairways and ramps and all other shafts: $A/A_w = 0.00150$</p> <p>(4) Floors and roofs: $A/A_F = 0.00050$</p> <p>Where:</p> <p> A = Total leakage area, square feet (m²). A_F = Unit floor or roof area of barrier, square feet (m²). A_w = Unit wall area of barrier, square feet (m²).</p> <p>The leakage area ratios shown do not include openings created by gaps around doors and operable windows. The total leakage area of the smoke barrier shall be determined in accordance with Section 405.5.1 and tested in accordance with Section 405.5.2.</p>		<p>(3) Enclosed exit access stairways and ramps and all other shafts: $A/A_w = 0.00150$</p> <p>(4) Floors and roofs: $A/A_F = 0.00050$</p> <p>Where:</p> <p> A = Total leakage area, square feet (m²). A_F = Unit floor or roof area of barrier, square feet (m²). A_w = Unit wall area of barrier, square feet (m²).</p> <p>The leakage area ratios shown do not include openings created by gaps around doors and operable windows. The total leakage area of the smoke barrier shall be determined in accordance with Section 405.5.1 and tested in accordance with Section 405.5.2.</p>	references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
<p>909.5.1 Total Leakage Area. Total leakage area of the barrier is the product of the smoke barrier gross area times the allowable leakage area ratio, plus the area of other openings such as gaps around doors and operable windows.</p>		<p>405.5.1 Total Leakage Area. Total leakage area of the barrier is the product of the smoke barrier gross area times the allowable leakage area ratio, plus the area of other openings such as gaps around doors and operable windows.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.5.2 Testing of Leakage Area. Compliance with the maximum total leakage area shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems utilizing the pressurization method. Compliance with the maximum total leakage area of passive smoke control systems shall be verified through methods such as door fan testing or other methods, as approved by the fire code official.</p>		<p>405.5.2 Testing of Leakage Area. Compliance with the maximum total leakage area shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems utilizing the pressurization method. Compliance with the maximum total leakage area of passive smoke control systems shall be verified through methods such as door fan testing or other methods, as approved by the fire code official.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>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 door assemblies complying with the requirements of the <i>Building Code</i> for doors in smoke barriers.</p> <p>Exceptions:</p> <p>(1) Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with the <i>Building Code</i>.</p> <p>(2) Fixed openings between smoke zones that are protected utilizing the airflow method.</p> <p>(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</p>		<p>405.5.3 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 door assemblies complying with the requirements of the <i>Building Code</i> for doors in smoke barriers.</p> <p>Exceptions:</p> <p>(1) Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with the <i>Building Code</i>.</p> <p>(2) Fixed openings between smoke zones that are protected utilizing the airflow method.</p> <p>(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</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>

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<p>accordance with Section 405.5.3.1, the doors shall not be required to be protected in accordance with Section 716 of the <i>Building Code</i>. The doors shall be close-fitting within operational tolerances and shall not have a center mullion or undercuts in excess of ¾ 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.</p> <p>(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 of the <i>Building Code</i> and are automatic closing by smoke detection in accordance with Section 716.5.9.3 of the <i>Building Code</i>.</p> <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>accordance with Section 405.5.3.1, the doors shall not be required to be protected in accordance with Section 716 of the <i>Building Code</i>. The doors shall be close-fitting within operational tolerances and shall not have a center mullion or undercuts in excess of ¾ 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.</p> <p>(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 of the <i>Building Code</i> and are automatic closing by smoke detection in accordance with Section 716.5.9.3 of the <i>Building Code</i>.</p> <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 of the <i>Building Code</i> 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>405.5.3.1 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 of the <i>Building Code</i> 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>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.5.3.2 Ducts and Air Transfer Openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250°F (121°C) smoke damper complying with the <i>Building Code</i>.</p>		<p>405.5.3.2 Ducts and Air Transfer Openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250°F (121°C) smoke damper complying with the <i>Building Code</i>.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.6 Pressurization Method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.</p>		<p>405.6 Pressurization Method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All</p>

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		references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
<p>909.6.1 Minimum Pressure Difference. The minimum pressure difference across a smoke barrier shall be 0.05-inch water gage (12.4 Pa) in fully sprinklered buildings. In building 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>405.6.1 Minimum Pressure Difference. The minimum pressure difference across a smoke barrier shall be 0.05-inch water gage (12.4 Pa) in fully sprinklered buildings. In building 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>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.6.2 Maximum Pressure Difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with the <i>Building Code</i>. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:</p> <p>$F = F_{dc} + K(WA\Delta P)/2(W-d)$</p> <p>Where:</p> <p>A = Door area, square feet (m²).</p> <p>d = Distance from door handle to latch edge of door, feet (m).</p> <p>F = Total door opening force, pounds (N).</p> <p>F_{dc} = Force required to overcome closing device, pounds (N).</p> <p>K = Coefficient 5.2 (1.0).</p> <p>W = Door width, feet (m).</p> <p>ΔP = Design pressure difference, inches of water gage (Pa).</p>	<p>405.6.2 Maximum Pressure Difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with the <i>Building Code</i>. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:</p> <p>$F = F_{dc} + K(WA\Delta P)/2(W-d)$</p> <p>Where:</p> <p>A = Door area, square feet (m²).</p> <p>d = Distance from door handle to latch edge of door, feet (m).</p> <p>F = Total door opening force, pounds (N).</p> <p>F_{dc} = Force required to overcome closing device, pounds (N).</p> <p>K = Coefficient 5.2 (1.0).</p> <p>W = Door width, feet (m).</p> <p>ΔP = Design pressure difference, inches of water gage (Pa).</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.6.3 Pressurized Stairways and Elevator Hoistways. Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with Section 405 as smoke control systems, in addition to the requirements of Section 909.20 of the <i>Building Code</i> and 909.21 of the <i>Fire Code</i>.</p>	<p>405.6.3 Pressurized Stairways and Elevator Hoistways. Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with Section 405 as smoke control systems, in addition to the requirements of Section 909.20 of the <i>Building Code</i> and 909.21 of the <i>Fire Code</i>.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.7 Airflow Design Method. Where approved by the code official, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design airflow shall be in accordance with this section. Airflow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be</p>	<p>405.7 Airflow Design Method. Where approved by the code official, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design airflow shall be in accordance with this section. Airflow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p>

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<p>considered to prevent flow reversal from turbulent effects. Smoke control systems using the airflow method shall be designed in accordance with NFPA 92.</p> <p>909.7.1 Prohibited Conditions. This airflow design 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 building occupants exiting. Airflow toward the design 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>flow reversal from turbulent effects. Smoke control systems using the airflow method shall be designed in accordance with NFPA 92.</p> <p>405.7.1 Prohibited Conditions. This airflow design 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 building occupants exiting. Airflow toward the design 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>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.8 Exhaust Method. Where approved by the building official, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. Smoke control systems using the exhaust method shall be designed in accordance with NFPA 92.</p> <p>909.8.1 Exhaust Rate. The height of the lowest horizontal surface of the accumulating smoke layer shall be maintained not less than 6 feet (1829 mm) above any walking surface that forms a portion of a required egress system within the smoke zone.</p>	<p>405.8 Exhaust Method. Where approved by the building official, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. Smoke control systems using the exhaust method shall be designed in accordance with NFPA 92.</p> <p>405.8.1 Exhaust Rate. The height of the lowest horizontal surface of the accumulating smoke layer shall be maintained not less than 6 feet (1829 mm) above any walking surface that forms a portion of a required egress system within the smoke zone.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.9 Design Fire. The design fire shall be based on a rational analysis performed by the registered design professional and approved by the code official. The design fire shall be based on the analysis in accordance with Section 405.4 and this section.</p> <p>909.9.1 Factors Considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.</p> <p>405.9.2 Design Fire Fuel. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration.</p> <p>405.9.3 Heat-Release Assumptions. The analysis shall make use of the best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.</p> <p>405.9.4 Sprinkler Effectiveness Assumptions. A documented engineering analysis shall be provided for conditions that assume fire growth is halted at the time of sprinkler activation.</p>	<p>405.9 Design Fire. The design fire shall be based on a rational analysis performed by the registered design professional and approved by the code official. The design fire shall be based on the analysis in accordance with Section 405.4 and this section.</p> <p>405.9.1 Factors Considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.</p> <p>405.9.2 Design Fire Fuel. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration.</p> <p>405.9.3 Heat-Release Assumptions. The analysis shall make use of the best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.</p> <p>405.9.4 Sprinkler Effectiveness Assumptions. A documented engineering analysis shall be provided for conditions that assume fire growth is halted at the time of sprinkler activation.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.10 Equipment. Equipment, such as, but not limited to, fans, ducts, automatic dampers and balance dampers, shall be suitable for its intended use, suitable for the probable exposure temperatures that the rational analysis indicates and as approved by the code official.</p>	<p>405.10 Equipment. Equipment, such as, but not limited to, fans, ducts, automatic dampers and balance dampers, shall be suitable for its intended use, suitable for the probable exposure temperatures that the rational analysis indicates and as approved by the code official.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>

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<p>909.10.1 Exhaust Fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:</p> $T_s = (Q_c/mc) + (T_a)$ <p>Where:</p> <p>c = Specific heat of smoke at smoke-layer temperature, BTU/lb°F (kJ/kg • K). m = Exhaust rate, pounds per second (kg/s). Q_c = Convective heat output of fire, Btu/s (kW). T_a = Ambient temperature, °F (K). T_s = Smoke temperature, °F (K).</p> <p>Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.</p>	<p>405.10.1 Exhaust Fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:</p> $T_s = (Q_c/mc) + (T_a)$ <p>Where:</p> <p>c = Specific heat of smoke at smoke-layer temperature, BTU/lb°F (kJ/kg • K). m = Exhaust rate, pounds per second (kg/s). Q_c = Convective heat output of fire, Btu/s (kW). T_a = Ambient temperature, °F (K). T_s = Smoke temperature, °F (K).</p> <p>Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.10.2 Ducts. Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 405.10.1. Ducts shall be constructed and supported in accordance with Chapter 6. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.</p> <p>Exception: Flexible connections, for the purpose of vibration isolation, that are constructed of approved fire-resistance-rated materials are exempt from 405.10.2.</p>	<p>405.10.2 Ducts. Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 405.10.1. Ducts shall be constructed and supported in accordance with Chapter 6. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.</p> <p>Exception: Flexible connections, for the purpose of vibration isolation, that are constructed of approved fire-resistance-rated materials are exempt from 405.10.2.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.10.3 Equipment, Inlets and Outlets. Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outdoor air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.</p>	<p>405.10.3 Equipment, Inlets and Outlets. Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outdoor air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.10.4 Automatic Dampers. Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved, recognized standards.</p> <p>909.10.5 Fans. In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty, with the minimum number of belts being two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the structural design requirements of the <i>Building Code</i>. Motors driving fans shall</p>	<p>405.10.4 Automatic Dampers. Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved, recognized standards.</p> <p>405.10.5 Fans. In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty, with the minimum number of belts being two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the structural design requirements of the <i>Building Code</i>. Motors driving fans shall operate</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All</p>

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<div>operate within the limits specified on their nameplate horsepower (kilowatts), as determined from measurement of actual current draw. Motors driving fans shall have a minimum service factor of 1.15.</div>	<div><div>within the limits specified on their nameplate horsepower (kilowatts), as determined from measurement of actual current draw. Motors driving fans shall have a minimum service factor of 1.15.</div></div>	references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.
<div><div>909.11 Standby Power.</div><div>The smoke control system shall be supplied with standby power in accordance with Section 2702 of the <i>Building Code</i>.</div><div><div>909.11.1 Equipment Room.</div><div>The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch gears and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour fire-resistance-rated fire barriers constructed in accordance with Section 707 of the <i>Building Code</i> or horizontal assemblies constructed in accordance with Section 711 of the <i>Building Code</i>, or both. Power distribution from the two sources shall be by independent routes.</div><div><div>909.11.2 Power Sources and Power Surges.</div><div>Elements of the smoke control system relying on volatile memories or the like shall be supplied with uninterruptible power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke control system susceptible to power surges shall be suitable protected by conditioners, suppressors or other approved means.</div></div></div></div>	<div><div>405.11 Standby Power.</div><div>The smoke control system shall be supplied with standby power in accordance with Section 2702 of the <i>Building Code</i>.</div><div><div>405.11.1 Equipment Room.</div><div>The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch gears and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour fire-resistance-rated fire barriers constructed in accordance with Section 707 of the <i>Building Code</i> or horizontal assemblies constructed in accordance with Section 711 of the <i>Building Code</i>, or both. Power distribution from the two sources shall be by independent routes.</div><div><div>405.11.2 Power Sources and Power Surges.</div><div>Elements of the smoke control system relying on volatile memories or the like shall be supplied with uninterruptible power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke control system susceptible to power surges shall be suitable protected by conditioners, suppressors or other approved means.</div></div></div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div><div>Justification:</div><div>Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</div></div></div></div>
<div><div>909.12 Detection and Control Systems.</div><div>Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Section 907 of the <i>Building Code</i>. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.</div></div>	<div><div>405.12 Detection and Control Systems.</div><div>Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Section 907 of the <i>Building Code</i>. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.</div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div><div>Justification:</div><div>Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</div></div></div></div>
<div><div>909.12.1 Verification.</div><div>Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override and the presence of power downstream of all disconnects. A preprogrammed weekly test sequence shall report abnormal conditions audibly, visually and by printed report. The preprogrammed weekly test shall operate all devices, equipment and components used for smoke control.</div><div><div>Exception:</div><div>Where verification of individual components tested through the preprogrammed weekly testing sequence will interfere with, and produce unwanted effects to, normal building operation, such individual components are permitted to be bypassed from the preprogrammed weekly testing, where approved by the building official and in accordance with both of the following:</div><div><div>(1)</div><div>Where the operation of components is bypassed from the preprogrammed weekly test, a listed control unit shall verify weekly the presence of power downstream of all disconnects.</div><div><div>(2)</div><div>Testing of all components bypassed from the preprogrammed weekly test shall be in accordance with Section 909.20.6 of the <i>Fire Code</i>.</div></div></div></div></div>	<div><div>405.12.1 Verification.</div><div>Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override and the presence of power downstream of all disconnects. A preprogrammed weekly test sequence shall report abnormal conditions audibly, visually and by printed report. The preprogrammed weekly test shall operate all devices, equipment and components used for smoke control.</div><div><div>Exception:</div><div>Where verification of individual components tested through the preprogrammed weekly testing sequence will interfere with, and produce unwanted effects to, normal building operation, such individual components are permitted to be bypassed from the preprogrammed weekly testing, where approved by the building official and in accordance with both of the following:</div><div><div>(1)</div><div>Where the operation of components is bypassed from the preprogrammed weekly test, a listed control unit shall verify weekly the presence of power downstream of all disconnects.</div><div><div>(2)</div><div>Testing of all components bypassed from the preprogrammed weekly test shall be in accordance with Section 909.20.6 of the <i>Fire Code</i>.</div></div></div></div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</div><div><div>Justification:</div><div>Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</div></div></div></div>

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<p>909.12.2 Wiring. In addition to meeting the requirements of the <i>Electrical Code</i>, mechanical smoke control, wiring, regardless of voltage, shall be fully enclosed within continuous raceways. The requirement of this section shall apply only to wiring extending from the fire alarm system control unit that activates any required smoke-control system component such as relays, fans, dampers, or stair pressurization systems.</p> <p>909.12.3 Activation. Smoke control systems shall be activated in accordance with the <i>Building Code</i> or the <i>Fire Code</i>.</p> <p>909.12.4 Automatic Control. Where complete 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 of the <i>Fire Code</i>, from manual controls that are readily accessible to the fire department, and any smoke detectors required by engineering analysis.</p>	<p>405.12.2 Wiring. In addition to meeting the requirements of the <i>Electrical Code</i>, mechanical smoke control, wiring, regardless of voltage, shall be fully enclosed within continuous raceways. The requirement of this section shall apply only to wiring extending from the fire alarm system control unit that activates any required smoke-control system component such as relays, fans, dampers, or stair pressurization systems.</p> <p>405.12.3 Activation. Smoke control systems shall be activated in accordance with the <i>Building Code</i> or the <i>Fire Code</i>.</p> <p>405.12.4 Automatic Control. Where complete 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 of the <i>Fire Code</i>, from manual controls that are readily accessible to the fire department, and any smoke detectors required by engineering analysis.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>405.13 Control-Air Tubing. Control-air tubing shall be of sufficient size to meet the required response times specified by the design professional or <i>Fire Code</i>, whichever is more restrictive. Tubing shall be flushed clean and dry prior to final connections. Tubing shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.</p>	<p>405.13 Control-Air Tubing. Control-air tubing shall be of sufficient size to meet the required response times specified by the design professional or <i>Fire Code</i>, whichever is more restrictive. Tubing shall be flushed clean and dry prior to final connections. Tubing shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.</p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>405.13.1 Materials. Control-air tubing shall be hard-drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a 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 are exempted from 405.13.1, 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.(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 devices on doors shall be fastened along hinges.	<p>405.13.1 Materials. Control-air tubing shall be hard-drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280. Fittings shall be wrought copper or brass, solder type in accordance with ASME B 16.18 or ASME B 16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a 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 are exempted from 405.13.1, 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.(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 devices on doors shall be fastened along hinges.	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>

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<p>909.13.2 Isolation from Other Functions. <u>Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.</u></p> <p>909.13.3 Testing. <u>Control-air tubing shall be tested at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.</u></p>	<p>405.13.2 Isolation from Other Functions. <u>Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.</u></p> <p>405.13.3 Testing. <u>Control-air tubing shall be tested at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.14 Marking and Identification. <u>The detection and control systems shall be clearly marked at all junctions, accesses and terminations.</u></p> <p>909.15 Control Diagrams. <u>Identical control diagrams shall be provided and maintained as required by the <i>Fire Code</i>.</u></p> <p>909.16 Fire Fighter’s Smoke Control Panel. <u>A fire fighter’s smoke control panel for fire department emergency response purposes only shall be provided in accordance with the <i>Fire Code</i>.</u></p>	<p>405.14 Marking and Identification. <u>The detection and control systems shall be clearly marked at all junctions, accesses and terminations.</u></p> <p>405.15 Control Diagrams. <u>Identical control diagrams shall be provided and maintained as required by the <i>Fire Code</i>.</u></p> <p>405.16 Fire Fighter’s Smoke Control Panel. <u>A fire fighter’s smoke control panel for fire department emergency response purposes only shall be provided in accordance with the <i>Fire Code</i>.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
<p>909.17 System Response Time. <u>Smoke control system activation shall comply with the <i>Fire Code</i>.</u></p> <p>909.18 Acceptance Testing. <u>Devices, equipment, components and sequences shall be tested in accordance with Section 405.3 of this code and the <i>Fire Code</i>.</u></p> <p>909.19 System Acceptance. <u>Authority Having Jurisdiction acceptance of the smoke control system shall be based on special inspections documenting compliance with the provisions of this code and the <i>Fire Code</i>.</u></p>	<p>405.17 System Response Time. <u>Smoke control system activation shall comply with the <i>Fire Code</i>.</u></p> <p>405.18 Acceptance Testing. <u>Devices, equipment, components and sequences shall be tested in accordance with Section 405.3 of this code and the <i>Fire Code</i>.</u></p> <p>405.19 System Acceptance. <u>Authority Having Jurisdiction acceptance of the smoke control system shall be based on special inspections documenting compliance with the provisions of this code and the <i>Fire Code</i>.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: New UMC 2015 Section 405 COH amendment incorporating the provisions for smoke control from the Houston Building Code to correlate minimum life-safety requirements into the UMC that are not addressed by the IAMPO family of codes..</p> <p>Justification: Amendment needed to provide provisions on smoke control, which the UMC currently lacks, and provide conformity with provisions in the IBC for smoke control. Section 405 in its entirety was taken from Section 513 of the IMC. All references have been vetted, and newly referenced standards in the section have been added to the Ch. 17 Reference Standards.</p>
2012 Houston UMC – Chapter 5 Exhaust Systems	2015 Houston UMC – Chapter 5 Exhaust Systems	Code Analysis
<p>504.1 Makeup and Exhaust-Air Ducts. Environmental air ducts not regulated by other provisions of this code shall be in accordance with this section. Ducts shall be airtight as approved by the Authority Having Jurisdiction, and shall comply with the provisions of Chapter 6. Hazardous e Exhaust ducts under positive pressure shall not extend into or through ducts or plenums. Exhaust ducts shall terminate outside the building and shall be equipped with back-draft dampers. Environmental air ducts that have an alternate function as a part of an approved smoke-control system do not require design as Class 1 product-conveying ducts.</p>	<p>504.0 Environmental Air Ducts.</p> <p>504.1 General. Where not specified in this chapter, exhaust ducts shall be constructed and installed in accordance with Chapter 6 and shall be airtight as approved by the Authority Having Jurisdiction. Environmental air ducts that have an alternate function as a part of an approved smoke-control system do not require design as Class 1 product-conveying ducts.</p> <p>Exceptions:</p> <p>(1) Ductless range hoods where installed in accordance with the manufacturer's installation instructions.</p>	<p>City of Houston Amendment</p> <p>Analysis: UMC 2012 Section 504.1 COH amendment is not carried forward.</p> <p>Justification: Amendment no longer needed; reference to exhaust ducts moved to 505.1; provisions covered in 2015 base code.</p>

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
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	<p>(2) Condensing clothes dryers where installed in accordance with the manufacturer's installation instructions.</p> <p>504.1.1 Backdraft Protection. Exhaust ducts shall terminate outside the building and shall be equipped with backdraft dampers or with motorized dampers that automatically shut where the systems or spaces served are not in use.</p> <p>Exception: Where the exhaust duct does not discharge into a common exhaust plenum and one of the following:</p> <p>(1) The exhaust fan runs continuously.</p> <p>(2) The exhaust duct serves space(s) that are not mechanically heated or cooled.</p> <p>(3) The space served is maintained at positive pressure.</p>	
<p>504.2 Domestic Range Vents. Ducts used for domestic kitchen range ventilation shall be of metal and shall have smooth interior surfaces. Ducts for domestic range hoods shall serve cooking appliances.</p> <p>Exception: Ducts for domestic kitchen downdraft grill-range ventilation installed under a concrete slab floor may shall be permitted to be of approved Schedule 40 PVC provided:</p> <p>(1) The under-floor trench in which the duct is installed shall be completely backfilled with sand or gravel.</p> <p>(2) Not more than 1 inch (25.4 mm) of a 6 inch diameter (152 mm) PVC coupling may shall be permitted to protrude above the concrete floor surface.</p> <p>(3) PVC pipe joints shall be solvent cemented to provide an air- and grease-tight duct.</p> <p>(4) The duct shall terminate a minimum of 12 inches (305 mm) above grade outside the building and shall be equipped with a back-draft damper.</p>	<p>504.3 Domestic Range. Ducts used for domestic kitchen range ventilation shall be of metal and shall have smooth interior surfaces.</p> <p>Exception: Ducts for domestic kitchen downdraft grill-range ventilation installed under a concrete slab floor shall be permitted to be of approved Schedule 40 PVC provided:</p> <p>(1) The under-floor trench in which the duct is installed shall be completely backfilled with sand or gravel.</p> <p>(2) Not more than 1 inch (25.4 mm) of 6-inch diameter (152 mm) PVC coupling shall be permitted to protrude above the concrete floor surface.</p> <p>(3) PVC pipe joints shall be solvent cemented to provide an air and grease-tight duct.</p> <p>(4) The duct shall terminate above grade outside the building and shall be equipped with a back-draft damper.</p>	<p>City of Houston Amendment</p> <p>Analysis: UMC 2012 Section 504.2 COH amendment is not carried forward. With one exception, the minor edits made by the Houston amendment is now provided in the model code text.</p> <p>Justification: Provisions now covered in base code; amendment no longer needed. Duct termination justification from previous code review is not sufficient to carry forward.</p>
<p>504.3 Clothes Dryers. Moisture exhaust ducts shall terminate on the outside of the building a minimum of 9 inches above grade and shall be equipped with a back-draft damper. Screens shall not be installed at the duct termination. Ducts for exhausting clothes dryers shall not be connected or installed with sheet metal screws or other fasteners that will obstruct the flow. Clothes dryer moisture exhaust ducts shall not be connected to a gas vent connector, gas vent, or chimney, and shall serve clothes dryers. Clothes dryer moisture exhaust ducts under positive pressure shall not extend into or through ducts or plenums.</p>	<p>504.4 Clothes Dryers. A clothes dryer exhaust duct shall not be connected to a vent connector, gas vent, chimney, and shall not terminate into a crawl space, attic, or other concealed space. Exhaust ducts shall not be assembled with screws or other fastening means that extend into the duct and that are capable of catching lint, and that reduce the efficiency of the exhaust system. Exhaust ducts shall be constructed of rigid metallic material. Transition ducts used to connect the dryer to the exhaust duct shall be listed for that application or installed in accordance with the clothes dryer manufacturer's installation instructions. Clothes dryer exhaust ducts shall terminate to the outside of the building in accordance with Section 502.2.1 and shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination. Devices, such as fire or smoke dampers, that will obstruct the flow of the exhaust shall not be used. Where ducts are joined, the male end shall be inserted in the direction of airflow.</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment not carried forward.</p> <p>Justification: No justification for amendment to be brought forward; UMC will need to match length limitation of the IRC.</p> <p>2015 Base code with no modifications.</p>
<p>504.3.1.2 Length Limitation. Unless otherwise permitted or required by the dryer manufacturer's instructions and approved by the Authority Having Jurisdiction, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 feet (4267 mm), including two 90 degree (1.57 rad) elbows. A length of 2 feet (610 mm) shall be deducted for each 90 degree (1.57 rad) elbow in excess of two. Where the exhaust duct is concealed within the building construction and exceeds the length limitation of this section a permanent label or tag shall be located within 6 feet of the exhaust duct connection identifying the length of the exhaust duct.</p>	<p>504.4.2.1 Length Limitation. Unless otherwise permitted or required by the dryer manufacturer's instructions and approved by the Authority Having Jurisdiction, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 35 feet (4267 10668 mm), including two 90 degree (1.57 rad) elbows. A length of 2 feet (610 mm) shall be deducted for each 90 degree (1.57 rad) elbow in excess of two. <u>Where the exhaust duct is concealed within the building construction and exceeds the length limitation of this section, a permanent label or tag shall be located within 6 feet (1829 mm) of the exhaust duct connection identifying the length of the exhaust duct.</u></p>	<p>City of Houston Amendment</p> <p>Analysis: Amendment from UMC 2012 Section 504.3.1.2 is brought forward and relocated to UMC 2015 Section 504.4.2.1.</p> <p>Justification: Amendment needed to mirror requirements of the IRC and IMC.</p> <p>Base code modified 10.12.21.</p>

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504.6 Gypsum Wallboard Ducts. Bathroom and laundry room exhaust ducts and other environmental air ducts shall not be permitted to be constructed of gypsum wallboard subject to the limitations of Section 602.4.	504.6 Gypsum Wallboard Ducts. Bathroom and laundry room exhaust ducts, and other environmental air ducts shall not be permitted to be constructed of gypsum wallboard subject to the limitations of Section 602.5.	City of Houston Amendment Analysis: No change made to COH amendment. Justification: Amendment needed to continue established local policy. Change protects these types of rooms from humidity and humidity damage. Base code modified 10.12.21.
507.1 Exhaust System. Cooking equipment used in processes producing smoke or grease-laden vapors shall be equipped with an exhaust system in accordance with the equipment and performance requirements of this chapter. [NFPA 96:4.1.1] Such equipment and performance shall be maintained in accordance with this chapter during periods of operation of the cooking equipment. Specifically, the following equipment shall be kept in good working condition: <ul style="list-style-type: none">(1) Cooking equipment(2) Hoods(3) Ducts (where applicable)(4) Fans(5) Fire suppression systems(6) Special effluent or energy control equipment [NFPA 96:4.1.2, 4.1.3] Airflows shall be maintained. [NFPA 96:4.1.4] Maintenance and repairs shall be performed on components at intervals necessary to maintain these conditions [NFPA 96:4.1.3.1]: <ul style="list-style-type: none">(1) The responsibility for inspection, maintenance, and cleanliness of the ventilation control and fire protection of the commercial cooking operations shall be the ultimate responsibility of the owner of the system provided that this responsibility has not been transferred in written form to a management company or other party. [NFPA 96:4.1.5](2) Solid-fuel cooking equipment shall comply with the requirements of Section 517.0. [NFPA 96:4.1.6](3) Multiple-tenancy applications shall require the concerted cooperation of design, installation, operation, and maintenance responsibilities by tenants and by the building owner. [NFPA 96:4.1.7](4) Interior surfaces of the exhaust system shall be accessible for cleaning and inspection purposes. [NFPA 96:4.1.8](5) Cooking equipment used in fixed, mobile, or temporary concessions, such as trucks, buses, trailers, pavilions, tents, or a form of roofed enclosure, shall be in accordance with this chapter unless all or part of the installation is exempted by the Authority Having Jurisdiction. [NFPA 96:4.1.9].	507.1 Exhaust System. Cooking equipment used in processes producing smoke or grease-laden vapors shall be equipped with an exhaust system that is in accordance with the equipment and performance requirements of this chapter. [NFPA 96:4.1.1] Such equipment and its performance shall be maintained in accordance with the requirements of this chapter during periods of operation of the cooking equipment. [NFPA 96:4.1.2] The following equipment shall be kept in working condition: <ul style="list-style-type: none">(1) Cooking equipment(2) Hoods(3) Ducts (where applicable)(4) Fans(5) Fire extinguishing equipment(6) Special effluent or energy control equipment [NFPA 96:4.1.3] Maintenance and repairs shall be performed on components at intervals necessity to maintain good working conditions as follows: <ul style="list-style-type: none">(1) Airflows shall be maintained. [NFPA 96:4.1.4](2) The responsibility for inspection, testing, maintenance, and cleanliness of the ventilation control and fire protection of the commercial cooking operations shall ultimately be that of the owner of the system, provided that this responsibility has not been transferred in written form to a management company, tenant, or other party. [NFPA 96:4.1.5](3) Solid-fuel cooking equipment shall comply with the requirements of Section 517 .0. [NFPA 96:4.1.6](4) Multitenant applications shall require the concerted cooperation of design, installation, operation, and maintenance responsibilities by tenants and by the building owner. [NFPA96:4.1.7](5) Interior surfaces of the exhaust system shall be accessible for cleaning and inspection purposes. [NFPA 96:4.1.8](6) Cooking equipment used in fixed, mobile, or temporary concessions, such as trucks, buses, trailers, pavilions, tents, or a form of roofed enclosure, shall be in accordance with this chapter unless othe1wise exempted by the Authority Having Jurisdiction. [NFPA 96:4.1.9]	City of Houston Amendment Analysis: The model code was reorganized by IAPMO for clarity. The previous 2012 COH amendment was not carried forward. Justification: No justification to keep amendment.
508.1 Where Required. Type 1 h Hoods shall be installed at or above commercial-type deep-fat fryers, broilers, fry grills, steam-jacketed kettles, hot-top ranges, ovens, barbecues, solid-fuel burning appliances, rotisseries, dishwashing machines, and similar equipment that produces comparable amounts of steam, smoke, grease, or heat in a food-processing establishment to collect and remove the grease and smoke. For the purpose of this section, a food processing establishment shall include a building or portion thereof used for the processing of food, but shall not include a dwelling unit.	508.1 Where Required. Type 1 hoods shall be installed at or above commercial-type deep-fat fryers, broilers, grills, hot-top ranges, ovens, barbecues, rotisseries, and similar equipment that emits comparable amounts of smoke or grease in a food-processing establishment. For the purpose of this section, a food-processing establishment shall include a building or portion thereof used for the processing of food, but shall not include a dwelling unit. Type 2 hoods shall be installed above equipment and dishwashers that generate steam, heat, and products of combustion, and where grease or smoke is not present.	City of Houston Amendment Analysis: The UMC 2012 model code was modified and now includes many of the previous COH amendments. As a result, only Item #5 and #6 of the previous 2012 amendment was brought forward. Justification: Amendment no longer needed; all provisions included in 2015 base code. The two exceptions carried forward needed to comply with Health department regulations.

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<p>Type 2 hoods shall be installed at or above other commercial-type ovens, rotisseries, and dishwashing machines.</p> <p>Exceptions:</p> <ul style="list-style-type: none"> (1) Cooking appliance that has been listed in accordance with EPA 202 for reduced emissions where the grease discharge does not exceed 2.9 E-09 ounces per cubic inch (oz/in³) (5.0 E-06 kg/m³) where operated with a total airflow of 500 cubic feet per minute (cfm) (0.236 m³/s). (2) Recirculating systems listed in accordance with UL 710B and installed in accordance with Section 516.0. (3) Direct vent dishwashers connected to an approved exhaust system. (4) Under counter, and enclosed single-batch low temperature chemical dishwashers (maximum 140°F) and installed in a space where the HVAC system has been engineered to accommodate the latent and sensible heat load emitted from such appliances as approved by the Authority Having Jurisdiction. Such equipment shall be provided with an interlocking device to prevent opening of the appliance prior to completion of its cycle. (5) Cooking equipment located in daycare facilities, churches, employee lunchrooms, or similar uses that are no more hazardous than kitchen facilities in an individual dwelling unit. (6) Listed convection ovens. (7) Dishwashing machines connected to a Type II duct system and exhausted directly to the outdoors. (8) Dishwashing machines with a self-contained condensing system listed in accordance with UL 921 and installed in a space where the HVAC system has been engineered to accommodate the latent and sensible heat load emitted from such appliances as approved by the Authority Having Jurisdiction. Such equipment shall be provided with an interlocking device to prevent opening of the appliance prior to completion of its cycle. 	<p>Exceptions:</p> <ul style="list-style-type: none"> (1) Cooking appliance that is in accordance with UL 710B for reduced emissions where the grease discharge does not exceed 2.9 E-09 ounces per cubic inch (oz/in³) (5.0 E-06 kg/m³) where operated with a total airflow of 500 cubic feet per minute (cfm) (0.236 m³/s). (2) Recirculating systems listed in accordance with UL 710B and installed in accordance with Section 516.0. (3) Dishwashing machines connected to a Type II duct system and exhausted directly to the outdoors. (4) Dishwashing machines with a self-contained condensing system listed in accordance with UL 921 and installed in a space where the HVAC system has been engineered to accommodate the latent and sensible heat load emitted from such appliances as approved by the Authority Having Jurisdiction. Such equipment shall be provided with an interlocking device to prevent opening of the appliance prior to completion of its cycle. (5) Residential cooking equipment located in daycare facilities, churches, employee lunchrooms, or similar locations that are no more hazardous than kitchen facilities in an individual dwelling unit. (6) Listed convection ovens. 	<p>Base code modified 10.12.21.</p>
<p>510.1 General. Ducts shall not pass through fire walls or fire partitions. [NFPA 96:7.1.1]</p> <p>Exception: Steel supply and exhaust ducts may be protected with a duct wrap material approved for such use that provides an equivalent fire-rating when installed in accordance with the manufacturer's specifications and in an approved fire-rated design, including through-penetration fire-stop and sealants.</p> <p>A letter sealed by the design professional or a special inspector certifying compliance with the fire-rated design and manufacturer's installation requirements for the finished installation must be provided to the authority having jurisdiction.</p>	<p>510.1 General. Ducts shall not pass through fire walls. [NFPA 96:7.1.1]</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment not carried forward.</p> <p>Justification: No justification for adding an exception; alternate designs not specifically addressed in the codes may be submitted and evaluated through the alternate method process.</p>
<p>510.1.3 Duct Installation. Ducts shall be installed without forming dips or traps that might collect residues. [NFPA 96:7.1.4]</p> <p>In manifold (common duct) systems, the lowest end of the main duct shall be connected flush on the bottom with the branch duct. [NFPA 96:7.1.4.1]</p> <p>Duct systems serving a Type I hood shall be so constructed and installed that grease cannot become pocketed in a portion thereof, and the system shall slope not less than ¼ inch per lineal foot (20.8 mm/m) toward the hood or toward an approved grease reservoir. Where horizontal ducts exceed 75 feet (22,860 mm) in length, the slope shall be not less than 1 inch per lineal foot (83.3 mm/m).</p>	<p>510.1.3 Duct Installation. Ducts shall be installed with not less than 2 percent slope on horizontal runs up to 75 feet (22,860 mm) and not less than 8 percent slope on horizontal runs more than 75 feet (22,860 mm). Factory-built grease ducts shall be permitted to be installed in accordance with the listing and the manufacturer's installation instructions. Horizontal ducts shall be provided with access in accordance with Section 510.3 .3.</p> <p>Drains shall be provided at low points in horizontal ducts. Where provided, drains shall be continuously welded to the exhaust duct or listed grease duct drains in accordance with the terms of the listing and the manufacturer's installation instructions.</p>	<p>City of Houston Amendment</p> <p>Analysis: The UMC 2012 model code was reorganized and modified to include additional prescriptive requirements identifying minimum horizontal slopes for duct runs up to and greater than 75 feet. COH amendment not carried forward.</p> <p>Justification: No justification to keep amendment; move forward with base code as listed systems are tested for those specific designs.</p>

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	Ducts shall be installed without forming dips or traps. In manifold (common duct) systems, the lowest end of the main duct shall be connected flush on the bottom with the branch duct. [NFPA 96:7.1.4 - 7.1.4.5]	
510.1.7 Ducts, Non-Grease. Ducts and plenums serving Type II hoods shall be constructed of rigid metallic materials in accordance with Chapter 6. Duct bracing and supports shall comply with Chapter 6. Ducts subject to positive pressure shall be adequately sealed. Ducts serving dishwasher exhaust shall be liquid tight and shall be constructed of aluminum or not less than 304 stainless steel.	510.1.7 Type II Exhaust Duct Systems. Ducts and plenums serving Type II hoods shall be constructed of rigid metallic materials in accordance with Chapter 6. Duct bracing and supports shall comply with Chapter 6. Ducts subject to positive pressure and ducts conveying moisture-laden or waste-heat-laden air shall be adequately sealed.	City of Houston Amendment Analysis: 2015 amendment carried forward. Justification: Amendment protects from corrosive dishwashing chemicals. Base code modified 10.12.21.
510.7.2.2 Protection from Physical Damage. Measures shall be taken to prevent physical damage to a covering or enclosure material. A damage to the covering or enclosure shall be repaired and the covering or enclosure shall be restored to meet its intended listing and fire-resistive rating and to be acceptable to the Authority Having Jurisdiction. [NFPA 96:7.7.3.1, 7.7.3.2]	510.7.5.1 Protection from Physical Damage. Measures shall be taken to prevent physical damage to a covering or enclosure material. Damage to the covering or enclosure shall be repaired, and the covering or enclosure shall be restored in accordance with its intended listing and fire-resistance rating, and be acceptable to the Authority Having Jurisdiction. [NFPA 96:7.7.3.1, 7.7.3.2]	City of Houston Amendment Analysis: 2012 amendment not carried forward. Justification: No justification to keep strikethrough.
510.8.1 Rooftop Terminations. Rooftop terminations shall be arranged with or provided with the following [NFPA 96:7.8.2.1]: (1) Not less than 10 feet (3048 mm) of clearance from the outlet to adjacent buildings, property lines, and air intakes. [NFPA 96:7.8.2.1(1)] Where space limitations absolutely prevent a 10 foot (3048 mm) horizontal separation from an air intake, a vertical separation shall be permitted, with the exhaust outlet being not less than 3 feet (914 mm) above an air intake located within 10 feet (3048 mm) horizontally. Exceptions: (1) Exhaust outlets for grease ducts serving commercial food heat-processing equipment may terminate not less than 5 feet (1524 mm) from an adjacent building, adjacent property line or air intake opening into a building if the air from the exhaust outlet is discharged away from such locations. (2) Upon approval of the Authority Having Jurisdiction, the exhaust from any hood serving commercial food heat-processing equipment may terminate in a properly engineered air recovery system for recirculation to the room in which the hood is located when designed in accordance with Section 516.0.	510.9.1 Rooftop Terminations. Rooftop terminations shall be arranged with or provided with the following: (1) Not less than 10 feet (3048 mm) of horizontal clearance from the outlet to adjacent buildings, property lines, and air intakes. Exception: Exhaust outlets for grease ducts serving commercial food heat-processing equipment may terminate not less than 5 feet (1524 mm) from an adjacent building, adjacent property line or air intake opening into a building if the air from the exhaust outlet is discharged away from such locations. {EDITORIAL NOTE: THE REMAINDER OF THIS SECTION REMAINS AS SET FORTH IN THE 2015 UMC.}	City of Houston Amendment Analysis: The UMC 2012 model code was extensively updated and now include provisions to coincide with previous COH amendments except for one. The COH amendment exception to item #1 is carried forward. Justification: Exception #1 provides specific circumstances to meet intent of code. Exception #2 now covered in base code Section 516.0. Base code modified 10.12.21.
513.1 General. Fire-extinguishing equipment for the protection of grease removal devices, hood exhaust plenums, and exhaust duct systems shall be provided. [NFPA 96:10.1.1]	513.1 General. Fire-extinguishing equipment for the protection of grease removal devices, hood exhaust plenums, and exhaust duct systems shall be provided in accordance with this section or the Fire Code, whichever is most restrictive. [NFPA 96:10.1.1]	City of Houston Amendment Analysis: COH amendment added to correlate with the <i>Houston Fire Code</i> . Justification: Amendment needed to cover fire extinguishing provisions and correlate with the IFC.

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2012 Houston UMC – Chapter 6 Duct Systems	2015 Houston UMC – Chapter 6 Duct Systems	Code Analysis
<p>602.1 General. Supply air, return air, and outside air for heating, cooling, or evaporative cooling systems shall be conducted through duct systems constructed of metal in accordance with SMACNA HVAC Duct Construction Standards— Metal and Flexible as set forth in Tables 6-1, 6-2, 6-3, 6-4, 6-7, 6-8, 6-9, and 6-10, or metal ducts complying with UMC Standard No. 6-2 or the referenced HVAC duct construction standard in Chapter 17. Rectangular ducts exceeding 2 inches (51 mm) w.g. shall comply with SMACNA HVAC Duct Construction Standards— Metal and Flexible UMC Standard No. 6-2 or the referenced HVAC duct construction standard in Chapter 17. Ducts, plenums, and fittings shall be permitted to be constructed of concrete, clay, or ceramics where installed in the ground or in a concrete slab, provided the joints are tightly sealed.</p> <p>Corridors shall not be used to convey air to or from rooms where the corridor is required to be of fire-resistive construction in accordance with the building code.</p> <p>Concealed building spaces or independent construction within buildings shall be permitted to be used as ducts or plenums.</p> <p>Where gypsum products are exposed in ducts or plenums, the air temperature shall be restricted to a range from 50°F (10°C) to 125°F (52°C), and moisture content shall be controlled so that the material is not adversely affected. For the purpose of this section, gypsum products shall not be exposed in used as ducts serving as supply from evaporative coolers, and in other air handling systems regulated by this chapter where the temperature of the gypsum product will be below the dew point temperature.</p> <p>See Chapter 8 for limitations on combustion products venting systems extending into or through ducts or plenums.</p> <p>See Chapter 5 for limitations on environmental air systems exhaust ducts extending into or through ducts or plenums.</p> <p>Hazardous or product conveying Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. For appliance vents and chimneys, see Chapter 8.</p>	<p>602.1 General. Supply air, return air, and outside air for heating, cooling, or evaporative cooling duct systems constructed of metal shall comply with SMACNA HVAC Duct Construction Standards- Metal and Flexible or UL 181.</p> <p>Concealed building spaces or independent construction within buildings shall be permitted to be used as ducts or plenums.</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment not carried forward. Amendment no longer needed; references come from the 2003 UMC and are based on SMACNA standards. Gypsum amendments covered in UMC 602.5 base code.</p> <p>Justification: The model code does a sufficient job at covering the requirements to industry standards.</p>
<p>602.2 Combustibles Within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50, where tested as a composite product in accordance with one of the following test methods: NFPA 255, Method of Test of Surface Burning Characteristics of Building Materials, ASTM E84, Surface Burning Characteristics of Building Materials, or UL 723, Test for Surface Burning Characteristics of Building Materials, except as indicated below.</p> <p>Exceptions:</p> <ol style="list-style-type: none">(1) Return-air and outside-air ducts, plenums, or concealed spaces that serve a dwelling unit shall be permitted to be of combustible construction.(2) Air filters meeting the requirements of Section 314.2 and Section 503.3.(3) Water evaporation media in an evaporative cooler.(4) Charcoal filters where protected with an approved fire suppression system.(5) Electrical wiring in plenums shall comply with NFPA 70, National Electrical Code. Electrical wires and cables and optical fiber cables shall be listed and labeled for use in plenums and shall have a flame spread distance not exceeding 5 feet (1,524 mm), an average optical density not exceeding 0.15,	<p>602.2 Combustibles Within Ducts or Plenums. Materials exposed within ducts or plenums shall be noncombustible or shall have a flame spread index not to exceed 25 and a smoke developed index not to exceed 50, where tested as a composite product in accordance with ASTM E84 or UL 1723.</p> <p>Exceptions:</p> <ol style="list-style-type: none">(1) Return-air and outside-air ducts, plenums, or concealed spaces that serve a dwelling unit shall be permitted to be of combustible construction.(2) Air filters in accordance with the requirements of Section 311.2.(3) Water evaporation media in an evaporative cooler.(4) Charcoal filters where protected with an approved fire suppression system.(5) Products listed and labeled for installation within plenums in accordance with Section 602.2.1 through Section 602.2.4.(6) Smoke detectors.(7) Duct insulation, coverings, and linings and other supplementary materials installed in accordance with Section 604.0.	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment not carried forward.</p> <p>Justification: No amendment in this section will be needed; all provisions covered in 2015 base code.</p>

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<p>and a peak optical density not exceeding 0.5, where tested in accordance with NFPA 262, Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.</p> <p>(6) Nonmetallic fire sprinkler-piping in plenums shall be listed and labeled for use in plenums and shall have a flame spread distance not exceeding 5 feet (1,524 mm), an average optical density not exceeding 0.15, and a peak optical density not exceeding 0.5, where tested in accordance with UL 1887, Fire Test of Plastic Sprinkler Pipe for Visible Flame and Smoke Characteristics.</p> <p>(7) Nonmetallic pneumatic tubing in plenums shall be listed and labeled for use in plenums and shall have a flame spread distance not exceeding 5 feet (1,524mm), an average optical density not exceeding 0.15, and a peak optical density not exceeding 0.5, where tested in accordance with UL 1820, Fire Test of Pneumatic Tubing for Flame and Smoke Characteristics.</p> <p>(8) Loudspeakers and recessed lighting fixtures, including their assemblies and accessories, in plenums shall be listed and labeled for use in plenums and shall have a peak rate of heat release not exceeding 134 horsepower (hp) (100 kW), an average optical density not exceeding 0.15, and a peak optical density not exceeding 0.5, where tested in accordance with UL 2043, Fire Test for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air-Handling Spaces.</p> <p>(9) Smoke detectors.</p> <p>(10) Duct insulation, coverings, and linings and other supplementary materials complying with Section 604.0.</p> <p>(11) Materials in a Group H 5, Division 6, HPM fabrication area including the areas above and below the fabrication area sharing a common air recirculation path with the fabrication area.</p>	<p>(8) Materials in a hazardous fabrication area including the areas above and below the fabrication area sharing a common air recirculation path with the fabrication area.</p>	
<p>602.4 Joints and Seams of Ducts. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, gasketing, or other means. Sealant materials and methods of assemblage shall be in accordance with the manufacturer's instructions and conform to SMACNA Method A.</p> <p>Crimp joints for round ducts shall have a contact lap of not less than 1½ inches (38 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws equally spaced around the joint, or an equivalent fastening method.</p> <p>Joints and seams for 0.016 of an inch (0.41 mm) (No. 28 gauge) and 0.013 of an inch (0.33 mm) (No. 30 gauge) residential rectangular ducts shall comply with SMACNA HVAC Duct Construction Standards - Metal and Flexible for 0.019 of an inch (0.48 mm) (No. 26 gauge) material.</p> <p>Joints and seams for rectangular duct systems shall comply with SMACNA HVAC Duct Construction Standards- Metal and Flexible.</p> <p>Joints and seams for flat oval ducts and round ducts in other than single-dwelling units shall comply with SMACNA HVAC Duct Construction Standards - Metal and Flexible.</p> <p>Joints and seams and reinforcements for factory-made air ducts and plenums shall comply with the conditions of prior approval in accordance with the installation instructions that shall accompany the product. Closure systems for rigid air ducts and plenums shall be listed in accordance with UL 181A. Closure systems for flexible air ducts shall be listed in accordance with UL 181B.</p>	<p>1603.10 Joints and Seams of Ducts. Joints and seams for duct systems shall comply with SMACNA HVAC Duct Construction Standards- Metal and Flexible. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, gasketing, or other means. Crimp joints for round ducts shall have a contact lap of not less than 1 ½ inches (38 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws equally spaced around the joint, or an equivalent fastening method.</p> <p>Joints and seams and reinforcements for factory-made air ducts and plenums shall comply with the conditions of prior approval in accordance with the installation instructions that shall accompany the product. Closure systems for rigid air ducts and plenums shall be listed in accordance with UL 181A. Closure systems for flexible air ducts shall be listed in accordance with UL 181B.</p>	<p>City of Houston Amendment</p> <p>Analysis: The code provisions of UMC 2012 Section 602.4 were relocated to UMC 2015 Section 603.10. The previous COH amendment is not carried forward. Compliance to SMACNA installation requirements is all that is needed.</p> <p>Justification: Amendment is no longer needed, SMACNA reference is covered in base code.</p>

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<p>602.1 General. Supply air, return air, and outside air for heating, cooling, or evaporative cooling systems shall be conducted through duct systems constructed of metal in accordance with SMACNA HVAC Duct Construction Standards – Metal and Flexible as set forth in Tables 6-1, 6-2, 6-3, 6-4, 6-7, 6-8, 6-9, and 6-10, or metal ducts complying with UMC Standard No. 6-2 or the referenced HVAC duct construction standard in Chapter 17. Rectangular ducts exceeding 2 inches (51 mm) w.g. shall comply with SMACNA HVAC Duct Construction Standards – Metal and Flexible UMC Standard No. 6-2 or the referenced HVAC duct construction standard in Chapter 17. Ducts, plenums, and fittings shall be permitted to be constructed of concrete, clay, or ceramics where installed in the ground or in a concrete slab, provided the joints are tightly sealed.</p> <p>Corridors shall not be used to convey air to or from rooms where the corridor is required to be of fire-resistive construction in accordance with the building code.</p> <p>Concealed building spaces or independent construction within buildings shall be permitted to be used as ducts or plenums.</p> <p>Where gypsum products are exposed in ducts or plenums, the air temperature shall be restricted to a range from 50°F (10°C) to 125°F (52°C), and moisture content shall be controlled so that the material is not adversely affected. For the purpose of this section, gypsum products shall not be exposed in used as ducts serving as supply from evaporative coolers, and in other air-handling systems regulated by this chapter where the temperature of the gypsum product will be below the dew point temperature.</p> <p>See Chapter 8 for limitations on combustion products venting systems extending into or through ducts or plenums.</p> <p>See Chapter 5 for limitations on environmental air systems exhaust ducts extending into or through ducts or plenums.</p> <p>Hazardous or product conveying Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. For appliance vents and chimneys, see Chapter 8.</p>	<p>602.5 Gypsum. Where gypsum products are exposed in return air ducts or plenums, the air temperature shall be restricted to a range from 50°F (10°C) to 125°F (52°C), and moisture content shall be controlled so that the material is not adversely affected. For the purpose of this section, gypsum products shall not be exposed in ducts serving as supply from evaporative coolers, and in other air-handling systems regulated by this chapter where the temperature of the gypsum product will be below the dew point temperature, and exhaust systems complying with the requirements of Chapter 5.</p>	<p>City of Houston Amendment</p> <p>Analysis: UMC 2015 model reorganized to create this section specifically addressing the use of gypsum products in return air ducts and plenums. COH amendment included for clarity.</p> <p>Justification: Provisions now covered in base code; previous amendment no longer needed. Duct termination justification from previous code review is not sufficient to carry forward.</p>
<p>N/A</p> <p>602.1 General. Supply air, return air, and outside air for heating, cooling, or evaporative cooling systems shall be conducted through duct systems constructed of metal in accordance with SMACNA HVAC Duct Construction Standards – Metal and Flexible as set forth in Tables 6-1, 6-2, 6-3, 6-4, 6-7, 6-8, 6-9, and 6-10, or metal ducts complying with UMC Standard No. 6-2 or the referenced HVAC duct construction standard in Chapter 17. Rectangular ducts exceeding 2 inches (51 mm) w.g. shall comply with SMACNA HVAC Duct Construction Standards – Metal and Flexible UMC Standard No. 6-2 or the referenced HVAC duct construction standard in Chapter 17. Ducts, plenums, and fittings shall be permitted to be constructed of concrete, clay, or ceramics where installed in the ground or in a concrete slab, provided the joints are tightly sealed.</p> <p>Corridors shall not be used to convey air to or from rooms where the corridor is required to be of fire-resistive construction in accordance with the building code.</p> <p>Concealed building spaces or independent construction within buildings shall be permitted to be used as ducts or plenums.</p>	<p>603.11 Cross Contamination. Hazardous or product-conveying exhaust Exhaust ducts and venting systems under positive pressure shall not extend into or pass through ducts or plenums.</p>	<p>City of Houston Amendment</p> <p>Analysis: New model code section created from provisions previously located in UMC 2012 Section 602.1. COH amendment added for clarity.</p> <p>Justification: Amendment brought forward from 2012 UMC 602.1; ensures conformity between local policies and adopted codes.</p> <p>Base code modified during review process 10.12.21.</p>

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<p>Where gypsum products are exposed in ducts or plenums, the air temperature shall be restricted to a range from 50°F (10°C) to 125°F (52°C), and moisture content shall be controlled so that the material is not adversely affected. For the purpose of this section, gypsum products shall not be exposed in used as ducts serving as supply from evaporative coolers, and in other air-handling systems regulated by this chapter where the temperature of the gypsum product will be below the dew point temperature.</p> <p>See Chapter 8 for limitations on combustion products venting systems extending into or through ducts or plenums.</p> <p>See Chapter 5 for limitations on environmental air systems exhaust ducts extending into or through ducts or plenums.</p> <p>Hazardous or product conveying Exhaust ducts under positive pressure and venting systems shall not extend into or pass through ducts or plenums. For appliance vents and chimneys, see Chapter 8.</p>		
<p>N/A</p>	<p>603.12 Underground Installation. Ducts installed underground shall be approved for the installation and shall have a slope of not less than 1/8 inch per foot (10.4 mm/m). Ducts, plenums, and fittings shall be permitted to be constructed of concrete, clay, or ceramics where installed in the ground or in a concrete slab, provided the joints are tightly sealed. Metal ducts where installed in or under a concrete slab shall be stainless steel or galvanized and encased in not less than 2 inches (51 mm) of concrete.</p>	<p>City of Houston Amendment</p> <p>Analysis: New COH amendment.</p> <p>Justification: Amendment needed to provide clarity regarding intent of metal duct installation underground.</p> <p>Base code modified during review process 10.12.21.</p>
<p>604.1 General. Supply-air ducts, return-air ducts, and plenums of a heating or cooling system shall be insulated to achieve the minimum thermal (R) value in accordance with the energy conservation code SMACNA HVAC Duct Construction Standards—Metal and Flexible.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> (1) Factory-installed plenums, casings, or ductwork furnished as a part of HVAC equipment tested and rated in accordance with approved energy efficiency standards. (2) Ducts or plenums located in conditioned spaces where heat gain or heat loss will not increase energy use. (3) For runouts less than 10 feet (3048 mm) in length to air terminals or air outlets, the rated R value of insulation need not exceed R-3.5 (R-0.6). (4) Backs of air outlets and outlet plenums exposed to unconditioned or indirectly conditioned spaces with face areas exceeding 1 5 square foot (0.09 m²) need not exceed R-2 (R-0.4); those 5 square feet (0.5 m²) or smaller need not be insulated. (5) Ducts and plenums used exclusively for evaporative cooling systems. <p>Approved materials shall be installed within ducts and plenums for insulating, sound deadening, or other purposes. Materials shall have a mold, humidity, and erosion-resistant surface that meets the requirements of the referenced standard for air ducts in Chapter 17. Duct liners in systems operating with air velocities exceeding 18 inches (5486 mm) in height and width 2000 feet per minute (10.16 m/s) shall be fastened with both adhesive and mechanical fasteners, and exposed edges shall have approved treatment to withstand the operating velocity.</p> <p>Insulation applied to the surface of ducts, including duct coverings, linings, tapes, and adhesives, located in buildings shall have a flame-spread index not to exceed 25 and a smoke developed index not to exceed 50, where tested in accordance with</p>	<p>604.1 General. Air ducts conveying air at temperatures exceeding 140°F (60°C) shall be insulated to maintain an insulation surface temperature of not more than 140°F (60°C). Factory-made air ducts and insulations intended for installation on the exterior of ducts shall be legibly printed with the name of the manufacturer, the thermal resistance (R) value at installed thickness, flame-spread index and smoke developed index of the composite material. Internal duct liners and insulation shall be installed in accordance with the Energy Conservation Code SMACNA HVAC Duct Construction Standards—Metal and Flexible.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> (1) Factory-installed plenums, casings, or ductwork furnished as a part of HVAC equipment tested and rated in accordance with approved energy efficiency standards. (2) Ducts or plenums located in conditioned spaces where heat gain or heat loss will not increase energy use. (3) For runouts less than 10 feet (3048 mm) in length to air terminals or air outlets, the rated R value of insulation need not exceed R-3.5. (4) The rated R value of required insulation on the bBacks of air outlets and outlet plenums exposed to unconditioned or indirectly conditioned spaces with face areas exceeding 1 5 square feet (0.09295 m²) need not exceed R-2; those 1 5 square feet (0.09295 m²) or smaller need not be insulated. (5) Ducts and plenums used exclusively for evaporative cooling systems. 	<p>City of Houston Amendment</p> <p>Analysis: Portions of 2012 & 2015 amendment carried forward. Base code modified.</p> <p>Justification: Amendments needed to continue established policy for insulating air outlets and outlet plenums.</p> <p>Base code modified during review process 10.12.21</p>

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ASTM E 84 or UL 723. The specimen preparation and mounting procedures of ASTM E 2231 shall be used. Air duct coverings and linings shall not flame, glow, smolder, or smoke where tested in accordance with ASTM C 411 at the temperature to which they are exposed in service. In no case shall the test temperature be less than 250°F (121°C). Factory-made air ducts and faced insulations intended for installation on the exterior of ducts shall be legibly printed with the name of the manufacturer, the thermal resistance (R) value at installed thickness, and the flame-spread index and smoke developed index of the composite material.		
605.5 Access and Identification. Dampers shall be provided with an approved means of access large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not impair fire-resistive construction. Access shall not require the use of tools, keys, or special knowledge. Access points shall be permanently identified visibly on the exterior of the duct and at the ceiling level by a label with letters not less than 1 ½ of an inch (25.4 12.7 mm) in height reading: SMOKE DAMPER or FIRE DAMPER . Access doors in ducts shall be tight fitting and approved for the required duct construction. Access doors shall be not more than 2 inches (51 mm) less than the size of the duct up to 24 inches (610 mm), and 24 inch by 24 inch (610 mm by 610 mm) in ducts of 28-inch (211-mm) dimension or larger.	605.5 Access and Identification. Fire and smoke dampers shall be provided with an approved means of access large enough to allow inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of the fire resistance-rated assembly. The access openings shall not reduce the fire resistance rating of the assembly. Access shall not require the use of tools. Access doors in ducts shall be tight fitting and approved for the required duct construction. Access points shall be permanently identified <u>visibly</u> on the exterior <u>of the duct and at the ceiling level</u> by a label with letters not less than ½ of an inch (12.7 mm) in height reading as one of the following: (1) Smoke Damper (2) Fire Damper (3) Fire/Smoke Damper <u>Access doors shall be not more than 2 inches (51 mm) less than the size of the duct up to 24 inches (610 mm), and 24 inch by 24 inch (610 mm by 610 mm) in ducts of 28 inches (711 mm) dimension or larger.</u>	City of Houston Amendment Analysis: No change to COH amendment; base code language modified. Justification: Amendment carried forward to comply with requirements in the IBC. Base code modified during review process on 10.12.21.
608.1 General. Air-moving systems supplying air in excess of 2,200 2,000 -cubic feet per minute (ft ³ /min) (0.9439 1.0382 m ³ /s) to enclosed spaces within buildings shall be equipped with an automatic shutoff. Automatic shutoff shall be accomplished by interrupting the power source of the air-moving equipment upon detection of smoke in the main supply-air duct or return-air duct served by such equipment. Smoke detectors shall be labeled by an approved agency for air duct installation and shall be installed in accordance with the manufacturer's installation instructions. Such devices shall be compatible with the operating velocities, pressures, temperatures, and humidity's of the system. Where fire-detection or alarm systems are provided for the building, the smoke detectors required by this section shall be supervised by such systems. Exceptions: (1) Where the space supplied by the air-moving equipment is served by a total coverage smoke-detection system in accordance with the fire code, interconnection to such system shall be permitted to be used to accomplish the required shutoff. (2) Automatic shutoff is not required where occupied rooms served by the air-handling equipment have direct exit to the exterior and the travel distance does not exceed 100 feet (30 480 rom). For the purpose of this exception, occupied rooms shall not include rooms that have less than 300 square feet and are ancillary to the function of the space served by the air-handling system, such as restrooms, storerooms, or cashier or manager offices. (3) Automatic shutoff is not required for Group R, Division 3 and Group U Occupancies.	608.1 Air-Moving Systems and Smoke Detectors. Air-moving systems supplying air in excess of 2000 2200 cubic feet per minute (ft ³ /min) (0.9439 1.0382 m ³ /s) to enclosed spaces within buildings shall be equipped with an automatic shutoff. Automatic shutoff shall be accomplished by interrupting the power source of the air-moving equipment upon detection of smoke in the main supply-air duct or return-air duct served by such equipment. Duct smoke detectors shall comply with UL 268A and shall be installed in accordance with the manufacturer's installation instructions. Such devices shall be compatible with the operating velocities, pressures, temperatures, and humidity's of the system. Where fire-detection or alarm systems are provided for the building, the smoke detectors shall be supervised by such systems in an approved manner. Exceptions: (1) Where the space supplied by the air-moving equipment is served by a total coverage smoke-detection system in accordance with the fire code, interconnection to such system shall be permitted to be used to accomplish the required shutoff. (2) Automatic shutoff is not required where occupied rooms served by the air-handling equipment have direct exit to the exterior and the travel distance does not exceed 100 feet (30,480 mm). For the purpose of this exception, occupied rooms shall not include rooms that have less than 300 square feet (27.8709 square meters) and are ancillary to the function of the space served by the air-handling system, such as restrooms, storerooms, or cashier or manager offices.	City of Houston Amendment Analysis: 2012 amendment carried forward. Justification: Amendment carried forward to maintain established policy. Increase in cubic feet better allows enforcement of this section, and maintains guidance on when occupiable rooms do/don't need such systems. Base code modified during review process on 10.12.21.

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<p>(4) Automatic shutoff is not required for approved smoke control systems or where analysis demonstrates shutoff would create a greater hazard, such as shall be permitted to be encountered in air-moving equipment supplying specialized portions of Group H Occupancies. Such equipment shall be required to have smoke detection with remote indication and manual shutoff capability at an approved location.</p> <p>(5) Smoke detectors that are factory installed in listed air-moving equipment shall be permitted to be used in lieu of smoke detectors installed in the main supply-air duct served by such equipment.</p>		<p>(3) Automatic shutoff is not required for Group R, Division 3 and Group U occupancies.</p> <p>(4) Automatic shutoff is not required for approved smoke-control systems or where analysis demonstrates shutoff would create a greater hazard, such as shall be permitted to be encountered in air-moving equipment supplying specialized portions of Group H Occupancies. Such equipment shall be required to have smoke detection with remote indication and manual shutoff capability at an approved location.</p> <p>(5) Smoke detectors that are factory installed in listed air-moving equipment shall be permitted to be used in lieu of smoke detectors installed in the main supply-air duct served by such equipment.</p>	
2012 Houston UMC – Chapter 9 Installation of Specific Appliances		2015 Houston UMC – Chapter 9 Installation of Specific Appliances	Code Analysis
<p>902.8 Prohibited installation. Air-handling units shall not be located in the same room with gas utilization equipment.</p> <p>Exception: Listed central heating furnaces.</p>		N/A	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment not carried forward.</p> <p>Justification: No justification for amendment.</p>
<p>904.4 Temperature- or Pressure-Limiting Devices. Steam and hot water boilers, respectively, shall be provided with approved automatic limiting devices for shutting down the burner(s) to prevent boiler steam pressure or boiler water temperature from exceeding the maximum allowable working pressure or temperature. Safety limit controls shall not be used as operating controls. [NFPA 54:10.3.4] See Chapter 10 of this code.</p> <p>904.5 Low-Water Cutoff. See Chapter 10 of this code. Hot water boilers installed above the radiation level and steam boilers shall be provided with an automatic means to shut off the fuel supply to the burner(s) where the boiler water level drops to the lowest safe water line. [NFPA 54:10.3.5]</p> <p>904.6 Steam Safety and Pressure-Relief Valves. See Chapter 10 of this code. Steam and hot water boilers shall be equipped, respectively, with listed or approved steam safety or pressure-relief valves of discharge capacity and shall comply with ASME requirements. A shutoff valve shall not be placed between the relief valve and the boiler or on discharge pipes between such valves and the atmosphere. [NFPA 54:10.3.6]</p> <p>904.6.1 Discharge. Relief valves shall be piped to discharge near the floor. [NFPA 54: 10.3.6.1]</p> <p>904.6.2 Size. The entire discharge piping shall be not less than the same size as the relief valve discharge piping. [NFPA 54: 10.3.6.2]</p> <p>904.6.3 End Connections. Discharge piping shall not contain a threaded end connection at its termination point. [NFPA 54:10.3.6.3]</p>		<p>904.4 Temperature- or Pressure-Limiting Devices. See Chapter 10 of this code. Steam and hot water boilers, respectively, shall be provided with approved automatic limiting devices for shutting down the burner(s) to prevent boiler steam pressure or boiler water temperature from exceeding the maximum allowable working pressure or temperature. Safety limit controls shall not be used as operating controls. [NFPA 54:10.3.4]</p> <p>904.5 Low-Water Cutoff. See Chapter 10 of this code. Water boilers and steam boilers shall be provided with an automatic means to shut off the fuel supply to the burner(s) where the boiler water level drops to the lowest safe water line. In lieu of the low water cutoff, water tube or coil-type boilers that require forced circulation to prevent overheating and failure shall have an approved flow sensing device arranged to shut down the boiler where the flow rate is not capable of protecting the boiler against overheating. [NFPA 54:10.3.5]</p> <p>904.6 Steam Safety and Pressure-Relief Valves. See Chapter 10 of this code. Steam and hot water boilers shall be equipped, respectively, with listed or approved steam safety or pressure-relief valves of discharge capacity and shall comply with ASME requirements. A shutoff valve shall not be placed between the relief valve and the boiler or on discharge pipes between such valves and the atmosphere. [NFPA 54:10.3.6]</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment carried forward.</p> <p>Justification: No justification to keep strikethrough, no conflict between bodes. Reference to Ch. 10 kept referring to the provisions of the boiler chapter.</p> <p>Base code modified during review process on 10.12.21.</p>
N/A		<p>913.1.1 Gasketed Fireplace Doors. A gasketed fireplace door shall not be installed on a factory-built fireplace, except where the fireplace system has been tested in accordance with UL 127 and the Energy Conservation Code.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment.</p> <p>Justification: Amendment needed to reference compliance with the energy code.</p>

2012 Houston UMC Amendments	2015 Houston UMC Amendments	Code Change Summary
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<div>924.1 Prohibited Installations. Unless specifically permitted by the Authority Having Jurisdiction, unvented room heaters shall not be installed as primary heat sources. Unvented room heaters shall not be permitted in spaces that do not have the required volume of indoor air as defined in section 701.4.</div> <div>924.1.1 Unvented room heaters shall not be installed in bathrooms or bedrooms. [NFPA 54:10.23.1] This subsection shall not apply to portable oil fired unvented heating appliances used as supplemental heating in Group S (Divisions 3, 4, and 5), and Group U Occupancies, and regulated by the fire code.</div> <div>Exceptions:</div> <div>(1) Where approved by the Authority Having Jurisdiction, one listed wall-mounted unvented room heater equipped with an oxygen depletion safety shutoff system shall be permitted to be installed in a bathroom provided that the input rating shall not exceed 6000 Btu/h (1.76 kW) and combustion and ventilation air is provided as specified in Section 902.2.</div> <div>(2) Where approved by the Authority Having Jurisdiction, one listed wall-mounted unvented room heater equipped with an oxygen depletion safety shutoff system shall be permitted to be installed in a bedroom provided that the input rating shall not exceed 10 000 Btu/h (3 kW) and combustion and ventilation air is provided as specified in Section 902.2 [NFPA 54:10.23.1]</div> <div>924.1 Vented Freestanding. Vented freestanding room heaters shall be installed with clearances from combustible material as set forth in Table 303.4.</div> <div>Exception: Heaters listed for reduced clearances may be installed at the clearances specified on the required manufacturer's label.</div> <div>Vented freestanding room heaters shall not be located so that a door can swing within less than 12 inches (305 mm) of a warm-air outlet of the heater, measured at right angles to the outlet. Doorstops or door closers shall not be installed to obtain such clearance.</div> <div>Vented freestanding room heaters shall be located at least 36 inches (914 mm) below any part of a structure projecting over the heater. This projection shall include doors or windows that could project over the heater.</div> <div>Vented freestanding room heaters shall be safely and securely installed to prevent accidental displacement.</div>	<div>916.2.1.1 Unvented Room Heaters. Unvented room heaters shall be prohibited in accordance with Section 2445.1 of the Residential Code not be installed in bathrooms or bedrooms.</div> <div>[EDITORIAL NOTE: THE REMAINDER OF THIS SECTION REMAINS AS SET FORTH IN THE 2015 UMC AND IS NOT ADOPTED BY THIS JURISDICTION.]</div>	<div>City of Houston Amendment</div> <div>Analysis: The provisions of UMC 2012 Section 924.1.1 model code is relocated to UMC 2015 916.2.1.1 new COH amendment to correlate with provisions of the Houston Residential Code.</div> <div>Justification: Amendment no longer needed; provisions are now covered in the 2015 model code.</div> <div>Base code modified during review process on 10.12.21.</div>
<div>924.2 Installations in Institutions. Room heaters shall not be installed in the following occupancies:</div> <div>(1) Residential board and care</div> <div>(2) Health care. [NFPA 54:10.23.3]</div> <div>924.2 Vented Overhead. Vented overhead room heaters shall be safely and securely supported with hangers and brackets of noncombustible material and shall be installed with clearances from combustible material as specified on the required manufacturer's label.</div> <div>Exception: Installation of overhead heaters in aircraft storage or servicing areas of aircraft hangars shall comply with requirements of Section 911.0.</div>	<div>916.2.2 Installations in Institutions. Room heaters shall not be installed in the following occupancies:</div> <div>(1) Residential board and care</div> <div>(2) Health care [NFPA 54:10.23.3]</div>	<div>City of Houston Amendment</div> <div>Analysis: 2012 amendment not carried forward; Section now located in 916. All heaters requiring structural mounting to a building or a structure must installed in compliance with the manufacturers information and Chapter 16 of the Houston Building Code.</div> <div>Justification: Amendment no longer needed; provisions are now covered in the 2015 model code.</div>

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<p>924.3 Clearance. A room heater shall be placed so as not to cause a hazard to walls, floors, curtains, furniture, doors when open, and so on, and to the free movements of persons within the room. Heaters designed and marked, "For use in noncombustible fireplace only," shall not be installed elsewhere. Listed room heaters shall be installed in accordance with their listings and the manufacturers' instructions. In no case shall the clearances be such as to interfere with combustion air and accessibility. Unlisted room heaters shall be installed with clearances from combustible material not less than the following:</p> <p class="list-item-l1">(1) Room heaters having an outer jacket surrounding the combustion chamber, arranged with openings at top and bottom so that air circulates between the inner and outer jacket, and arranged without openings in the outer jacket to permit direct radiation, shall have clearance at sides and rear of not less than 12 inches (305 mm).</p> <p class="list-item-l1">(2) Room heaters other than those of the circulating type described in Section 924.3(a) shall have clearance at sides and rear of not less than 18 inches (457 mm), except that heaters that make use of metal, asbestos, or ceramic material to direct radiation to the front of the heater shall have a clearance of 36 inches (914 mm) in front and, where constructed with a double back of metal or ceramic, shall be permitted to be installed with a clearance of 18 inches (457 mm) at sides and 12 inches (305 mm) at rear. Combustible floors under unlisted room heaters shall be protected in an approved manner. [NFPA 54:10.23.4]</p> <p>924.3 Unvented. Unvented fuel-burning room heaters and decorative appliances shall be prohibited.</p>		<p>916.2.3 Clearance. A room heater shall be placed so as not to cause a hazard to walls, floors, curtains, furniture, doors where open, and to the free movements of persons within the room. Heaters designed and marked, "For use in noncombustible fireplace only," shall not be installed elsewhere. Listed room heaters shall be installed in accordance with their listings and the manufacturer's installation instructions. In no case shall the clearances be such as to interfere with combustion air and accessibility. Unlisted room heaters shall be installed with clearances from combustible material not less than the following:</p> <p class="list-item-l1">(1) Circulating type room heaters having an outer jacket surrounding the combustion chamber, arranged with openings at top and bottom so that air circulates between the inner and outer jacket, and without openings in the outer jacket to permit direct radiation, shall have clearance at sides and rear of not less than 12 inches (305 mm).</p> <p class="list-item-l1">(2) Radiating type room heaters other than those of the circulating type described in Section 916.2.3(1) shall have clearance at sides and rear of not less than 18 inches (457 mm), except that heaters that make use of metal, asbestos, or ceramic material to direct radiation to the front of the heater shall have a clearance of 36 inches (914 mm) in front and, where constructed with a double back of metal or ceramic, shall be permitted to be installed with a clearance of 18 inches (457 mm) at sides and 12 inches (305 mm) at rear. Combustible floors under unlisted room heaters shall be protected in an approved manner.</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 COH amendment not carried forward; Section now located in 916.2.3.</p> <p>Justification: Amendment no longer needed; provisions are now covered in the provisions of the 2015 model code.</p>
<p>924.4 Wall-Type Room Heaters. Wall-type room heaters shall not be installed in or attached to walls of combustible material unless listed for such installation. [NFPA 54:10.23.5]</p> <p>924.4 Overhead Radiant Heaters. Listed or approved unvented overhead room heaters may be installed in a Group A, B, F, M, S or U Occupancy, provided the installation conforms to all the following requirements:</p> <p class="list-item-l1">924.4.1 All portions of the heater are located at least 8 feet (2438 mm) above the floor.</p> <p class="list-item-l1">924.4.2 At least two unobstructed permanent openings are provided to the room or space containing such heaters. These openings shall open directly to the outside of the building through the floor, roof or wall. The minimum combined total area of these openings shall be at least 1 square inch (645 mm²) for each 1000 Btu/h (293 W) input of the heater or heaters, with a minimum total area of 100 square inches (64 516 mm²). One-half of the required openings shall be above the heater or heaters, and one-half shall be located below the heater or heaters.</p> <p class="list-item-l1">Exception: When approved by the Authority Having Jurisdiction, provisions may be made to exhaust the products of combustion to the exterior by mechanical means.</p> <p class="list-item-l1">924.4.3 Heaters shall be safely and securely supported with hangers and brackets of noncombustible material and installed with clearances from combustible material as specified on the required manufacturer's label.</p>		<p>N/A</p>	<p>City of Houston Amendment</p> <p>Analysis: 2012 amendment not carried forward; Code provisions are addressed in the model code throughout several different sections including UMC 2015 Section 916.</p> <p>Justification: Amendment no longer needed; provisions are now covered in the 2015 model code.</p>

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<div><div><div>EDITORIAL NOTE:</div><div>DELETE AND RESERVE SECTION 922 POOL HEATERS IN ITS ENTIRETY.</div></div></div>	<div><div>928.0 Pool Heaters.</div><div>Pool heaters shall comply with Appendix L of the <i>Plumbing Code</i>.</div><div><div>EDITORIAL NOTE:</div><div>THE REMAINDER OF SECTION 928 REMAINS AS SET FORTH IN THE 2015 UMC AND IS NOT ADOPTED BY THIS JURISDICTION.</div></div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>COH amendment was moved to Section 928 due to reorganization of the model code. COH Amendment modified to provide a pointer to appropriate sections to correlate with other applicable code volumes.</div></div><div><div>Justification:</div><div>Amendment to delete and reserve section no longer needed. Includes new reference to the UPC for pool heater provisions.</div></div></div>
2012 Houston UMC – Chapter 10 Steam and Hot Water Boilers	2015 Houston UMC – Chapter 10 Boilers and Pressure Vessels	Code Analysis
<div><div>1001.1 Applicability.</div><div>The requirements of this chapter shall apply to the construction, installation, operation, repair, and alteration of all boilers and pressure vessels.</div><div><div>Exceptions:</div><div><div>(1)</div><div>Listed and approved potable water heaters with a nominal capacity not exceeding 120 gallons (454 L) and having a heat input not exceeding 200,000 British thermal units per hour (Btu/h) (58.6 kW) used for hot water supply at a pressure not exceeding 160 pounds force per square inch (psi) (1103 kPa) and at temperatures not exceeding 210°F (99°C), as regulated by the plumbing code.</div><div><div>(2)</div><div>Pressure vessels used for unheated water supply, including those containing air that serves as a cushion and is compressed by the introduction of water and tanks connected to sprinkler systems.</div><div><div>(3)</div><div>Portable unfired pressure vessels and Interstate Commerce Commission (I.C.C.) containers.</div><div><div>(4)</div><div>Containers for liquefied petroleum gases, bulk oxygen, and medical gas that are regulated by the fire code.</div><div><div>(5)</div><div>Unfired pressure vessels in Groups B, F, H, M, R, S, and U Occupancies having a volume not exceeding 5 cubic feet (0.14 m³) and operating at pressures not exceeding 250 psi (1,724 kPa).</div><div><div>(6)</div><div>Pressure vessels used in refrigeration systems that are regulated by Chapter 11 of this code.</div><div><div>(7)</div><div>Pressure tanks used in conjunction with coaxial cables, telephone cables, power cables, and other similar humidity control systems.</div><div><div>(8)</div><div>A boiler or pressure vessel subject to regular inspection by federal inspectors or licensed by federal authorities.</div><div><div>(9)</div><div>Boilers within the scope of NFPA 85, including associated fuel systems shall be designed and installed in accordance with NFPA 85.</div></div></div></div></div></div></div></div></div></div></div></div>	<div><div>1001.1 Applicability.</div><div>The requirements of this chapter shall apply to the construction, installation, operation, repair, and alteration of boilers and pressure vessels. Low-pressure boilers shall comply with this chapter and Section 904.0. The installation or repair of gas and potable water piping and/or accessories shall be subject to the provisions of the <i>Plumbing Code</i>.</div><div><div>Exceptions:</div><div><div>(1)</div><div>Listed and approved potable water heaters with a nominal capacity not exceeding 120 gallons (454 L) and having a heat input not exceeding 200,000 British thermal units per hour (Btu/h) (58.6 kW) used for hot water supply at a pressure not exceeding 160 pounds force per square inch (psi) (1103 kPa) and at temperatures not exceeding 210°F (99°C), in accordance with the plumbing code.</div><div><div>(2)</div><div>Pressure vessels used for unheated water supply, including those containing air that serves as a cushion and is compressed by the introduction of water and tanks connected to sprinkler systems.</div><div><div>(3)</div><div>Portable unfired pressure vessels and Interstate Commerce Commission (I.C.C.) containers.</div><div><div>(4)</div><div>Containers for liquefied petroleum gases, bulk oxygen, and medical gas that are regulated by the fire code.</div><div><div>(5)</div><div>Unfired pressure vessels in business, factory, hazardous, mercantile, residential, storage, and utility occupancies having a volume not exceeding 5 cubic feet (0.14 m³) and operating at pressures not exceeding 250 psi (1,724 kPa).</div><div><div>(6)</div><div>Pressure vessels used in refrigeration systems shall comply with Chapter 11.</div><div><div>(7)</div><div>Pressure tanks used in conjunction with coaxial cables, telephone cables, power cables, and other similar humidity control systems.</div><div><div>(8)</div><div>A boiler or pressure vessel subject to regular inspection by federal inspectors or licensed by federal authorities.</div><div><div>(9)</div><div>DELETED</div></div></div></div></div></div></div></div></div></div></div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>UMC 2012 Section 1001.1 model code includes some minor editorial changes for clarity. A new COH Amendment is also added for additional clarity. No significant code changes to these provisions.</div></div><div><div>Justification:</div><div>Amendment needed to maintain conformity with state boiler law and provide reference to the UPC.</div></div><div><div>Base code modified during review process on 10.12.21.</div></div></div>
<div><div>1001.2 Definitions.</div><div><div>– A –</div><div><div>Alteration.</div><div>A change in an original design or configuration.</div></div><div><div>– D –</div><div><div>Detached Boiler.</div><div>Any class of boiler that remains in its original installed location and has been permanently disconnected from its energy source (i.e. natural gas, electricity, etc.)</div></div></div></div></div>	<div><div>SEE: CHAPTER 2 – DEFINITIONS</div><div><div>203.0</div><div>– A –</div><div><div>Alteration.</div><div>Any change in an original design or configuration.</div></div><div><div>206.0</div><div>– D –</div><div><div>Detached Boiler.</div><div>Any class of boiler that remains in its original installed location and is permanently disconnected from its energy source (i.e. natural gas, electricity, etc.).</div></div><div><div>216.0</div><div>– N –</div></div></div></div></div>	<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>All Houston added definitions have now been relocated to Ch. 2 to keep in line with the format of the model codes. No changes to the previous COH definitions.</div></div><div><div>Justification:</div><div>To correlate with definitions provided in the State law and COH policy.</div></div></div>

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<p>– N –</p> <p>National Board Inspection Code. The manual for boiler and pressure vessel inspectors published by the National Board of Boiler and Pressure Vessel Inspectors.</p> <p>Non-Standard Boiler. A boiler that does not qualify as a standard boiler.</p> <p>– P –</p> <p>Portable Boiler. A boiler primarily intended for temporary use at a location.</p> <p>– R –</p> <p>Repair. The work necessary to restore a boiler or a pressure vessel to a safe and satisfactory operating condition, provided there is no deviation from the original design.</p> <p>– S –</p> <p>Safety Appliances. Safety devices such as safety valves or safety relief valves (within the jurisdictional limits as prescribed by the Authority Having Jurisdiction) provided for the purposes of diminishing the danger of accidents.</p> <p>Secondhand Boiler. A boiler for which both the location and ownership have changed.</p> <p>Standard Boiler. A boiler that bears the Texas stamp, the ASME stamp, or the stamp of any jurisdiction that has adopted a standard of construction equivalent to that required by the State of Texas.</p>	<p>National Board Inspection Code. The manual for boiler and pressure vessel inspectors published by the <i>National Board of Boiler and Pressure Vessel Inspectors</i>.</p> <p>Non-standard Boiler. A boiler that does not qualify as a standard boiler.</p> <p>218.0 – P –</p> <p>Portable Boiler. A boiler primarily designed and intended for temporary use by anyone at any location.</p> <p>220.0 – R –</p> <p>Repair (Boilers). The work necessary to restore a boiler or a pressure vessel to a good and sound operating condition, provided there is no deviation from the original design.</p> <p>221.0 – S –</p> <p>Safety Appliances. Safety devices such as safety valves or safety relief valves (within the jurisdictional limits as prescribed by the Authority Having Jurisdiction) provided for the purposes of diminishing the danger of accidents.</p> <p>Secondhand Boiler. A boiler for which both the location and ownership have changed.</p> <p>Standard Boiler. A boiler that bears the Texas stamp, the ASME stamp, or the stamp of any jurisdiction that has adopted a standard of construction equivalent to that required by the State of Texas.</p>	
<p>1026.3 Makeup water connection to steam boilers. Approved backflow preventers shall be installed in accordance with the plumbing code.</p>	<p>1001.7 Makeup water connection to steam boilers. Approved backflow preventers shall be installed in accordance with the <i>Plumbing Code</i>.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment moved from UMC 2012 Section 1026.3 to UMC 2015 Section 1001.7.</p> <p>Justification: State law requirement; provides reference to UPC. Base code modified during review process on 10.12.21.</p>
<p>1011.1 General. Automatic boilers shall be equipped with controls and limit devices in accordance with Table 1011.1. Automatic boilers shall be equipped with the following gauges, as applicable:</p> <ol style="list-style-type: none">(1) Oil temperature(2) Oil suction pressure(3) High and low gas pressure(4) Stack temperature(5) Windbox pressure <p>Except as otherwise specified, all gas-fired boilers exceeding 400,000 Btu/h (117 kW) input shall comply with nationally recognized standards approved by the Authority Having Jurisdiction.</p> <p>The Authority Having Jurisdiction shall have the authority to approve solid-fuel-fired boilers that comply with the safety requirements for automatic gas- or oil-fired boilers.</p>	<p>1003.2 Controls. Required electrical, mechanical, safety, and operating controls shall carry approval of an approved testing agency or be accepted by the Authority Having Jurisdiction. Electrical controls shall be of such design and construction as to be suitable for installation in the environment in which they are located.</p> <p>1003.2.1 Automatic Boilers. Automatic boilers shall be equipped with controls and limit devices in accordance with ASME CSD-1 or Table 1003 .2.1.</p> <p>The Authority Having Jurisdiction shall have the authority to approve solid-fuel-fired boilers that comply with the safety requirements for automatic gas-fired boilers or oil-fired boilers.</p> <p>1003.3 Gauges. A steam boiler(s) shall be provided with a pressure gauge and a water level glass. A water boiler(s) shall be provided with a pressure gauge and a temperature gauge. Automatic boilers shall be equipped with the following gauges:</p> <ol style="list-style-type: none">(1) Oil temperature(2) Oil suction pressure(3) High and low gas pressure(4) Stack temperature(5) Windbox pressure	<p>City of Houston Amendment</p> <p>Analysis: Model Code provisions moved from UMC 2012 Sections 1011.1 to UMC 2015 Section 1003.2, 1003.2.1 and 1002.3; slight modifications to language but intent remains the same.</p> <p>Justification: Establishes the specific type of controls required for automatic boilers.</p>

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1004.6 Potable Water Boilers. Permits and inspections pertaining to boilers used exclusively for the production of potable hot water shall be administered by the Plumbing Inspection Section staff of the Authority Having Jurisdiction. Reference Section 1001.1, Exception 1. Permits and inspections pertaining to boilers used for other than the production of potable hot water shall be administered by the Mechanical Inspection Section staff of the Authority Having Jurisdiction.	1003.6 Potable Water Boilers. Permits and inspections pertaining to boilers used exclusively for the production of potable hot water shall be administered by the Plumbing Inspection Section staff of the Authority Having Jurisdiction. Reference Section 1001.1, Exception 1. Permits and inspections pertaining to boilers used for other than the production of potable hot water shall be administered by the Mechanical Inspection Section staff of the Authority Having Jurisdiction.	City of Houston Amendment Analysis: COH amendment moved from 2012 amendment Sections 1004.6, 1004.7 & 1004.10; slight modifications to language but intent remains the same. Justification: Establishes plumbing handles all potable water heaters. Base code modified during review process on 10.12.21.
1004.7 Permit Required. Except for work exempted by Section 111.2 of this code, a permit shall be obtained from the Authority Having Jurisdiction prior to installation, reinstallation, alteration, repair or replacement of boilers and pressure vessels related to steam and hot water boiler systems. Alteration of safety control systems on automatic boilers or replacement, repair, or alteration of breeching, vent connector, vent pipe or chimney, and the conversion of solid fuel-fired boilers as permitted by Section 1012.0 shall also require a permit. See Chapter 1 for requirements for obtaining permits.	1003.7 Permit Required. Except for work exempted by Section 104.2 of this code, a permit shall be obtained from the <i>Authority Having Jurisdiction</i> prior to installation, reinstallation, alteration, repair or replacement of boilers and pressure vessels related to steam and hot water boiler systems. Alteration of safety control systems on automatic boilers or replacement, repair, or alteration of breeching, vent connector, vent pipe or chimney, and the conversion of solid fuel-fired boilers as permitted by Section 1010.0 shall also require a permit. See Chapter 1 for requirements for obtaining permits.	
1004.10 Boiler Nameplate. A boiler nameplate shall be attached to each boiler. Lost or destroyed nameplates shall be replaced in accordance with The <i>National Board Inspection Code</i> .	1003.8 Boiler Nameplate. A boiler nameplate shall be attached to each boiler. Lost or destroyed nameplates shall be replaced in accordance with the <i>National Board Inspection Code</i> .	City of Houston Amendment Analysis: Previous COH amendment in UMC 2012 Section 1004.10 is relocated to UMC 2015 Section 1003.8 to better correlate with the updated UMC 2015 code.
1004.8 Moving Boilers. Any owner, user, or person desiring to remove, transfer, or relocate any boiler in the jurisdiction shall first obtain a new permit to install and have that same boiler inspected or tested by the Authority Having Jurisdiction.	N/A	City of Houston Amendment Analysis: Previous COH amendment in UMC 2012 Section 1004.08 is deleted. This amendment is no longer needed as the model code and associated COH amendments sufficiently address this type of project.
1004.9 Reinstallation. Any installed boiler in the jurisdiction may be reinstalled, provided an application is filed with the Authority Having Jurisdiction and a permit is granted. A permit to install shall be issued provided that: (1) The boiler is inspected internally; (2) A hydrostatic pressure test is applied if deemed necessary by the Authority Having Jurisdiction; and (3) The Authority Having Jurisdiction determines that the boiler meets inspection and test requirements. Exception: A horizontal return tubular boiler having continuous lap seam of more than 12 feet (3658 mm) in length shall not be reinstalled for a gauge pressure in excess of 15 psi.	N/A	City of Houston Amendment Analysis: Amendment is no longer needed as the model code and associated Houston amendments address required permits and installation requirements for projects proposing the installation or reinstallation of equipment such as boilers. Justification: Provisions for these sections are covered in the base code and associated Houston amendments and are no longer needed.
1004.11 Automatic Controls. No low-pressure gas-fired boiler or furnace capable of consuming 200,000 Btu or more per hour shall be installed, and no boiler designed for other fuels having that Btu capacity shall be converted to the use of gas fuel unless equipped with either a thermostatic pilot light or other approved equipment constructed and adjusted so that no gas can flow through the main burner unless the pilot light is burning. In the case of a steam boiler, it shall be equipped with a low-water cutoff and an excess pressure switch to close the main gas supply valve on a low-water condition or an excess pressure condition. In the case of a hot-water boiler, it shall be equipped with a low-water fuel cutoff and an excess temperature switch to close the main gas	N/A	City of Houston Amendment Analysis: Amendment is no longer needed as the model code and associated Houston amendments address required permits and installation requirements for projects proposing the installation or reinstallation of equipment such as boilers. Justification: Provisions for these sections are covered in the base code and associated Houston amendments and are no longer needed.

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supply valve on a low-water condition or an excess temperature condition. In the case of a forced or mechanical draft boiler, a means to prove airflow shall be provided to prevent gas flow to the main burner in the absence of airflow.		
1005.2 Systems with Open Expansion Tanks. Systems equipped with an open expansion tank to satisfy thermal water expansion shall be provided with an indoor overflow from the upper portion of the expansion tank in addition to an open vent. The indoor overflow shall be carried within the building to an <u>approved</u> plumbing fixture or <u>plumbing drain to the basement</u> .	1004.2 Open-Type Expansion Tanks. Open type expansion tanks shall be located not less than 3 feet (914 mm) above the highest point of the system. Such tanks shall be sized based on the capacity of the system. An overflow with a diameter of not less than one-half the size of the supply or not less than 1 inch (25 mm) in diameter shall be installed at the top of the tank. The overflow shall discharge through an air gap into the drainage system.	City of Houston Amendment Analysis: Amendment is no longer needed as the model code and associated Houston amendments address required permits and installation requirements for projects proposing the installation or reinstallation of equipment such as boilers. Justification: Provisions are no longer needed and covered in Section 1004.2.
1006.0 Safety or and Safety Relief Valves Discharge. 1006.1 Safety and Safety Relief Valves. All safety valves used on boilers in the jurisdiction shall conform to the prescribed or recommendatory rules of the ASME Code and the State of Texas Boiler Law and shall have the necessary provisions so that the safety valve can be sealed in such a manner that the pressure-relieving mechanism of the safety valve cannot be changed, altered or adjusted unless the seal is broken.	1005.0 Safety or Relief Valve Discharge. 1005.1 General. Pressurized vessels or boilers shall be provided with overpressure protection by means of a listed pressure relief valve installed in accordance with the manufacturer's installation instructions.	City of Houston Amendment Analysis: Amendment is no longer needed as the model code and associated Houston amendments address permit and installation requirements for projects proposing the installation or reinstallation of boilers. The model code and state law require compliance with the state adopted ASME Boiler Code Justification: Provisions are no longer needed and covered in Section 1004.2.
1006.3 General. The discharge from relief valves shall be piped to <u>an approved location</u> within 18 inches (457 mm) of the floor or to an open receptacle, and where the operating temperature is in excess of 212°F (100°C), shall be equipped with a splash shield or centrifugal separator. Where the discharge from safety valves would result in a hazardous discharge of steam inside the boiler room, such discharge shall be extended outside the boiler room. No valve shall be placed between the safety or relief valve and the boiler, nor on the discharge pipe between the safety valve and the atmosphere. <u>Discharge piping shall not be connected to any other piping system, and the cross-sectional area shall not be less than the full area of the valve outlet, or the total areas of the valve outlets discharging therein, whichever is greater. See also Section 1010.</u> Discharges from relief valves on industrial boilers shall be discharged to an approved location.	1005.2 Discharge Piping. The discharge piping serving a temperature relief valve, pressure relief valve, or combination of both shall have no valves, obstructions, or means of isolation and provided with the following: <div><div>(1)</div>Equal to the size of the valve outlet and shall discharge full size to the flood level of the area receiving the discharge and pointing down.<div>(2)</div>Materials shall be rated at not less than the operating temperature of the system and approved for such use.<div>(3)</div>Discharge pipe shall discharge independently by gravity through an air gap into the drainage system or outside of the building with the end of the pipe not exceeding 2 feet (610 mm) and not less than 6 inches (152 mm) above the ground and pointing downwards.<div>(4)</div>Discharge in such a manner that does not cause personal injury or structural damage.<div>(5)</div>No part of such discharge pipe shall be happed or subject to freezing.<div>(6)</div>The terminal end of the pipe shall not be threaded.<div>(7)</div>Discharge from a relief valve into a water heater pan shall be prohibited.</div> 1005.3 Splash Shield. Where the operating temperature exceeds 212°F (100°C), the discharge pipe shall be installed with a splash shield or centrifugal separator. 1005.4 Hazardous Discharge. Where the discharge from safety valves is capable of being hazardous, discharge of steam inside the boiler room, such discharge shall be discharged to the outside of the boiler room. Discharges from relief valves on industrial boilers shall be discharged to an approved location.	City of Houston Amendment Analysis: Amendment is no longer needed as the model code and associated Houston amendments address permit and installation requirements for projects proposing the installation or reinstallation of boilers. The code provisions of the model code were extensively reorganized and the provisions of UMC 2012 Section 1006.3 have been redistributed into UMC 2015 Section 1005. The model code and state law require compliance with the state adopted ASME Boiler Code Justification: Provisions are no longer needed and covered in Section 1004.2.
1006.2 Authority to Set and Seal Safety Appliances. All safety and safety relief valves for ASME Section I, Section IV, and Section VIII Division 1 boilers must be repaired, tested, set, and sealed by one of the following, provided the scope of the issued certificate of authorization covers the work to be performed:	1005.6 Authority to Set and Seal Safety Appliances. All safety and safety relief valves for ASME Section I, Section IV, and Section VIII Division 1 boilers must be repaired, tested, set, and sealed by one of the following, provided the scope of the issued certificate of authorization covers the work to be performed:	City of Houston Amendment Analysis: COH amendment moved from UMC 2012 Section 1006.2 to UMC 2012 1005.6. No changes to the previous COH code amendment.

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<p>(1) An organization holding a valid V, HV, or UV certificate of authorization, as appropriate, issued by the American Society of Mechanical Engineers (ASME);</p> <p>(2) An organization holding a valid VR certificate of authorization issued by the National Board of Boiler and Pressure Vessel Inspectors; or</p> <p>(3) An organization holding a valid owner/operator certificate of authorization issued by the Texas Department of Licensing and Regulation.</p>		<p>(1) An organization holding a valid V, HV, or UV certification or authorization, as appropriate, issued by the American Society of Mechanical Engineers (ASME);</p> <p>(2) An organization holding a valid VR certificate of authorization issued by the National Board of Boiler and Pressure Vessel Inspectors; or</p> <p>(3) An organization holding a valid owner/operate certificate of authorization issued by the Texas Department of Licensing and Regulation.</p>	<p>Justification: State law requirement.</p> <p>Base code modified during review process on 10.12.21.</p>
<p>1007.0 Gas Shutoff Valves.</p> <p>1007.1 General. An approved manual shutoff valve with handle shall be installed within 3 feet (914 mm) of the boiler gas train, upstream of all control devices on the main burner of a gas-fired boiler. The takeoff point for the gas supply to the pilot shall be upstream of the gas shutoff valve of the main burner and shall be valved separately. A union or other approved means of disconnect shall be provided immediately down-stream of these shutoff valves</p>		<p>1006.0 Gas Shutoff Valves.</p> <p>1006.1 General. An approved manual shutoff valve with handle shall be installed within 3 feet (914 mm) of the boiler gas train, upstream of all control devices on the main burner of a gas-fired boiler. The takeoff point for the gas supply to the pilot shall be upstream of the gas shutoff valve of the main burner and shall be valved separately. A union or other approved means of disconnect shall be provided immediately down-stream of these shutoff valves.</p>	<p>City of Houston Amendment</p> <p>Analysis: The model code was reorganized and UMC 2012 Section 1007.1 was relocated to UMC 2015 Section 1006.0. The COH amendment was brought forward with a minor editorial change and moves with the model code section to the new location.</p> <p>Justification: State law requirement. Previous 2012 amendment no longer needed, provisions covered in base code.</p> <p>Base code modified during review process on 10.12.21.</p>
<p>1009.4 Newly Installed Automatically Fired Hot Water Heating Boilers. Such boilers, when installed in a forced circulation system, shall be equipped in the manner described in this section and Sections 1009.1 and 1009.2. A coil-type boiler or a water-tube boiler requiring forced circulation to prevent overheating of the coils or tubes shall have a device to prevent burner operation if the flow rate becomes inadequate to protect the boiler unit from overheating.</p>		<p>1008.0 Low-Water Cutoff.</p> <p>1008.1 General. Hot water boilers and steam boilers shall be installed with a low-water cutoff. A coil-type boiler or a water-tube boiler that requires forced circulation to prevent overheating of the coils or tubes shall be installed with a flow-sensing device in the outlet piping in lieu of the low-water cutoff. The low-water cutoff or the flow sensing device shall be installed so as to prevent damage to the boiler and to permit testing of the fuel-supply cutoff without draining the heating system. The low-water cutoff shall shut off the combustion at a water level set point that is in accordance with the boiler manufacturer's instructions.</p>	<p>City of Houston Amendment</p> <p>Analysis: The COH amendment in UMC 2012 Section 1009.4 is relocated to UMC 2015 Section 1008.1. The model code addresses this type of application and the COH amendment is no longer needed.</p> <p>Justification: State law requirement. Previous 2012 amendment no longer needed, provisions covered in base code.</p>
<p>1009.2 Low-Water Fuel Cutoff and Feed Water Pump Control Combined in a Single Device. Where such a device is used, an additional separate low-water fuel cutoff with manual reset shall be installed. The additional control shall be wired in series electrically with the existing low-water fuel cutoff.</p> <p>1009.3 Low-Water Fuel Cutoff Housed in Either the Water Column or Separate Chamber. The installation shall be provided with a blow down pipe and valve not less than ¾ inch pipe size. The arrangement shall be such that when the water column is blown down, the water level in it will be lowered sufficiently to activate the low-water fuel cutoff device.</p>		<p>1008.2 Low-Water Fuel Cutoff and Feed Water Pump Control Combined in a Single Device. Where a low-water fuel cutoff and feed water pump control combined in a single device is used, an additional separate low-water fuel cutoff with manual reset shall be installed, or be in accordance with the manufacturer's specifications of a listed device. The additional control shall be wired in series electrically with the existing low-water fuel cutoff.</p> <p>1008.3 Low-Water Fuel Cutoff Housed in Either the Water Column or Separate Chamber. The installation shall be provided with a blow down pipe and valve not less than ¾ inch pipe size. The arrangement shall be such that when the water column is blown down, the water level in it will be lowered sufficiently to activate the low-water fuel cutoff device.</p>	<p>City of Houston Amendment</p> <p>Analysis: COH amendment moved from UMC 2012 Section 1009.2 and 1009.3 to UMC 2015 Section 1008.2 and 1008.3.</p> <p>Justification: State law requirement. Previous amendment slightly modified to provide more inclusivity of listed devices.</p> <p>Base code modified during review process on 10.12.21.</p>
<p>1009.1 General Hot-Water-Heating Boilers. Hot-water-heating boilers, other than manually fired, shall be equipped with a low-water cutoff, except that a coil-type boiler or a water-tube boiler that requires forced circulation to prevent overheating of the coils or tubes shall have a flow-sensing device installed in the outlet piping in lieu of the low-water cutoff. The required low-water cutoff or flow switch, as applicable, shall be mounted so as to prevent damage to the boiler and to permit testing of the fuel-supply cutoff without draining the heating system, except that such boilers used in Group R Occupancies of less than six dwelling units and Group U Occupancies need not be equipped with the low-water cutoff or flow switch.</p>		<p>1009.0 Combustion Regulators - Safety Valves.</p> <p>1009.1 General. The following requirements shall be retroactive:</p> <p>(1) Hot-water-heating boilers, other than manually fired, shall be equipped with two temperature combustion regulators in series. Steam-heating boilers, other than manually fired, shall be equipped with a pressure combustion regulator and a low-water cutoff. (See Section 1008.0)</p> <p>(2) Boilers and pressure vessels shall be provided with the required number, size, and capacity of safety or relief valves to ensure positive relief of overpressure in accordance with nationally recognized standards, as applicable. Valves so</p>	<p>City of Houston Amendment</p> <p>Analysis: Previous COH amendment in UMC 2012 Section 1009.1 is no longer needed, the code provisions are covered in model code for this type of application. The COH amendment not carried forward.</p> <p>Justification: Previous 2012 amendment no longer needed, provision covered in base code.</p>

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	employed shall be constructed, sealed, and installed in accordance with nationally recognized standards, as applicable.	
1009.5 Water Feed Device. Where a water feed device is used, it shall be constructed to prevent feed water from entering the boiler through the water column or separate chamber of the low-water fuel cutoff.	N/A	City of Houston Amendment Analysis: Amendments not carried forward. Justification: Previous 2012 amendment no longer needed; provisions covered in base code section 1008.
1020.0 Operating Adjustments and Instructions 1020.1 General. Hot water boiler installations, u Upon completion, all boiler installations shall have controls set, adjusted, and tested by the installing contractor. A complete control diagram of a permanent legible type, together with complete boiler operating instructions, shall be furnished by the installer for each installation.	1012.0 Operating Adjustments and Instructions. 1012.1 General. Hot water boiler installations, upon completion, shall have controls set, adjusted, and tested by the installing contractor. A complete control diagram of a permanent legible type, together with complete boiler operating instructions, shall be furnished by the installer for each installation.	City of Houston Amendment Analysis: Amendment not carried forward. Justification: Previous 2012 amendment no longer needed; provisions covered in base code Section 303.1.
1021.1 General An installation for which a permit is required shall not be put into service until it has been inspected and approved by the Authority Having Jurisdiction. It shall be the duty of the owner permit holder or his authorized representative to notify the Authority Having Jurisdiction that the installation is ready for inspection and test. It also shall be the duty of the owner permit holder or his authorized representative post in a conspicuous position on the installation a notice in substantially the following form: “Warning! This installation has not been inspected and approved by the Authority Having Jurisdiction and shall not be covered or concealed until so inspected and approved,” and it shall be unlawful for anyone other than the Authority Having Jurisdiction to remove such notice. The installation shall not be covered, or concealed, or operated until so inspected and approved by the Authority Having Jurisdiction. The Authority Having Jurisdiction shall require such tests as it deems necessary to determine that the installation complies with the provision of this section. Such tests shall be made by the owner permit holder or his authorized representative in the presence of the Authority Having Jurisdiction. Exception: On installations designed and supervised by a registered professional engineer, the Authority Having Jurisdiction shall have the authority to permit inspection and testing by such engineer may accept the written report bearing the engineer’s seal of a hydrostatic test performed and/or witnessed by said engineer. Where the owner or his authorized representative requests inspection of a boiler prior to its installation, the Authority Having Jurisdiction shall make such inspection.	1013.1 General. An installation for which a permit is required shall not be put into service until it has been inspected and approved by the Authority Having Jurisdiction. It shall be the duty of the owner or his authorized representative to notify the Authority Having Jurisdiction that the installation is ready for inspection and test. It also shall be the duty of the owner or his authorized representative to post in a conspicuous position on the installation a notice in substantially the following form: “Warning! This installation has not been inspected and approved by the Authority Having Jurisdiction and shall not be covered or concealed until so inspected and approved,” and it shall be unlawful for anyone other than the Authority Having Jurisdiction to remove such notice. The Authority Having Jurisdiction shall require such tests as it deems necessary to determine that the installation is in accordance with the provisions of this section. Such tests shall be made by the owner or his authorized representative in the presence of the Authority Having Jurisdiction. All boiler installations shall be hydrostatically tested by the owner or owner’s authorized representative in the presence of the Authority Having Jurisdiction and in accordance with the <i>National Board Inspection Code</i>. Exception: On installation designed and supervised by a registered design professional, the Authority Having Jurisdiction shall have the authority to permit inspection and testing by such registered design professional. Where the owner or his authorized representative requests inspection of a boiler prior to its installation, the Authority Having Jurisdiction shall make such inspection.	City of Houston Amendment Analysis: New COH amendment added to reference the National Board Inspection Code (NBIC). Justification: Amendment needed to comply with state boiler law. Base code modified during review process on 10.12.21.
1022.0 Temporary Operating Permit 1022.1 General. It shall be unlawful to operate a boiler or pressure vessel without first obtaining a valid operating permit to do so from the Authority Having Jurisdiction. Such permit shall be displayed in a conspicuous place adjacent to the boiler or vessel. The operating permit shall not be issued until the equipment has been inspected and approved by the Authority Having Jurisdiction. Exception: The operation only of steam-heating boilers, low-pressure hot-water-heating boilers, hot water supply boilers, and pressure vessels in Group R Occupancies of less than six dwelling units and in Group U Occupancies An installer of a boiler installed by authority of a permit issued under the provisions of this code may operate a temporary boiler and its appurtenances for a limited period	1013.2 Temporary Operating Permit. It shall be unlawful to operate a boiler or pressure vessel without first obtaining a valid operating permit to do so from the Authority Having Jurisdiction. Such permit shall be displayed in a conspicuous place adjacent to the boiler or vessel. The operating permit shall not be issued until the equipment has been inspected and approved by the Authority Having Jurisdiction. Exception: The operation of steam-heating boilers, low-pressure hot-water-heating boilers, hot water supply boilers, and pressure vessels in residential occupancies of less than six dwelling units and in utility occupancies. An installer of a boiler installed by authority of a permit issued under the provisions of this code may operate a temporary boiler and its appurtenances for a limited time	City of Houston Amendment Analysis: Amendment moved from 2012 amendment Section 1022.0 & 1022.1. Justification: Amendment needed to continue established state and local policies. Base code modified during review process on 10.12.21.

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<p>of time for the purpose of cleaning, testing and adjusting, prior to passing final inspection, upon the following conditions:</p> <p>(1) The installer in whose name the permit is issued shall request the Authority Having Jurisdiction to inspect the system for approval of such operation.</p> <p>(2) If upon inspection the system is approved for operation as described in this section, the Authority Having Jurisdiction shall indicate in writing on said permit that a temporary operation is approved for the purpose of cleaning, testing, and adjusting for a period 30 working days from date of inspection.</p> <p>(3) On or before the expiration date of the temporary operating permit, the system shall be given a final inspection and if the system fails to be approved, a reinspection fee will be charged for each subsequent inspection until the system is finally approved as complying with the requirements of this code.</p> <p>(4) Should the cleaning, testing, and adjusting of a boiler system not be completed within the time stipulated on the temporary operating permit, the Authority Having Jurisdiction may extend the time for just cause.</p>	<p>for the purpose of cleaning, testing and adjusting, prior to passing final inspection, upon the following conditions:</p> <p>(1) The installer in whose name the permit is issued shall request the Authority Having Jurisdiction to inspect the system for approval of such operation.</p> <p>(2) If upon inspection the system is approved for operation as described in this section, the Authority Having Jurisdiction shall indicate in writing on said permit that a temporary operation is approved for the purpose of cleaning, testing, and adjusting for a period of 30 working days from date of inspection.</p> <p>(3) On or before the expiration date of the temporary operating permit, the system shall be given a final inspection and if the system fails to be approved, a reinspection fee will be charged for each subsequent inspection until the system is finally approved as complying with the requirements of this code.</p> <p>(4) Should the cleaning, testing, and adjusting of a boiler system not be completed within the time stipulated on the temporary operating permit, the Authority Having Jurisdiction may extend the time for just cause.</p>	
<p>1020.2 Manufacturer's Instructions. The installation of each boiler covered by this chapter shall conform to the conditions of approval as specified in the manufacturer's installation instructions pertaining to safety and to the requirements of this chapter. The installer shall leave the manufacturer's instructions attached to the boiler or readily available for the benefit of the inspector.</p>	<p>N/A</p>	<p>City of Houston Amendment Analysis: Amendment not carried forward. Justification: Previous 2012 amendment no longer needed; provisions covered in base code Section 303.1.</p>
<p>1021.2 Inspection Codes and Standards. All inspections or tests shall be made in compliance with the prescribed or recommendatory rules or instructions of this code, the ASME Code and the <i>National Board Inspection Code</i> as applicable. The installation or repair of gas and potable water piping and/or accessories shall be subject to the provisions of the plumbing code.</p>	<p>N/A</p>	<p>City of Houston Amendment Analysis: Amendment not carried forward. Justification: Previous 2012 amendment no longer needed; provisions covered in base code.</p>
<p>1021.3 Hydrostatic tests. A hydrostatic test is required for each secondhand boiler or detached boiler being placed back into service. Such boilers shall be tested by hydraulic pressure, in accordance with the <i>National Board Inspection Code</i>, at 50 percent greater than their allowed safe working pressure. If for any reason or on account of leakage the boiler will not hold this pressure, the owner shall have all repairs made before the boiler is placed into service and the inspector shall witness a second test upon receipt of notification that repairs have been made. If upon making the second test, the boiler is still defective, the Authority Having Jurisdiction shall, for each subsequent test, collect an additional inspection fee as herein provided for, but in no case shall the Authority Having Jurisdiction approve the boiler for use until fully satisfied of safe condition of such boiler. The installer or owner shall supply the equipment and labor to conduct the hydrostatic test on the boiler.</p> <p>When there is a question or doubt about the condition of a boiler, the inspector may require a hydrostatic test, as follows:</p>	<p>N/A</p>	<p>City of Houston Amendment Analysis: Amendments not carried forward. Justification: Amendment no longer needed as provisions are covered in base code. A note has been added to 1013 that all boiler installations shall be hydrostatically tested.</p>
<p>1021.3.1 In preparing a boiler for a hydrostatic test, the boiler shall be filled with water to the stop valve and all air vented off. If the boiler to be tested is connected with other boilers that are under pressure, such connections shall be blanked off unless they have double stop valves on all connection pipes with a drain between.</p> <p>1021.3.2 During a hydrostatic test of a boiler, the safety valve or valves shall be removed or each valve disc shall be held to its seat by means of a testing clamp and not by screwing down the compression screw under the spring.</p> <p>1021.3.3 The temperature of the water used to apply a hydrostatic test shall be</p>	<p>N/A</p>	<p>City of Houston Amendment Analysis: Amendments not carried forward. Justification: Amendment no longer needed as provisions are covered in base code. A note has been added to 1013 that all boiler installations shall be hydrostatically tested.</p>

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<div>bet1een 70F and 120F.</div>		
<div><div>1021.3.4 When a hydrostatic test is to be applied, the pressure shall be as follows:</div><div><div>1021.3.4.1 For all cases involving the question of tightness, the pressure shall be equal to the set pressure of the safety valve or valves having the lowest setting.</div><div>1021.3.4.2 For all cases involving the question of safety, the pressure shall be equal to one and one-half times the maximum allowable working pressure.</div><div>1021.3.4.3 The pressure applied for a hydrostatic test shall not exceed one and one-half times the maximum allowable working pressure. In no case shall the test pressure be exceeded by more than 2 percent.</div></div></div>	<div>N/A</div>	<div><div>City of Houston Amendment</div><div>Analysis: Amendments not carried forward.</div><div>Justification: Amendment no longer needed as provisions are covered in base code. A note has been added to 1013 that all boiler installations shall be hydrostatically tested.</div></div>
<div><div>1023.0 Maintenance Inspection Repairs.</div><div>1023.1 General. The Authority Having Jurisdiction shall inspect boilers and pressure vessels operated under permit in accordance with ASHRAE/ACCA 180 at such intervals as deemed necessary, but not less frequently than noted below. Repairs, changes, or alterations made on a boiler shall conform with the prescribed or recommended rules of the ASME Code and the <i>National Board Inspection Code</i> and shall be subject to inspection (visual and/or hydrostatic test) by the Authority Having Jurisdiction before the boiler is coated with paint or other preservatives.</div><div>1023.2 Power and Miniature Boilers. Power boilers and miniature boilers shall be inspected externally annually. Where construction and operating conditions permit, they shall be subject to inspection internally annually. Major Repair. The term “major repair” as used herein shall be considered as one upon which the strength of a boiler would depend. Where a major repair is necessary, it shall be subject to the approval of the Authority Having Jurisdiction. Repairs to all boilers and their appurtenances shall conform as nearly as practicable to the requirements of the <i>National Board Inspection Code</i>. See Section 1023.6.</div></div>	<div><div>1013.3 Maintenance Inspection. The Authority Having Jurisdiction shall inspect boilers and pressure vessels operated under permit in accordance with ASHRAE/ACCA 180 at such intervals as deemed necessary, but not less frequently than in accordance with Section 1013.4 through Section 1013.7.</div><div>1013.4 Power and Miniature Boilers. Power boilers and miniature boilers shall be inspected externally annually. Where construction and operating conditions permit, they shall be subject to inspection internally annually.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: Amendment for Section 1023 not carried forward.</div><div>Justification: Previous 2012 amendment no longer needed; provisions covered in base code Section 1013.</div></div>
<div><div>1023.3 Steam and Water-Heating Boilers. Steam-heating boilers and hot-water heating boilers shall be inspected externally annually. Where construction and operating conditions permit, they shall also be subject to inspection internally annually. Repairs by Welding Fusion. All repairs by welding shall be completed in accordance with the recommended rules for repair by fusion welding to power boilers published in the <i>National Board Inspection Code</i>.</div><div>1023.4 Automatic Steam-Heating Boilers. Automatic steam-heating boilers shall be inspected externally biennially. Where construction and operating conditions permit, they shall be subject to inspection internally biennially. Re-ending and Piecing Tube. Re-ending or piecing tubes or pipes in either fire-tube or water-tube boilers is permitted, provided the thickness of the tube or pipe has not been reduced by more than 10 percent from that required by the ASME Code for the pressure to be carried.</div></div>	<div><div>1013.5 Steam-Heating and Water-Heating Boilers. Steam-heating boilers and hot-water-heating boilers shall be inspected externally annually. Where construction and operating conditions permit, they shall also be subject to inspection internally annually.</div><div>1013.6 Automatic Steam-Heating Boilers. Automatic steam-heating boilers shall be inspected externally biennially. Where construction and operating conditions permit, they shall be subject to inspection internally biennially.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: Amendment for Section 1023 not carried forward.</div><div>Justification: Previous 2012 amendment no longer needed; provisions covered in base code Section 1013.</div></div>
<div><div>1023.5 Unfired Pressure Vessels. Unfired pressure vessels shall be inspected externally biennially. Where subject to corrosion and construction permits, they shall be subject to inspection internally biennially.</div></div>	<div><div>1013.7 Unfired Pressure Vessels. Unfired pressure vessels shall be inspected externally biennially. Where subject to corrosion and construction permits, they shall be subject to inspection internally biennially.</div></div>	<div><div>City of Houston Amendment</div><div>Analysis: Amendment for Section 1023 not carried forward.</div></div>

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1026.4 Boiler Discharge to Plumbing Systems. No steam pipe shall connect to any part of a drainage or plumbing system, nor shall any water above 140EF (60EC) be discharged into any part of a drainage system. Such pipes shall be indirectly connected by discharging into an interceptor, blowoff pit or similar appurtenances prior to delivery into the drainage system.	N/A	City of Houston Amendment Analysis: Amendment for Section 1026 not carried forward. Justification: Previous 2012 amendment no longer needed; provisions covered in the 2015 model code. 1026.3 relocated to 1001.7, state law requirement.
2012 Houston UMC – Chapter 11 Refrigeration	2015 Houston UMC – Chapter 11 Refrigeration	Code Analysis
1101.1 Applicability. Part I of this chapter covers refrigeration systems. Refrigeration systems, equipment, and devices for new buildings, including the replacement of parts, alterations, and substitution of a different refrigerant, shall conform to the requirements of this chapter and other applicable provisions of this code. Replacement of existing refrigeration systems, conversion to a different refrigerant or installation of a new refrigeration system into an existing building shall conform to the requirements of this chapter as modified by Section 1127. Occupied spaces within refrigerated areas shall be in compliance with this chapter and the applicable portions of the building code. Part II covers cooling towers.	1101.1 Applicability. Part I governs the design, installation, and construction of refrigeration systems, equipment, refrigerant piping, pressure vessels, and safety devices for new buildings, replacement of parts, alterations, and substitution of different refrigerants. Replacement of existing refrigeration systems, conversion to a different refrigerant or installation of a new refrigeration system into an existing building shall conform to the requirements of this chapter. Part II governs the installation and construction of cooling towers.	City of Houston Amendment Analysis: COH amendment. Base code has been modified. Justification: Amendment needed to continue established state and local policies. Base code modified during review process on 10.12.21.

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<div><div>1127.0 Requirements for Modifications to Existing Buildings.</div><div><div>1127.1 General.</div><div>The requirements of this section shall apply retroactively to existing refrigeration systems, equipment or devices where a substitution of a different refrigerant or replacement or addition of a refrigeration system or equipment occurs, and:</div><div><div>(1)</div><div>The quantity of refrigerant in the largest system in the room exceeds the allowable quantities per Table 1102.1; or</div><div><div>(2)</div><div>The replaced, converted or altered system contains Group A1 refrigerant and has an aggregate horsepower of 100 or more for a single refrigerant system; or</div><div><div>(3)</div><div>The system contains other than Group A1 refrigerant.</div><div><div>Exception:</div><div>Absorption systems, see Section 1129.</div><div><div>1127.2 Permits.</div><div>Regardless of exemptions to the permit requirement set forth in Section 111.0, a mechanical permit shall be obtained for the replacement or addition of equipment or for conversion to another Group A1 refrigerant if mechanical refrigerating equipment is greater than 25 horsepower or conversion to a refrigerant other than Group A1 refrigerant in a system of any size.</div><div><div>1127.3 System Selection.</div><div>Refrigerants used in replaced, added or refrigerant-converted systems shall be limited in application in accordance with Table 1105.1 and the requirements of Section 1105.</div><div><div>1127.4 Refrigerant Sensor and Alarms.</div><div>A refrigerant vapor detection system and alarm system for the specific refrigerant shall be installed in accordance with Section 1107.4 and shall utilize alarm signaling. The refrigerant sensor shall energize the emergency ventilation system upon detection of refrigerant levels as specified in Section 1108.5.</div><div><div>1127.5 Ventilation.</div><div>Both continuous and emergency ventilation shall be provided in accordance with Section 1108 to serve the machinery room.</div><div><div>Exception:</div><div>In the event that compliance with Sections 1108.7 and 1108.9 are physically impractical, a system designed to minimize the hazard of contaminated exhaust shall be prepared and submitted for approval to the Authority Having Jurisdiction by a registered professional engineer licensed to practice as such in the State of Texas. Such design is subject to the provisions of Sections 103, 104, and 105 of this code.</div><div><div>1127.6 Overpressure Protection.</div><div>Pressure vessels of replaced, added or refrigerant- converted refrigeration machinery shall be provided with over-pressure protection as specified in this chapter.</div><div><div>1127.7 Machinery Room Construction.</div><div>Construction joints and penetrations shall be sealed to restrict passage of refrigerant vapor in accordance with Section 1107.5.</div><div><div>Exception:</div><div>Where it is found to be physically impractical to rehabilitate a machinery room to comply with the above requirement (one- or two-hour construction), an evaluation and report by a registered professional engineer or registered architect licensed to practice in the State of Texas shall be submitted to the Authority Having Jurisdiction for approval, clearly stating measures necessary to attain a reasonably complete fire-rated separation and to minimize the possibility of refrigerant escaping the machinery room into other parts of the building. Such design is subject to the provisions of Sections 103, 104, and 105 of this code.</div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>		<div><div>1101.1.1 Existing Systems.</div><div>The requirements of this section shall apply to existing refrigerant systems, equipment or devices where a substitution of a different refrigerant or replacement or addition of a refrigeration system or equipment occurs, and:</div><div><div>(1)</div><div>The quantity of refrigerant in the largest system in the room exceeds the allowable quantities per Table 1102.2; or</div><div><div>(2)</div><div>The replaced, converted or altered system contains Group A1 refrigerant and has an aggregate horsepower of 100 or more for a single refrigerant system; or</div><div><div>(3)</div><div>The system contains other than Group A1 refrigerant</div><div><div>Exception:</div><div>Absorption systems, see Section 1104.9, are exempted from 1101.2.</div></div></div></div></div></div>		<div><div>City of Houston Amendment</div><div><div>Analysis:</div><div>COH amendment. Amendment moved from 2012 amendment Section 1127.0 & 1127.1.</div><div><div>Justification:</div><div>Provides guidance on requirements for existing systems.</div></div><div>Base code modified during review process on 10.12.21.</div></div></div>	

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<div>1127.8 Equipment Identification. Equipment in the machinery rooms shall be identified as indicated in Section 1123 of this chapter.</div> <div>1127.9 Ductwork. New ductwork, except for ventilation as required by this chapter and combustion air, is not permitted in an existing refrigeration machinery room. Where it is impractical to relocate existing duct or where it is necessary to add ductwork for combustion air, all joints and seams in both new and existing ductwork shall be sealed substantially air tight. Refer to Section 602.4.</div>		
<div>1129.0 Absorption Refrigeration.</div> <div>1129.1 Lithium Bromide Absorption Refrigeration. Lithium bromide absorption refrigeration equipment using water as the refrigerant and steam or hot water as the energy source is exempt from refrigeration machinery room requirements and may be located in the same room with refrigeration equipment requiring a machinery room.</div> <div>1129.2 Direct Fired Absorption Refrigeration. Direct fired absorption refrigeration equipment shall be installed in a room constructed as required for a boiler of similar Btu input. This equipment shall not be installed in a refrigeration machinery room.</div> <div>1129.3 Ammonia Absorption Refrigeration. Ammonia absorption refrigeration equipment larger than 5 tons shall be installed in a refrigeration machinery room with the relief piped in accordance with Section 1120.</div>	<div>1104.9 Absorption Refrigeration.</div> <div>1104.9.1 Lithium Bromide Absorption Refrigeration. Lithium bromide absorption refrigeration equipment using water as the refrigerant and steam or hot water as the energy source is exempt from refrigeration machinery room requirements and may be located in the same room with refrigeration equipment requiring a machinery room.</div> <div>1104.9.2 Direct Fired Absorption Refrigeration. Direct fired absorption refrigeration equipment shall be installed in a room constructed as required for a boiler of similar Btu input. This equipment shall not be installed in a refrigeration machinery room.</div> <div>1104.9.3 Ammonia Absorption Refrigeration. Ammonia absorption refrigeration equipment larger than 5 tons shall be installed in a refrigeration machinery room with the relief piped in accordance with the <i>Fire Code</i>.</div>	<div>City of Houston Amendment</div> <div>Analysis: COH Amendment. Amendment moved from 2012 amendment Section from Section 1129.</div> <div>Justification: Amendment needed to continue established state law policies. Base code modified during review process on 10.12.21.</div>
<div>1106.8 Prohibited Locations. Refrigeration systems or portions thereof shall not be located within a required exit enclosure. Refrigeration compressors exceeding 5 horsepower (3.7 kW) rating, and replacements of existing systems that contain other than A1 refrigerants, shall be located not less than 10 feet (3048 mm) from an exit opening in a Group A; Group B; Group E; Group F; Group H; Group I; Group R, Division 1 or 2; or Group S Occupancy, unless separated by a one-hour fire-resistive occupancy fire barrier separation.</div> <div>The installation of air handling and refrigeration units within the same room is prohibited.</div>	<div>1105.6 Prohibited Locations. Refrigeration systems or portions thereof shall not be located within a required exit enclosure. Refrigeration compressors exceeding 5 horsepower (3.7 kW) rating shall be located not less than 10 feet (3048 mm) from an exit opening in a Group A; Group B; Group E; Group F; Group I; Group R; Division 1; or Group S Occupancy, unless separated by a one-hour fire-resistive occupancy separation fire barrier.</div> <div>Exception: Refrigeration compressors containing A1 refrigerant located 10 feet (3048 mm) or less from an exit opening.</div>	<div>City of Houston Amendment</div> <div>Analysis: Model code text relocated from UMC 2012 Section 1106.8 to UMC 2015 Section 1105.6. Previous COH amendment is modified so the code provisions apply to any occupancy.</div> <div>Justification: Provides conformity throughout <i>Houston Construction Code</i>. Base code modified during review process on 10.12.21.</div>
<div>1106.10 Condensate. Condensate from air-cooling coils shall be collected and drained to an approved location. Drain pans and coils shall be arranged to allow thorough drainage and access for cleaning. Where temperatures drop below freezing, heat tracing and insulation of condensate drains shall be installed. Primary drain piping inside buildings shall be insulated for the first 15 feet (4572 mm) horizontally from the drain pan. The insulation shall be a minimum of ½ inch (12.7 mm) in thickness.</div>	<div>1105.7 Condensate. Condensate from air-cooling coils shall be collected and drained to an approved location. Drain pans and coils shall be arranged to allow thorough drainage and access for cleaning. Where temperatures drop below freezing, heat tracing and insulation of condensate drains shall be installed.</div> <div>(310.3.2 Insulation. Primary drain piping inside buildings shall be insulated for the first 15 feet (4572 mm) horizontally from the drain pan. The insulation shall be a minimum of ½ inch (12.7 mm) in thickness.)</div>	<div>City of Houston Amendment</div> <div>Analysis: Model code text relocated from UMC 2012 Section 1106.10 to UMC 2015 Section 1105.7. Previous COH amendment is NOT modified. However, it is relocated to the general requirements in Chapter 3.</div> <div>Justification: Amendment relocated to the general requirements of Chapter 3 in Section 310.3.2. Base code modified during review process on 10.12.21.</div>
<div>1128.0 Boilers in Existing Machinery Rooms</div> <div>1128.1 Isolation. Boilers and other heat-producing appliances shall be isolated from the machinery room by walls or partitions that create a reasonably distinct and separate atmosphere from the refrigeration machinery room. Combustion air shall be taken from other than refrigeration machinery rooms in accordance with Chapter 7 of this code. Partitions, doors and other components of the structure shall be made of materials as required for not less than a one-hour occupancy separation.</div>	<div>1106.9 Boilers in Existing Machinery Rooms.</div> <div>1106.9.1 Isolation. Boilers and other heat-producing appliances shall be isolated from the machinery room by walls or partitions that create a reasonably distinct and separate atmosphere from the refrigeration machinery room. Combustion air shall be taken from other than refrigeration machinery rooms in accordance with Chapter 7 of this code. Partitions, doors and other components of the structure shall be made of materials as required for not less than a one-hour occupancy separation.</div>	<div>City of Houston Amendment</div> <div>Analysis: Model code text relocated from UMC 2012 Section 1128.0 and 1128.1 to UMC 2015 Section 1106.9 and 1106.9.1. Previous COH amendment is NOT modified.</div> <div>Justification: Amendment needed to continue established state law policies. Base code modified during review process on 10.12.21.</div>

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<p>Exceptions:</p> <p>(1) Where it is physically impractical to comply with the above requirement, an evaluation report by a registered engineer or registered architect licensed to practice in the State of Texas shall be presented to the Authority Having Jurisdiction for approval. The walls, partitions and doors need not comply with the requirements set forth for a fire barrier, but may consist of one-hour material designed and constructed to isolate the machinery room from the boilers to create a reasonably distinct and separate atmosphere within the respective rooms.</p> <p>(2) Where it is found to be physically impractical to construct a separation of boilers and refrigeration machinery containing Group A1 or Group B1 refrigerant, a registered professional engineer licensed to practice in the State of Texas shall evaluate the effect that ventilation, both emergency and continuous, will have on the operation of boilers within the refrigeration machinery room. A report, including a statement clearly indicating that a boiler will operate safely shall be submitted to the Authority Having Jurisdiction for review and approval prior to placing the boilers and ventilation into operation simultaneously. If the registered professional engineer determines that the required continuous ventilation will not have a detrimental effect on the operation of boilers but that emergency ventilation will have a detrimental effect on boiler operation, an electrical interlock designed to shut off the fuel supply to boilers when emergency ventilation is energized may be used in lieu of isolation of the boilers from the machinery room.</p>	<p>Exceptions:</p> <p>(1) Where it is physically impractical to comply with the above requirement, an evaluation report by a registered engineer or registered architect licensed to practice in the State of Texas shall be presented to the Authority Having Jurisdiction for approval. The walls, partitions and doors need not comply with the requirements set forth for a fire barrier, but may consist of one-hour material designed and constructed to isolate the machinery room from the boilers to create a reasonably distinct and separate atmosphere within the respective rooms.</p> <p>(2) Where it is found to be physically impractical to construct a separation of boilers and refrigeration machinery containing Group A1 or Group B1 refrigerant, a registered professional engineer licensed to practice in the State of Texas shall evaluate the effect that ventilation, both emergency and continuous, will have on the operation of boilers within the refrigeration machinery room. A report, including a statement clearly indicating that a boiler will operate safely shall be submitted to the Authority Having Jurisdiction for review and approval prior to placing the boilers and ventilation into operation simultaneously. If the registered professional engineer determines that the required continuous ventilation will not have a detrimental effect on the operation of boilers but that emergency ventilation will have a detrimental effect on boiler operation, an electrical interlock designed to shut off the fuel supply to boilers when emergency ventilation is energized may be used in lieu of isolation of the boilers from the machinery room.</p>	
<p>1128.2 Engines in Existing Refrigeration Machinery Rooms. Engines are permitted in refrigeration machinery rooms provided:</p> <p>(1) The refrigerant classification is Group A1 or Group B1 only;</p> <p>(2) Combustion air is taken from outside the building and to the engine in substantially sealed ducts or pipes;</p> <p>(3) Insulation is provided for all hot surfaces subject to a temperature of 800°F or higher;</p> <p>(4) Ventilation is provided to dissipate the radiant heat from the engines to keep the room below 120°F; and</p> <p>(5) There is no open flame or spark.</p>	<p>1106.9.2 Engines in Existing Refrigeration Machinery Rooms. Engines are permitted in refrigeration machinery rooms, provided:</p> <p>(1) The refrigerant classification is Group A1 and Group B1 only;</p> <p>(2) Combustion air is taken from outside the building and to the engine in substantially sealed ducts or pipes;</p> <p>(3) Insulation is provided for all hot surfaces subject to a temperature of 800°F or higher;</p> <p>(4) Ventilation is provided to dissipate the radiant heat from the engines to keep the room below 120°F (48.89°C); and</p> <p>(5) There is no open flame or spark.</p>	<p>City of Houston Amendment</p> <p>Analysis: Model code text relocated from UMC 2012 Section 1128.2 to UMC 2015 Section 1106.9.2. Previous COH amendment is modified to include the temperature equivalent in Celsius.</p> <p>Justification: Amendment needed to continue established state law policies. Base code modified during review process on 10.12.21.</p>
<p>1128.3 Switchgear and Related Equipment in Machinery Room. Switchgear and related equipment may remain in an existing machinery room provided:</p> <p>(1) The refrigerant classification is Group A1 or Group B1 only; and</p> <p>(2) The switchgear or related equipment possesses no clearance or work hazard in regard to the refrigeration machinery or the electrical switchgear.</p>	<p>1106.9.3 Switchgear and Related Equipment in Machinery Rooms. Switchgear and related equipment may remain in an existing machinery room, provided:</p> <p>(1) The refrigerant classification is Group A1 or Group B1 only; and</p> <p>(2) The switchgear or related equipment possesses no clearance or work hazard in regard to the refrigeration machinery or the electrical switchgear.</p>	<p>City of Houston Amendment</p> <p>Analysis: Model code text relocated from UMC 2012 Section 1128.3 to UMC 2015 Section 1106.9.3. Previous COH amendment is NOT modified.</p> <p>Justification: Amendment needed to continue established state law policies. Base code modified during review process on 10.12.21.</p>
<p>1128.4 Emergency Control. Emergency control in accordance with Section 1109.4 shall be provided for the refrigeration equipment and existing air-handling equipment except machinery room ventilation fans.</p>	<p>1106.9.4 Emergency Control. Emergency control in accordance with Section 1107.6 shall be provided for the refrigeration equipment and existing air-handling equipment except machinery room ventilation fans.</p>	<p>City of Houston Amendment</p> <p>Analysis: Model code text relocated from UMC 2012 Section 1128.4 to UMC 2015 Section 1106.9.4. Previous COH amendment is NOT modified.</p> <p>Justification: Amendment needed to continue established state law policies. Base code modified during review process on 10.12.21.</p>

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1106.14 Refrigerant Port Protection. Air conditioning refrigerant circuit access ports located outdoors shall be protected from unauthorized access with locking-type tamper-resistant caps or in a manner approved by the Authority Having Jurisdiction. Exception: Refrigerant ports in secure locations protected by walls or fencing and requiring key-access.		1105.11 Refrigerant Port Protection. Air conditioning refrigerant circuit access ports located outdoors shall be protected from unauthorized access with locking-type tamper-resistant caps or in a manner approved by the Authority Having Jurisdiction. Exception: Refrigerant ports in secure locations protected by walls or fencing and requiring key-access.		City of Houston Amendment Analysis: Provisions are now covered in base code Section 1105.11. Previous COH amendment is NOT carried forward. Justification: Provisions are now covered in base code Section 1105.11.																					
1108.3 Distribution of Ventilation. Exhaust inlets or permanent openings shall be located to provide ventilation throughout the entire refrigeration machinery room. Emergency exhaust intakes shall be located within 12 inches (305 mm) of the floor unless the refrigerant is lighter than air.		1107.4 Distribution of Ventilation. Exhaust inlets or permanent openings shall be located to provide ventilation throughout the entire refrigeration machinery room. Emergency exhaust intakes shall be located within 12 inches (305 mm) of the floor unless the refrigerant is lighter than air.		City of Houston Amendment Analysis: Previous COH amendment is carried forward from UMC 2012 Section 1108.3 to UMC 2015 Section 1107.4. Justification: Amendment is needed for clarification purposes regarding emergency exhaust intakes. Base code modified during review process on 10.12.21.																					
1108.6 Central Control of Ventilation Systems Flow Monitoring. Two colored and labeled indicator lamps responding to the differential pressure across the purge fan or current through the fan motor shall be provided for each switch. One lamp shall indicate flow; the other shall indicate no flow. 1109.4 Emergency Control. A clearly identified switch of the break-glass type or with an approved tamper-resistant cover shall be provided immediately adjacent to and within 2 feet (610 mm) of the strike side of the door outside of the principal refrigeration machinery room exit. The switch shall provide off-only control of refrigerant compressors, refrigerant pumps, and normally closed, automatic refrigerant valves located in the machinery room. The switch shall be automatically shutoff where the refrigerant vapor concentration in the machinery room exceeds the vapor detector's upper detection limit or 25 percent of the LFL, whichever is lower.		1107.6 Emergency Control of the Ventilation Systems. Fans required by Section 1107.2 to provide emergency purge ventilation shall be activated by refrigerant Alarm 1 in accordance with Section 1106.4 and by a clearly identified switch of the break-glass type, or protected by an approved tamper resistant cover located immediately adjacent to and outside of the principal refrigerant machinery room entrance. Two colored and labeled indicator lamps responding to the differential pressure across the purge fan or current through the fan motor shall be provided for each switch. One lamp shall indicate flow; the other shall indicate no flow.		City of Houston Amendment Analysis: UMC 2012 Section 1108.6 and 1109.4 are combined to some extent and relocated to UMC 2015 Section 1107.6 the modified text include provisions to address alarm activation, purge fan requirements, and required tamper resistant covers. Previous COH amendment NOT needed or carried forward. Justification: No justification for amendment, will not be carried forward.																					
1110.3 Ferrous Materials. Iron and steel refrigeration piping, valves, fittings, and related parts shall be approved for the intended use. Pipe exceeding 2 inches (50 mm) iron pipe size shall be electric-resistance welded, submerged arc welded or seamless pipe.		1109.1.2 Iron and Steel. Iron and steel refrigeration piping, valves, fittings, and related parts shall be approved for the intended use. Pipe exceeding 2 inches (50 mm) iron pipe size shall be electric-resistance welded or seamless pipe. Refrigeration piping shall comply with ASME B31.5.		City of Houston Amendment Analysis: Amendment not carried forward. Justification: No justification to keep amendment; electric-resistance welding is the same as submerged arc welding.																					
1110.1.1 For minimum pipe insulation see Table 1110.1.1. TABLE 1110.1.1 Minimum Pipe Insulation a <table><tr><th>Fluid</th><th>≤1.5 inch</th><th>>1.5-inch - 4-inch e</th><th>>4 inch e</th></tr><tr><td>Steam and Steam Condensate</td><td>1½"</td><td>3</td><td>4</td></tr><tr><td>Heating Hot Water</td><td>1½"</td><td>2</td><td>2</td></tr><tr><td>Service Hot Water</td><td>1"</td><td>2</td><td>2</td></tr><tr><td>Chilled Water, Brine or Refrigerant</td><td>1"</td><td>1½"</td><td>2</td></tr></table> Footnotes: a Based on insulation having a conductivity (k) not exceeding 0.27 Btu per inch/h · ft ² · °F.		Fluid	≤1.5 inch	>1.5-inch - 4-inch e	>4 inch e	Steam and Steam Condensate	1½"	3	4	Heating Hot Water	1½"	2	2	Service Hot Water	1"	2	2	Chilled Water, Brine or Refrigerant	1"	1½"	2	1109.1.4 Piping Insulation. For minimum pipe insulation see the Energy Code.		City of Houston Amendment Analysis: Amendment moved to 1109.1.4 and is turned into a pointer to the <i>Houston Energy Code</i> for pipe insulation. However, at least one other section in this code address requirements for pipe insulation. Reference Section 310.3.2. The most restrictive will govern. Justification: Amendment provides reference to the IECC for hot water piping insulation.	
Fluid	≤1.5 inch	>1.5-inch - 4-inch e	>4 inch e																						
Steam and Steam Condensate	1½"	3	4																						
Heating Hot Water	1½"	2	2																						
Service Hot Water	1"	2	2																						
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<p>b For insulation with a thermal conductivity not equal to 0.27 Btu · inch/h · ft² · °F at a mean temperature of 75°F, the minimum required pipe thickness is adjusted using the following equation:</p> $T = r[(1 + t/r)K/k - 1]$ <p>where:</p> <p>T = Adjusted insulation thickness (in). r = Actual pipe radius (in). t = Insulation thickness from applicable cell in table (in). K = New thermal conductivity at 75°F (Btu · in/hr · ft² · °F). k = 0.27 Btu · in/hr · ft² · °F.</p> <p>c These thicknesses are based on energy efficiency considerations only. Additional insulation is sometimes required relative to safety issues/surface temperatures.</p> <p>d These thicknesses are based on energy efficiency considerations only. Issues such as water vapor permeability or surface condensation sometimes require vapor retarders or additional insulation.</p> <p>e Nominal pipe size.</p>		
<p>1111.8 Identification. Piping shall be in accordance with the reference standard for identification. The type of refrigerant, function, and pressure shall be indicated with labels affixed at 20 feet (6096 mm) intervals for exposed piping and at each side of a penetration of a wall or partition.</p>	<p>1109.10 Identification. Piping shall be in accordance with the reference standard for identification. The type of refrigerant, function, and pressure shall be indicated.</p>	<p>City of Houston Amendment</p> <p>Analysis: The model code provisions moved from UMC 2012 Section 1111.8 to UMC 2015 Section 1109.10. Required labeling applies and will continue to be the City of Houston standard practice. If necessary, a Code Word will be created to identify specifics. Amendment not carried forward.</p> <p>Justification: No justification to keep amendment.</p>
<p>1112.4 Identification. Stop valves shall be identified by <u>engraved brass tags with a minimum diameter of 1 inch (25.4 mm)</u> tagging in accordance with the reference standard for identification. A valve chart shall be mounted under glass at an approved location near the principal entrance to a refrigeration machinery room.</p> <p>Exception: Stop valves that are furnished as an integral part of manufactured refrigeration equipment.</p>	<p>1110.5 Identification. Stop valves shall be identified by tagging in accordance with the reference standard for identification. A valve chart shall be mounted under glass at an approved location near the principal entrance to a refrigeration machine¹y room.</p>	<p>City of Houston Amendment</p> <p>Analysis: The model code provisions moved from UMC 2012 Section 1112.4 to UMC 2015 Section 1110.5. Amendment not carried forward.</p> <p>Justification: No justification to keep amendment.</p>
<p>1123.3 Permanent Sign. In a refrigeration machinery room and for a direct refrigerating system of more than ten horsepower (7.5 kW), there shall be a permanent sign at an approved location located on or adjacent to the primary machinery room door and on each condensing unit in ½ inch high letters giving the following information:</p> <p>(1) Name of contractor installing the equipment. (2) Name and number designation of refrigerant in system. (3) Pounds of refrigerant in system.</p>	<p>1115.3 Permanent Sign. In a refrigeration machinery room and for a direct refrigerating system of more than 10 horsepower (7.5 kW), there shall be a permanent sign at an approved location giving the following information:</p> <p>(1) Name of contractor installing the equipment. (2) Name and number designation of refrigerant in system. (3) Pounds of refrigerant in system.</p>	<p>City of Houston Amendment</p> <p>Analysis: The model code provisions moved from UMC 2012 Section 1123.3 to UMC 2015 Section 1115.3. Amendment not carried forward.</p> <p>Justification: No justification to keep amendment.</p>
<p>Part II - Cooling Towers.</p> <p>1127.0 1130.0 General.</p> <p>1127.1 1130.1 Applicability. Cooling towers, evaporative condensers, and fluid coolers shall be readily accessible. Where located on roofs, such equipment having combustible exterior surfaces shall be protected with an approved automatic fire-extinguishing system.</p>	<p>Part II - Cooling Towers.</p> <p>1119.0 General.</p> <p>1119.1 Applicability. Cooling towers, evaporative condensers, and fluid coolers shall be readily accessible. Where located on roofs, such equipment having combustible exterior surfaces shall be protected with an approved automatic fire-extinguishing system.</p>	<p>City of Houston Amendment</p> <p>Analysis: The model code provisions of UMC 2012 Sections 1127, 1128, 1129, and 1130 have been relocated to UMC 2015 Sections 1119, 1120, 1121, 1122. The COH amendment is not carried forward. The code provisions remain the same with no changes.</p> <p>Justification: Amendment no longer required.</p>

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<div>1128.0 1131.0 Support and Anchorage. 1128.1 1131.1 General. Cooling towers, evaporative condensers, and fluid coolers shall be supported on noncombustible grillage designed in accordance with the building code. Seismic restraints shall be as required by the building code. 1129.0 1132.0 Drainage. 1129.1 1132.1 General. Drains, overflows, and blow-down provisions shall have an indirect connection to an approved disposal location. Discharge of chemical waste shall be as approved by the regulatory authority. 1130.0 1133.0 Chemical Treatment Systems. 1130.1 1133.1 General. Chemical treatment systems shall comply with the fire code. Where chemicals used present a contact hazard to personnel, approved emergency eye-wash and shower facilities shall be installed.</div>	<div>1120.0 Support and Anchorage. 1120.1 General. Cooling towers, evaporative condensers, and fluid coolers shall be supported on noncombustible grillage designed in accordance with the building code. Seismic restraints shall be as required by the building code. 1121.0 Drainage. 1121.1 General. Drains, overflows, and blow-down provisions shall have an indirect connection to an approved disposal location. Discharge of chemical waste shall be as approved by the regulat01y authority. 1122.0 Chemical Treatment Systems. 1122.1 General. Chemical treatment systems shall comply with the fire code. Where chemicals used present a contact hazard to personnel, approved emergency eye-wash and shower facilities shall be installed.</div>	
<div>1131.0 1134.0 Location. 1131.1 1134.1 General. Cooling towers, evaporative condensers, and fluid coolers shall be located such that their plumes cannot enter occupied spaces. Plume discharges shall be not less than 25 feet (7620 mm) away from a ventilation inlet to a building. Location on the property shall be as required for buildings by the building code. 1132.0 1135.0 Electrical. 1132.1 1135.1 General. Electrical systems shall be in accordance with the electrical code. Equipment shall be provided with a vibration switch to shut off fans operating with excessive vibration. In climates commonly subject to electrical storms, lightning protection shall be provided on roof-mounted equipment. 1133.0 1136.0 Refrigerants and Hazardous Fluids. 1133.1 1136.1 General. Equipment containing refrigerants as a part of a closed-cycle refrigeration system shall comply with Part I of this chapter. Equipment containing other fluids that are flammable, combustible, or hazardous shall be in accordance with the fire code.</div>	<div>1123.0 Location. 1123.1 General. Cooling towers, evaporative condensers, and fluid coolers shall be located such that their plumes cannot enter occupied spaces. Plume discharges shall be not less than 25 feet (7620 mm) away from a ventilation inlet to a building. Location on the property shall be as required for buildings by the building code. 1124.0 Electrical. 1124.1 General. Electrical systems shall be in accordance with the electrical code. Equipment shall be provided with a vibration switch to shut off fans operating with excessive vibration. In climates commonly subject to electrical storms, lightning protection shall be provided on roof-mounted equipment. 1125.0 Refrigerants and Hazardous Fluids. 1125.1 General. Equipment containing refrigerants as a part of a closed-cycle refrigeration system shall comply with Part I of this chapter. Equipment containing other fluids that are flammable, combustible, or hazardous shall be in accordance with the fire code.</div>	<div>City of Houston Amendment Analysis: The model code provisions of UMC 2012 Sections 1134, 1135, and 1136 have been relocated to UMC 2015 Sections 1123, 1124, and 1125. The COH amendment is not carried forward. The code provisions remain the same with no changes. Justification: Amendment no longer required.</div>
2012 Houston UMC – Chapter 12 Hydronics	2015 Houston UMC – Chapter 12 Hydronics	Code Analysis
<div>1206.0 Heat Sources. 1206.1 General. Heat sources for generating hot water for use in hydronic panel radiant heating systems shall include conventional fossil fuel, hot water boilers, electrical-resistance heated boilers, air/water or water/water heat pumps, or solar heat collector systems. A latter system shall be permitted to include booster or backup heating units. Systems shall be protected by pressure-temperature relief valves as outlined in this code.</div>	<div>1207.4 Solar Heat Collector Systems. Solar water heating systems used in hydronic panel radiant heating systems shall be installed in accordance with the <i>Uniform Solar Energy Code</i> and <i>Hydronics Code</i> (USEHC).</div>	<div>City of Houston Amendment Justification: Section has been stricken to prevent the use of solar water heating systems used in hydronic radiant heating systems. Base code modified during review process on 10.12.21.</div>
2012 Houston UMC – Chapter 13 Fuel Gas Piping	2015 Houston UMC – Chapter 13 Fuel Gas Piping	Code Analysis
<div>1301.0 Scope of Gas Piping. General. For provisions pertaining to fuel gas piping, refer to Chapter 12 of the plumbing code. {EDITORIAL NOTE: DELETE THE REMAINDER OF THIS CHAPTER IN ITS ENTIRETY.}</div>	<div>1301.0 Scope of Gas Piping. For provisions pertaining to fuel gas piping see Chapter 12 of the <i>Plumbing Code</i>. {EDITORIAL NOTE: THE REMAINDER OF THIS CHAPTER REMAINS AS SET FORTH IN THE 2015 UMC AND IS NOT ADOPTED BY THIS JURISDICTION.}</div>	<div>City of Houston Amendment Analysis: COH amendment. 2012 Amendment carried forward and modified. Justification: Provides refence to UPC for fuel gas piping. Base code modified during review process on 10.12.21.</div>

2012 Houston UMC Amendments		2015 Houston UMC Amendments		Code Change Summary																																																																			
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2012 Houston UMC – Chapter 14 Process Piping		2015 Houston UMC – Chapter 14 Process Piping		Code Analysis																																																																			
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2012 Houston UMC – Chapter 15 Solar Systems		2015 Houston UMC – Chapter 15 Solar Energy Systems		Code Analysis																																																																			
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2012 Houston UMC – Chapter 17 Referenced Standards		2015 Houston UMC – Chapter 17 Referenced Standards		Code Analysis																																																																			
N/A		<div>TABLE 1701.1 REFERENCED STANDARDS</div> <table><tr><th>Standard Number</th><th>Standard Title</th><th>Application</th><th>Referenced Sections</th></tr><tr><td>ASTM B 68-2011</td><td>Specification for Seamless Copper Tube, Bright Annealed (Metric)</td><td>Miscellaneous</td><td>405.13.1</td></tr><tr><td>NFPA 70-2020-14*</td><td>National Electrical Code</td><td>Miscellaneous</td><td>301.4, 511.1.6, 512.2.5, 516.2.7, 516.2.9(4), 602.2.1, 905.10.2, 1104.4(6), 1217.7.1, 1311.14.5(2), 1312.6, E 503.5(11)(c)</td></tr><tr><td>NFPA 92-2015</td><td>Standard for Smoke Control Systems</td><td>Smoke Control</td><td>405.7, 405.8</td></tr><tr><td>UL 864-2003</td><td>Standards for Control Units and Accessories for Fire Alarm Systems</td><td>Miscellaneous</td><td>405.12</td></tr></table>		Standard Number	Standard Title	Application	Referenced Sections	ASTM B 68-2011	Specification for Seamless Copper Tube, Bright Annealed (Metric)	Miscellaneous	405.13.1	NFPA 70-2020-14*	National Electrical Code	Miscellaneous	301.4, 511.1.6, 512.2.5, 516.2.7, 516.2.9(4), 602.2.1, 905.10.2, 1104.4(6), 1217.7.1, 1311.14.5(2), 1312.6, E 503.5(11)(c)	NFPA 92-2015	Standard for Smoke Control Systems	Smoke Control	405.7, 405.8	UL 864-2003	Standards for Control Units and Accessories for Fire Alarm Systems	Miscellaneous	405.12	<div>City of Houston Amendment</div> <div>Analysis: The previous UMC 2012 code did not include any COH amendments to the referenced standards. Unlike the UMC 2015 Table 1701.1 which now includes three (3) updated reference standards.</div> <div>Justification: Standards have been updated to reflect the latest, most up-to-date issues.</div> <div>Base code modified during review process on 10.12.21.</div>																																															
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<div>APPENDIX D UNIT CONVERSION TABLES</div> <div>{EDITORIAL NOTE: INSERT THE FOLLOWING TABLE.}</div> <div>TABLE D 2.1 METRIC / INCH CONVERSIONS</div> <table><tr><th colspan="6">Metric / Inch Conversion Chart</th></tr><tr><th>Millimeters</th><th>Fractions</th><th>Inches</th><th>Millimeters</th><th>Fractions</th><th>Inches</th></tr><tr><td>.397</td><td>1/64</td><td>.015625</td><td>13.097</td><td>33/64</td><td>.515625</td></tr><tr><td>.794</td><td>1/32</td><td>.03125</td><td>13.494</td><td>17/32</td><td>.53125</td></tr><tr><td>1.191</td><td>3/64</td><td>.046875</td><td>13.891</td><td>35/64</td><td>.546875</td></tr><tr><td>1.588</td><td>1/16</td><td>.0625</td><td>14.288</td><td>9/16</td><td>.5625</td></tr><tr><td>1.984</td><td>5/64</td><td>.078125</td><td>14.684</td><td>37/64</td><td>.573125</td></tr><tr><td>2.381</td><td>3/32</td><td>.09375</td><td>15.081</td><td>19/32</td><td>.59375</td></tr><tr><td>2.778</td><td>7/64</td><td>.109375</td><td>15.478</td><td>39/64</td><td>.609375</td></tr><tr><td>3.175</td><td>1/8</td><td>.125</td><td>15.875</td><td>5/8</td><td>.625</td></tr><tr><td>3.572</td><td>9/64</td><td>.140625</td><td>16.272</td><td>41/64</td><td>.640625</td></tr></table>		Metric / Inch Conversion Chart						Millimeters	Fractions	Inches	Millimeters	Fractions	Inches	.397	1/64	.015625	13.097	33/64	.515625	.794	1/32	.03125	13.494	17/32	.53125	1.191	3/64	.046875	13.891	35/64	.546875	1.588	1/16	.0625	14.288	9/16	.5625	1.984	5/64	.078125	14.684	37/64	.573125	2.381	3/32	.09375	15.081	19/32	.59375	2.778	7/64	.109375	15.478	39/64	.609375	3.175	1/8	.125	15.875	5/8	.625	3.572	9/64	.140625	16.272	41/64	.640625	N/A		<div>City of Houston Amendment</div> <div>Analysis: The previous UMC 2012 code included a COH amendment with a unit conversion chart to assist code users. The UMC 2015 does NOT include the previous amendment.</div> <div>Justification: The 2015 UMC removes the unit conversion appendix; amendment no longer needed.</div>	
Metric / Inch Conversion Chart																																																																							
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	3.969	5/32	.15625	16.669	21/32	.65625												
	4.366	11/64	.171875	17.066	43/64	.671875												
	4.762	3/16	.1875	17.462	11/16	.6875												
	5.159	13/64	.203125	17.859	45/64	.703125												
	5.556	7/32	.21875	18.256	23/32	.71875												
	5.953	15/64	.234375	18.653	47/64	.734375												
	6.350	¼	.25	19.050	¾	.75												
	6.747	17/64	.265625	19.447	49/64	.765625												
	7.144	9/32	.28125	19.844	25/32	.78125												
	7.541	19/64	.296875	20.241	51/64	.796875												
	7.938	5/16	.3125	20.638	13/16	.8125												
	8.334	21/64	.328125	21.034	53/64	.828125												
	8.731	11/32	.34375	21.431	27/32	.84375												
	9.128	23/64	.359375	21.828	55/64	.859375												
	9.525	3/8	.375	22.225	7/8	.875												
	9.922	25/64	.390625	22.622	57/64	.890625												
{EDITORIAL NOTE: REMAINDER OF APPENDIX D TO REMAIN AS SET FORTH IN 2012 UMC.}																		