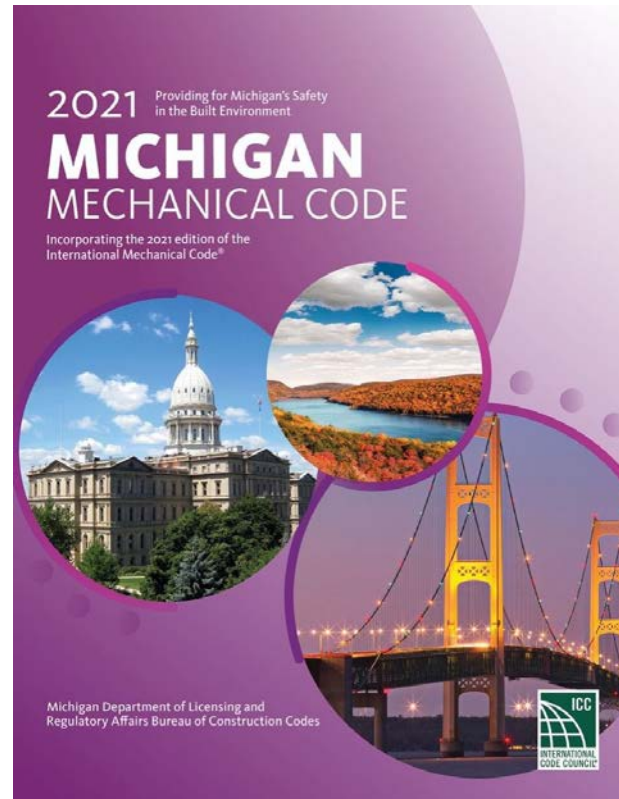


THE LONG AWAITED!

2021 Michigan Mechanical Code Significant Changes



Thank you to **SMACNA** Board of
Directors helping us share this
important information

Also, we want to thank

- Walsh Community College, Ino-Tek
- Mark Charlene and Rich, Sue, Ed Bartram
- Michael Bergstrom of Thornton and Grooms



- All our membership who help develop and support these programs on a daily basis

About Code Consultant Kendall Nightlinger



About us...

Founded in 1996, Ino-Tek is the Leader for the Design, Installation and Service of Turn-Key, Code-Compliant Life Safety / Hazardous Material Emergency Alarm Systems and Gas Detection. Our customers include leading manufacturers, universities, research institutions, hospitals, municipalities, the United States Environmental Protection Agency and now - with changes in Michigan law legalizing marijuana for recreational use - grow, extraction and processing facilities across the state.

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Support the leading inspector education in Michigan to foster an advanced professional workforce

MIMIA, Inc.

MMC 2021

Significant Changes

3 Credit Hours
1-A & R, 2-T (MI)

2021 Michigan Mechanical Code Effective March 12, 2024

Incorporates the 3rd printing of the 2021 International Mechanical Code (IMC) as amended by MI Dept. of Licensing Affairs Construction Code, Part 9A

The Part 9A.

Mechanical Code rules was filed with the Secretary of State November 13, 2023, and become effective on **March 12, 2024**.

The Part 9A Mechanical Code rules will adopt by reference the 2021 third printing edition of the International Mechanical Code with

amendments,

deletions, and

additions deemed appropriate for use in Michigan.

The Michigan Mechanical Code was not yet printed

Until the electronic and hard copies are available from the International Code Council (ICC), one can use the 2021 International Mechanical Code with the Part 9A Michigan Amendments for the 2021 Michigan Mechanical Code.

The **bureau will notify** the public when the electronic and hard copy versions of each code are available for purchase and update the code books information on our website, which links to ICC for purchase.

Codes are legally enforceable requirements

Generally, standards such as: NFPA, ACCA, ASHRAE, ASTM, NFPA, SMACNA, etc.) are industry consensus guidelines and recommendations.

However: The MMC states:

102.8 Referenced codes and standards. The codes and standards referenced herein shall be those that are listed in Chapter 15 and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.8.1 and 102.8.2.

MMC 102.8.1 Conflicts

- Where conflicts occur between provisions of this code and the referenced standards, the provisions of this code shall apply.
- **102.8.2 Provisions in referenced codes and standards.** Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

2021 MMC Significant Changes

Introduction

After completing this course, attendants will understand the significant changes between the 2015 MMC and the 2021 MMC and gain practical knowledge for compliance and application in real world projects.

The majority of changes are due to

- Changes in technology
- Energy codes
- New materials
- New methods
- Environmental factors

2021 MMC Significant Changes

Overview

Chapter 1	Scope and Administration.....	30 min
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Chapter 1 Scope and Administration Section 101 General

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 101.2 Scope. This code regulates the design, installation, maintenance, alteration and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate the mechanical systems, system components, equipment and appliances specifically addressed in this code.</p> <p>Exceptions:</p> <p>Mechanical systems within 1- and 2-family dwellings shall be constructed and maintained in accordance with the Michigan mechanical code for 1- and 2-family dwellings.</p> <p>Mechanical systems in existing buildings undergoing repairs, alterations, or additions, and change of occupancy shall be permitted to comply with the Michigan rehabilitation code for existing buildings.</p> <p>R 408.30902a</p>	<p>[A] 101.2 Scope. This code shall regulate the design, installation, maintenance, alteration and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate those mechanical systems, system components, equipment and appliances specifically addressed herein. The installation of fuel gas distribution piping and equipment, fuel gas-fired appliances and fuel gas-fired appliance venting systems shall be regulated by the International Fuel Gas Code.</p> <p>Exception: Detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height shall comply with this code or the Michigan Residential Code.</p>	<p>Michigan Part 9A Mechanical Code Rules rescinds Rule R 408.30902a and invokes the wording of the 2021 IMC with the exception that it refers to the Michigan Residential Code instead of the International Residential Code.</p>

Section 102 General

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 102.2 Existing installations. Except as otherwise provided for in this chapter, a provision in this code shall not require the removal, alteration or abandonment of, nor prevent the continued utilization and maintenance of, a mechanical system lawfully in existence at the time of the adoption of this code.</p>	<p>[A] 102.2 Existing installations. Except as otherwise provided for in this chapter, a provision in this code shall not require the removal, alteration or abandonment of, nor prevent the continued utilization and maintenance of, a mechanical system lawfully in existence at the time of the adoption of this code.</p> <p>[A] 102.2.1 Existing buildings. Additions, alterations, renovations or repairs related to building or structural issues shall be regulated by the International Existing Building Code</p> <p>[A] 102.11 Application of references. Reference to chapter section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.</p>	<p>Adds reference to existing buildings per the 2021 IMC.</p> <p>Adds two additional sections from the 2021 IMC.</p>

Section 103 Code Compliance Agency

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 103.1 General. The position of mechanical inspector is created. The mechanical inspector shall be appointed in accordance with 1986 PA 54, MCL 338.2301 et seq. R 408.30904</p>	<p>[A] 103.1 General. The position of mechanical inspector is created. The mechanical inspector shall be appointed in accordance with 1986 PA 54, MCL 338.2301 et seq. R 408.30904</p>	<p>R 408.30901a International mechanical code; adoption by reference. Rule 901a. IMC Sections 103.1 to 103.3 not adopted.</p>
<p>[A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the code official shall have the authority to appoint a deputy code official, other related technical officers, inspectors and other employees. Such employees shall have powers as delegated by the code official.</p>	<p>[A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the code official shall have the authority to appoint a deputy code official, other related technical officers, inspectors and other employees. Such employees shall have powers as delegated by the code official.</p>	<p>R 408.30901a International mechanical code; adoption by reference. Rule 901a IMC Sections 103.1 to 103.3 not adopted.</p>
<p>[A] 103.4.1 Legal defense. Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representatives of the jurisdiction until the final termination of the proceedings. The code official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code.</p>		<p>IMC 2021 deletes 103.4.1 Legal defense.</p>

Section 104 Duties and Powers of the Code Official

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 104.4 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the code official has reasonable cause to believe that there exists in a building or on any premises any conditions or violations of this code that make the building or premises unsafe, insanitary, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed on the code official by this code. If such building or premises is occupied, the code official shall present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner, the owner’s authorized agent or other person having charge or control of the building or premises and request entry. If entry is refused, the code official has recourse to every remedy provided by law to secure entry.</p> <p>Where the code official has first obtained a proper inspection warrant or other remedy provided by law to secure entry, the owner, owner’s authorized agent or occupant or person having charge, care or control of the building or premises shall not fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.</p>	<p>[A] 104.4 Right of entry. If a building or premises are occupied, the code official shall present credentials to the occupant and request entry. If a building or premises is unoccupied, the code official shall first make a reasonable effort to locate either the owner, the owner’s authorized agent, or another person having care or control of the building or premises and request entry. If entry is refused, the code official has recourse to every remedy provided by law to secure entry. If a code official obtains a proper inspection warrant or other remedy provided by law to secure entry, the owner, owner’s authorized agent or occupant or person having charge, care or control of the building or premises shall not fail or neglect, after a proper request is made as provided in this rule, to allow the code official prompt entry into the building or premises to inspect or examine the building or premises pursuant to this code.</p>	<p>R 408.30904a Right of entry. Rule 904a. Section 104.4 of the code is amended</p> <p>Note: 2015 MMC verbiage is consistent with 2021 IMC</p>

Section 105 Approval

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
[A] 105.2 Alternative materials, methods, equipment and appliances.	[A] 105.2 Alternative materials, design and methods of construction and equipment.	Minor edit.

Section 106 Permits

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p data-bbox="59 204 606 851">[A] 106.1 Where required. A contractor licensed under 1984 PA 192, MCL 338.971 to 338.988 who desires to erect, install, enlarge, alter, repair, remove, convert or replace a mechanical system, the installation of which is regulated by this code, or to cause such work to be done, shall first make application in accordance with the requirements of the act.</p> <p data-bbox="59 915 316 951">R 408.30906a</p>	<p data-bbox="664 204 1232 896">[A] 106.1 Where required. An owner, owner’s authorized agent or contractor who desires to erect, install, enlarge, alter, repair, remove, convert or replace a mechanical system, the installation of which is regulated by this code, or to cause such work to be performed, shall first make application to the code official and obtain the required permit for the work.</p> <p data-bbox="664 915 1232 1410">Exception: Where equipment and appliance replacements or repairs must be performed in an emergency, the permit application shall be submitted within the next working business day of the department of mechanical inspection.</p>	<p data-bbox="1271 204 1823 304">New wording incorporated per 2021 IMC.</p>

Section 106 Permits (exceptions) contd.

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 106.2. Permits not required. A person is not required to obtain a permit to perform mechanical work on any of the following items:</p> <p>(a) A portable heating or gas appliance that has inputs of less than 30,000 Btu’s per hour.</p> <p>(b) Portable ventilation appliances and equipment.</p> <p>(c) A portable cooling unit.</p> <p>(d) Steam, hot water, or chilled water piping within any heating or cooling equipment or an appliance regulated by the code.</p> <p>(e) The replacement of any minor part that does not alter the approval of equipment or make the appliance or equipment unsafe.</p> <p>(f) portable evaporative cooler.</p> <p>(g) Self-contained refrigeration systems that contain 10 pounds or less of refrigerant, or that are actuated by motors of 1.5 horsepower or less.</p> <p>(h) Portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.</p>	<p>[A] 106.2. Permits not required. A person is not required to obtain a permit to perform mechanical work on any of the following items:</p> <p>(a) A portable heating or gas appliance that has inputs of less than 30,000 Btu’s per hour.</p> <p>(b) Portable ventilation appliances and equipment.</p> <p>(c) A portable cooling unit.</p> <p>(d) Steam, hot water, or chilled water piping within any heating or cooling equipment or appliances regulated by the code.</p> <p>(e) Except for a heat exchanger, replacement of any manufacturer installed part on a listed and labeled appliance or listed and labeled equipment, if the replacement does not alter the approval of the appliance or equipment or make the appliance or equipment unsafe.</p> <p>(f) Self-contained refrigeration systems that contain 10 pounds or less of refrigerant, or that are actuated by motors of 1.5 horsepower or less.</p> <p>(g) Portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.</p>	<p>Michigan Part 9A Mechanical Code Rules R 408.30906a</p> <p>Clarifies which parts can be replaced on a listed and labeled appliance or equipment without requiring a permit.</p> <p>Deletes “(f) portable evaporative cooler” since it is included in (c).</p> <p>Deletes “(j) A portable gas heater that has inputs of less than 30,000 Btu’s per hour” since it is included in (a).</p> <p>Clarifies wording regarding permit exemption for the installation of gas piping when changing or relocating gas meters or regulators.</p> <p>Identifies the Michigan Health Code Act 368 of 1978</p> <p>Reflects current name of the Michigan Department of Environment, Great Lakes, and Energy.</p>

Section 106 Permits contd.

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>(i) An oil burner that does not require connection to a flue, such as an oil stove and a heater equipped with a wick.</p> <p>(j) A portable gas heater that has inputs of less than 30,000 Btu's per hour.</p> <p>(k) When changing or relocating a gas meter or regulator, a permit is not required when installing gas piping which shall be limited to 10 feet in length and not more than 6 fittings.</p> <p>l) When installing geothermal vertical closed loops under the supervision of a mechanical contractor licensed in HVAC as long as the company meets both the following:</p> <p>(1) Has obtained a certificate of registration as a well drilling contractor pursuant to part 127 of the public health code.</p> <p>(2) Has installed the geothermal vertical closed loops in accordance with the department of environmental quality's best practices regarding geothermal heat pump closed loops.</p> <p>Exemption from the permit requirements of this code shall not be deemed to grant authorization for work to be done in violation of the provisions of this code or other laws or ordinances of this jurisdiction.</p> <p>R 408.30906a</p>	<p>(h) An oil burner that does not require connection to a flue, such as an oil stove and a heater equipped with a wick.</p> <p>(i) Installing gas piping limited to 10 feet in length and not more than 6 fittings when changing or relocating a gas meter or regulator.</p> <p>(j) When installing geothermal vertical closed loops under the supervision of a mechanical contractor licensed in HVAC as long as the company meets both the following:</p> <p>(1) Has obtained a certificate of registration as a well drilling contractor pursuant to part 127 of the public health code, 1978 PA 368, MCL 333.12701 to 333.12771.</p> <p>(2) Has installed the geothermal vertical closed loops in accordance with the department of environment, Great Lakes, and energy's best practices regarding geothermal heat pump closed loops.</p> <p>Exemption from the permit requirements of this code shall not be deemed to grant authorization for work to be done in violation of the provisions of this code or other laws or ordinances of this jurisdiction.</p> <p>R 408.30906a</p>	<p>Michigan Part 9A Mechanical Code Rules R 408.30906a</p> <p>Clarifies which parts can be replaced on a listed and labeled appliance or equipment without requiring a permit.</p> <p>Deletes "(f) portable evaporative cooler" since it is included in (c).</p> <p>Deletes "(j) A portable gas heater that has inputs of less than 30,000 Btu's per hour" since it is included in (a).</p> <p>Changes scope of the exception (broadening) wording regarding permit exemption for the installation of gas piping when changing or relocating gas meters or regulators.</p> <p>Identifies the Michigan Health Code Act 368 of 1978</p> <p>Reflects current name of the Michigan Department of Environment, Great Lakes, and Energy.</p>

Section 106 Permits (Permit Application) contd.

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 106.3 Application for permit. Each application for a permit, along with the required fee, shall be filed with the code official on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The contractor who is performing the work shall sign the application. The permit application shall indicate the proposed occupancy of all parts of the building and of that portion of the site or lot, if any, not covered by the building or structure and shall contain such other information required by the act.</p>	<p>[A] 106.3 Application for permit. Each application for a permit, with the required fee, shall be filed with the code official on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or the owner's authorized agent. The permit application shall indicate the proposed occupancy of all parts of the building and of that portion of the site or lot, if any, not covered by the building or structure and shall contain such other information required by the code official.</p>	<p>New wording incorporated per 2021 IMC.</p>

Section 106 Permits (Inspection) contd.

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>106.3.2 Preliminary Inspection. Before a permit is issued, the code official is authorized to inspect and evaluate the systems, equipment, buildings, devices, premises and spaces or areas to be used.</p>	<p>106.3.1 Preliminary Inspection. Before a permit is issued, the code official is authorized to inspect and evaluate the systems, equipment, buildings, devices, premises and spaces or areas to be used.</p>	<p>Section numbering revised to align with 2021 IMC.</p>

Section 106 Permits (Construction Documents) contd.

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>106.3.1 Construction documents. (1) Construction documents, engineering calculations, diagrams, and other data shall be submitted in 2 or more sets with each application for a permit. The code official shall require construction documents, computations, and specifications to be prepared and designed by a registered design professional, licensed in accordance with the occupational code, 1980 PA 299, MCL 339.101 to 339.2919.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The code official may waive the submission of construction documents, calculations, or other data if the nature of the work applied for is such that reviewing of construction documents is not necessary to determine compliance with the code. 2. Construction documents shall not be required when obtaining a permit from the bureau of construction codes for any of the following circumstance: 	<p>106.3.1 Construction documents. (1) Construction documents, engineering calculations, diagrams, and other data shall be submitted in 2 or more sets with each application for a permit. Code officials may require additional construction documents at any point during construction. The code official shall require construction documents, computations, and specifications to be prepared and designed by a registered design professional, licensed in accordance with the occupational code, 1980 PA 299, MCL 339.101 to 339.2677.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. The code official may waive the submission of construction documents, calculations, or other data if the nature of the work applied for is such that reviewing of construction documents is not necessary to determine compliance with the code. 2. Construction documents shall not be required when obtaining a permit from the bureau of construction codes for any of the following circumstances: 	<p>Michigan Part 9A Mechanical Code Rules R 408.30906a: Authorizes code officials to require additional construction documents at any point during construction. Updates references to Occupational Code Act 299 of 1980. Deletes one and 2-family dwellings from list of circumstances where construction documents shall not be required. Deletes discussion of unusual designs and designs “beyond conventional system parameters”. The fact that “code officials may require additional construction documents at any point during construction” addresses such circumstance.</p> <p>Note: The version of MMC 2021 posted at UpCodes includes this verbiage in “Section107.1 Construction Documents” under “Section 107 Temporary Equipment, Systems and Usage.” This is consistent with IMC 2021 “Section107.1 Construction Documents” under “Section 107 Construction Documents”.</p>

Section 106 Permits (Construction Documents) contd.

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>(a) One and 2-family dwellings when the heating or cooling input rating is 375,000 Btu's or less.</p> <p>(b) Alterations and repair work determined by the mechanical official to be of a minor nature.</p> <p>(c) Business, mercantile, and storage use group buildings having HVAC equipment only, with 1 fire area and not more than 3,500 square feet.</p> <p>(d) Work completed by a governmental subdivision or state agency costing less than \$15,000.00.</p> <p>Bureau code officials may require construction documents in unusual designs and where questions arise as a result of system design beyond conventional system parameters.</p> <p>(2) Where special conditions exist, the code official may require additional construction documents to be prepared by a registered design professional.</p> <p>(3) Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed and show in detail that the work conforms to the provisions of this code.</p> <p>(4) Construction documents for buildings more than 2 stories in height shall indicate where penetrations will be made for mechanical systems, and the materials and methods for maintaining required structural safety, fire-resistance rating, and fire blocking</p>	<p>b. Business, mercantile, and storage use group buildings having HVAC equipment only, with 1 fire area and not more than 3,500 square feet.</p> <p>c. Work completed by a governmental subdivision or state agency costing less than \$15,000.00.</p> <p>(2) Where special conditions exist, the code official may require additional construction documents to be prepared by a registered design professional.</p> <p>(3) Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed and show in detail that the work conforms to the provisions of this code.</p> <p>(4) Construction documents for buildings more than 2 stories in height shall indicate where penetrations will be made for mechanical systems, and the materials and methods for maintaining required structural safety, fire-resistance rating, and fire blocking</p>	

2021 MMC Significant Changes

Section 106 Permits, Continued

<p>[A] 106.4 Permit issuance. The enforcing agency shall review the application, construction documents, and other data filed by an applicant for a permit in accordance with the act. If the enforcing agency finds that the proposed work conforms to the requirements of the act, the code, and all other applicable laws and ordinances, and all fees prescribed by the act have been paid, then the enforcing agency shall issue a permit to the applicant.</p>	<p>[A] 106.4 Permit issuance. The enforcing agency shall review the application, construction documents, and other data filed by an applicant for a permit in accordance with the act. If the enforcing agency finds that the proposed work conforms to the requirements of the act, the code, and all other applicable laws and ordinances, and that all fees prescribed by the act have been paid, then the enforcing agency shall issue a permit to the applicant.</p>	<p>Minor edit per Michigan Part 9A Mechanical Code Rules R 408.30906a.</p>
<p>2015 Michigan Mechanical Code</p>	<p>2021 Michigan Mechanical Code</p>	<p>Analysis</p>
<p>106.4.3. Expiration. Each permit issued by the code official under the provisions of the code shall expire by limitation and become null and void if the work authorized by the permit has not started within 180 days from the date of the permit, or if the work authorized by the permit is suspended or abandoned at any time after the work has started, for a period of 180 days. Before work is recommenced, the permit shall be reinstated if the code has not changed. If the code has changed and the work was not started, a new permit shall be first obtained, provided no changes have been made or will be made in the original construction document and that suspension or abandonment has not exceeded 1 year.</p>	<p>106.4.3. Expiration. Each permit issued by the code official under the provisions of the code shall expire by limitation and become null and void if the work authorized by the permit has not started within 180 days after the date of the permit is issued, or if the work authorized by the permit is suspended or abandoned at any time after the work has started, for a period of 180 days. Before work is recommenced on a project where a permit has expired, the permit must either be restored to "Issued" status and all necessary fees must be paid, or a new permit must be secured. If the code has changed and the work was not started, a new permit shall be first obtained, provided no changes have been made or will be made in the original construction document and that suspension or abandonment has not exceeded 1 year.</p>	<p>Michigan Part 9A Mechanical Code Rules R 408.30906a clarifies the wording regarding permit expirations for work that has not started within 180 days of permit issuance and for work suspended or abandoned for 180 days or more.</p>
<p>106.4.4. Extensions. A permittee holding an unexpired permit may apply for an extension of the time within which the permittee may begin work under that permit if for good and satisfactory reasons. The code official shall extend the time for action by the permittee for a period not exceeding 180 days if there is reasonable cause. No permit shall be extended more than once.</p>	<p>106.4.4. Extensions. A permittee holding an unexpired permit may apply for an extension of the time within which the permittee may begin work under that permit if for good and satisfactory reasons. The code official shall extend the time for action by the permittee for a period not exceeding 180 days if there is reasonable cause. No permit shall be extended more than once.</p>	<p>No Change</p>

2021 MMC Significant Changes

Section 106 Permits. Continued

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 106.4.5 Suspension or revocation of permit. The code official shall have the authority to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or <u>on the basis of</u> incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.</p>		Michigan Part 9A Mechanical Code Rules R 408.30906a deletes 106.4.5.
<p>[A] 106.4.6 Retention of Construction Documents. One set of approved construction documents shall be retained by the code official for a period of not less than 180 days from the date of completion of the permitted work, or as required by state or local laws. One set of approved construction documents shall be returned to the <u>applicant, and</u> said set shall be kept on the site of the building or job at all times during which the work authorized thereby is in progress.</p>		<p>Michigan Part 9A Mechanical Code Rules R 408.30906a deletes the section on Retention of Construction Documents.</p> <p>MMC 2021 aligns with IMC 2021 and addresses retention of construction documents in new Section 110.2</p>
<p>[A] 106.4.7 Previous approvals. This code shall not require changes in the construction documents, <u>construction</u> or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.</p>	<p>[A] 106.4.6 Previous approvals. This code shall not require changes in the construction documents, <u>construction</u> or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.</p>	Michigan Part 9A Mechanical Code Rules R 408.30906a revises section numbers.
<p>[A] 106.4.8 Posting of permit. The permit or a copy shall be kept on the site of the work until the completion of the project.</p>	<p>[A] 106.4.7 Posting of permit. The permit or a copy shall be kept on the site of the work until the completion of the project.</p>	Michigan Part 9A Mechanical Code Rules R 408.30906a revises section numbers.
<p>[A] 106.5 Fees. The fees required by this act shall be paid to the enforcing agency of the jurisdiction before a permit to begin work for new construction, alteration, removal, demolition, or other building operation may be issued. In addition, an amendment to a permit necessitating an additional fee shall not be approved until the additional fee is paid. R 408.30906a</p>		Section 106.5 Fees is not included in the 2021 IMC and IMC Section 109 Fees are excluded from MMC 2021 per Michigan Part 9A Mechanical Code.

2021 MMC Significant Changes

Section 107 Temporary Equipment, Systems and Uses

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 110.1 General. The code official is authorized to issue a permit for temporary equipment, systems and uses. Such permits shall be limited as to time of <u>service, but</u> shall not be permitted for more than 180 days. The code official is authorized to grant extensions for demonstrated cause.</p>	<p>[A] 107.1 General. The code official is authorized to issue a permit for temporary equipment, systems and uses. Such permits shall be limited as to time of <u>service, but</u> shall not be permitted for more than 180 days. The code official is authorized to grant extensions for demonstrated cause.</p>	<p>Same wording, different Section number. IMC 2021 Section 107 is Construction Documents.</p>
<p>[A] 110.2 Conformance. Temporary equipment, systems and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, <u>ventilation</u> and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.</p>	<p>[A] 107.2 Conformance. Temporary equipment, systems and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, <u>ventilation</u> and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.</p>	<p>The version of the 2021 MMC at up.codes lists Section 107 as “Temporary Equipment, Systems and Uses”, but includes the wording of 107 Construction Documents from the 2021 IMC.</p>
<p>[A] 110.3 Temporary utilities. The code official is authorized to give permission to temporarily supply utilities before an installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, <u>heat</u> or power in the code.</p>	<p>[A] 107.3 Temporary utilities. The code official is authorized to give permission to temporarily supply utilities before an installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, <u>heat</u> or power in the code.</p>	
<p>[A] 110.4 Termination of approval. The code official is authorized to terminate such permit for temporary equipment, systems or uses and to order the temporary equipment, systems or uses to be discontinued.</p>	<p>[A] 107.4 Termination of approval. The code official is authorized to terminate such permit for temporary equipment, systems or uses and to order the temporary equipment, systems or uses to be discontinued.</p>	

2021 MMC Significant Changes

Section 110 Construction Documents

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>[A] 110.1 Construction documents. Construction documents, engineering calculations, diagrams and other data shall be submitted in two or more sets, or in a digital format <u>where</u> allowed by the building official, with each application for a permit.</p> <p>The code official shall require construction documents, <u>computations</u> and specifications to be prepared and designed by a registered design professional where required by state law. Where special conditions exist, the code official is authorized to require additional construction documents to be prepared by a registered design professional. Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the work conforms to the provisions of this code. Construction documents for buildings more than two stories in height shall indicate where penetrations will be made for mechanical systems, and the materials and methods for maintaining required structural safety, fire-resistance rating and <u>fireblocking</u>.</p> <p>Exception: The code official shall have the authority to waive the submission of construction documents, <u>calculations</u> or other data if the nature of the work applied for is such that reviewing of construction documents is not necessary to determine compliance with this code.</p>	New Section expanding on Section 106.3.1
	<p>[A] 110.2 Retention of construction documents. One set of approved construction documents shall be retained by the code official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws. One set of approved construction documents shall be returned to the applicant and said set shall be <u>kept on the site of the building or job at all times</u> during which the work authorized thereby is in progress.</p>	

Section 111 Notice of Appeal

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>[A] 111.1 Approval. After the prescribed tests and inspections indicate that the work complies in all respects with this code, a notice of approval shall be issued by the code official.</p>	New Section 2021 IMC Section 108
	<p>[A] 111.2 Revocation. The code official is authorized to, in writing, suspend or revoke a notice of approval issued under the provisions of this code wherever the notice is issued in error, <u>on the basis of incorrect information supplied</u>, or where it is determined that the building or structure, premise or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.</p>	

2021 MMC Significant Changes

Section 112 Service Utilities

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>[A] 107.6 Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until authorized by the code official.</p>	<p>[A] 112.1 Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until authorized by the code official.</p>	
<p>[A] 107.5 Temporary connection. The code official shall have the authority to authorize the temporary connection of a mechanical system to the sources of energy for the purpose of testing mechanical systems or for use under a temporary certificate of occupancy.</p>	<p>[A] 112.2 Temporary connection. The code official shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel, power, water system or sewer system for the purpose of testing systems or for use under a temporary approval.</p>	Revised per 2021 IMC
	<p>[A] 112.3 Authority to disconnect service utilities. The code official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 112.1 or 112.2. The code official shall notify the serving utility, and wherever possible the owner or the owner's authorized agent and occupant of the building, structure or service system, of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner, the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.</p>	New Section

2021 MMC Significant Changes

Section 115 Violations

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>108.4 Violation Penalties A person that violates a provision of the code, that fails to conform with any of the requirements of the code, or that erects, installs, alters, or repairs mechanical work in violation of the approved construction documents or directive of the enforcing agency, or a permit or certificate issued under the provisions of the code, shall be fined in accordance with act.</p>	<p>115.4 Violation penalties. A person that violates a provision of the code, that fails to conform with any of the requirements of the code, or that erects, installs, alters, or repairs mechanical work in violation of the approved construction documents or directive of the enforcing agency, or a permit or certificate issued under the provisions of the code is subject to review, which may result in licensing action pursuant to the skilled trades regulation act, 2016 PA 407, MCL 339.5101 to 339.6133.</p>	<p>R 408.30918 Violation penalties. Rule 918. Section 115.4 of the code is amended</p>

Chapter 2 Definitions

Section 202 General Definitions

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>"Act" means 1972 PA 230, MCL 125.1501 anmd known as the Stille-DeRossett-Hale single state construction code act.</p>	<p>"Act" means the Stille-DeRossett-Hale single state construction code act, 1972 PA 230, MCL 125.1501 to 125.1531.</p>	<p>R 408.30905a Definitions. Rule 905a. The following definitions are added to section 202.</p>
	<p>"Cold weather months" means November 1 through April 1 in Michigan Energy Code climate zone 5A and from October 15 through May 1 in Michigan Energy Code climate zones 6A and 7.</p>	<p>R 408.30905a Definitions. Rule 905a. The following definitions are added to section 202.</p>
<p>Occupiable Space An enclosed space intended for human activities, excluding those spaces intended primarily for other purposes, such as storage rooms and equipment rooms, that are only intended to be occupied for short periods of time.</p>	<p>"Occupiable space" means a room or enclosed space designed for regular or non- regular human occupancy in which individuals congregate for activities, amusement, educational or similar purposes, or in which occupants are engaged at labor, and which is equipped with means of egress, heat, light, and ventilation facilities meeting the requirements of this code. Occupiable space does not include those spaces that are intended primarily for other purposes such as storage rooms and equipment rooms.</p>	<p>R 408.30905a Definitions. Rule 905a. The following definitions are added to section 202.</p>

2021 MMC Significant Changes

Chapter 3 General Regulations

Section 301 General

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>301.10.1. Electrical disconnect. The mechanical contractor shall ensure that all equipment is equipped with an externally accessible electrical disconnect switch on, or within 6 feet of, the equipment. The disconnect shall be permanently identified.</p>	<p>R 408.30923a Equipment installation. Rule 923a. Section 301.10.1 is added to the code and section 309.1 of the code is amended</p>

Section 307 Condensate Disposal

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>307.1 Fuel-burning appliances. Liquid combustion byproducts of condensing appliances shall be collected and discharged to an approved plumbing fixture or disposal area in accordance with the manufacturer's installation instructions. Condensate piping shall be of approved corrosion resistant material and shall not be smaller than the drain connection on the appliance. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope).</p>	<p>307.1 Fuel-burning appliances. Liquid combustion byproducts of condensing appliances shall be collected and discharged to an approved plumbing fixture or disposal area in accordance with the manufacturer's installation instructions. Condensate piping shall be of approved corrosion resistant material and shall not be smaller than the drain connection on the appliance. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope).</p> <p>307.1.1 Identification. The termination of concealed condensate piping shall be marked to indicate whether the piping is connected to the primary or secondary drain.</p>	

2021 MMC Significant Changes

Section 307 Condensate Disposal (Continued)

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>307.2 Evaporators and Cooling Coils 307.2.1 Condensate disposal. 307.2.1.1 Condensate discharge. Condensate drains shall not directly connect to any plumbing drain, waste or vent pipe. Condensate drains shall not discharge into a plumbing fixture other than a floor sink, floor drain, trench drain, mop sink, hub drain, standpipe, utility sink or laundry sink. Condensate drain connections to lavatory wye branch tailpiece or to a bathtub overflow pipe shall not be considered as discharging to a plumbing fixture. Except where discharging to grade outdoors, the point of discharge of condensate drains shall be located within the same occupancy, tenant space or dwelling unit as the source of the condensate.</p>	
<p>307.2.2 Drain pipe materials and sizes. Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, PE-RT, polyethylene, polypropylene, ABS, CPVC, PVC or polypropylene pipe or tubing. Components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the International Plumbing Code relative to the material type. Condensate waste and drain line size shall be not less than 3/4-inch pipe size and shall not decrease in size from the drain pan connection to the place of condensate disposal. Where the <u>drain pipes</u> from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 307.2.2</p>	<p>307.2.2 Drain pipe materials and sizes. Components of the condensate disposal system shall be ABS, cast iron, copper and copper alloy, CPVC, cross-linked polyethylene, galvanized steel, PE-RT, polyethylene, polypropylene, PVC or PVDF pipe or tubing. Components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the International Plumbing Code relative to the material type. Condensate waste and drain line size shall be not less than 3/4-inch pipe size and shall not decrease in size from the drain pan connection to the place of condensate disposal. Where the <u>drain pipes</u> from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 307.2.2.</p>	

2021 MMC Significant Changes

Section 309 Temperature Control

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>309.1. Occupiable space heating systems. Interior spaces intended for human occupancy shall be provided with heating facilities capable of maintaining a minimum interior room temperature of 68 degrees Fahrenheit at a point 3 feet above the floor and 2 feet from exterior walls at the design temperature. The installation of portable space heaters shall not be used to comply with this section.</p> <p>Exception:</p> <ol style="list-style-type: none"> Interior spaces where the primary purpose is not associated with human comfort. <p>Group F, H, S or U occupancies.</p>	<p>309.1. Occupiable space heating systems. Interior spaces intended for human occupancy shall be provided with heating facilities capable of maintaining a minimum interior room temperature of 68 degrees Fahrenheit, 20 degrees Celsius, at a point 3 feet, 914 millimeters, above the floor and 2 feet, 609.6 millimeters, from exterior walls at the required design temperature. The installation of portable space heaters shall not be used to comply with this section.</p> <p>Exception:</p> <ol style="list-style-type: none"> Interior spaces where the primary purpose is not associated with human comfort. Interior, seasonal spaces that are unoccupied during cold weather months, including restrooms, shower buildings, day use restrooms, concession stands, press boxes, ticket booths and locker rooms. <p>Group F, H, S or U occupancies.</p>	<p>R 408.30923a Equipment installation. Rule 923a. Section 301.10.1 is added to the code and section 309.1 of the code is amended</p>

2021 MMC Significant Changes

Chapter 4 Ventilation and Chapter 5 Exhaust Systems

Section 401 – General and Section 403 – Mechanical Ventilation

Sections 401.2, 403.1 – Mechanical Ventilation for Dwelling Units

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>401.2 Ventilation required. Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Where the air filtration rate in a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2-inch water column (50 Pa) in accordance with Section R402.4.1.2 of the International Energy Conservation Code, the dwelling shall be ventilation by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.</p>	<p>401.2 Ventilation required. Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Dwelling units complying with the air leakage requirements of the International Energy Conservation Code or ASHRAE 90.1 shall be ventilated by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.</p>	
<p>403.1 Ventilation system. Mechanical ventilation shall be provided by a method of supply air and return or exhaust air except that mechanical ventilation air requirements for Group R-2, R-3 and R-4 occupancies three stories and less in height above grade plane shall be provided by an exhaust system, supply system or combination thereof. The amount of supply air shall be approximately equal to the amount of return and exhaust air. The system shall not be prohibited from producing negative or positive pressure. The system to convey ventilation air shall be designed and installed in accordance with Chapter 6.</p>	<p>403.1 Ventilation system. Mechanical ventilation shall be provided by a method of supply air and return or exhaust air except that mechanical ventilation air requirements for Group R-2, R-3 and R-4 occupancies shall be provided by an exhaust system, supply system or combination thereof. The amount of supply air shall be approximately equal to the amount of return and exhaust air. The system shall not be prohibited from producing negative or positive pressure. The system to convey ventilation air shall be designed and installed in accordance with Chapter 6.</p>	

2021 MMC Significant Changes

Chapter 5 Exhaust Systems

Section 501 General

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>501.3 Exhaust discharge. The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distances specified in section 501.3.1 of the code. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or a crawl space, be directed onto walkways, or terminate within 3 feet of a ventilated section in a soffit.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of dwelling units that have private attics. 2. Commercial cooking recirculating systems. 3. When installed in accordance with the manufacturer's instructions and when mechanical or natural ventilation is otherwise provided in accordance with chapter 4 of the code, listed and labeled domestic ductless range hoods shall not be required to discharge to the outdoors. R 408.30945a 	<p>501.3 Exhaust discharge. The air removed by every mechanical exhaust system shall be discharged outdoors at a point where it will not cause a public nuisance and not less than the distances specified in section 501.3.1 of the code. The air shall be discharged to a location from which it cannot again be readily drawn in by a ventilating system. Air shall not be exhausted into an attic or a crawl space, be directed onto walkways, or terminate within 3 feet of a ventilated section in a soffit.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Whole-house ventilation-type attic fans shall be permitted to discharge into the attic space of dwelling units that have private attics. 2. Commercial cooking recirculating systems. 3. When installed in accordance with the manufacturer's instructions and when mechanical or natural ventilation is otherwise provided in accordance with chapter 4 of the code, listed and labeled domestic ductless range hoods shall not be required to discharge to the outdoors. <p>R 408.30945a</p>	<p>R 408.30945a Ventilation; exhaust. Rule 945a. Sections 501.3, 504.4, and <u>504.9.2</u>, of the code are amended</p> <p>No change.</p>

2021 MMC Significant Changes

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>504.4 Exhaust installation. Dryer exhaust ducts for clothes dryers shall terminate on the outside of the building, shall not terminate within 3 feet of a ventilated section in a soffit, and shall be equipped with a back-draft damper. Screens shall not be installed at the duct termination. Ducts shall not be connected or installed with sheet metal screws or other fasteners that will obstruct the exhaust flow. Clothes dryer exhaust ducts shall not be connected to a vent connector, vent, or chimney. Clothes dryer exhaust ducts shall not extend into or pass through ducts or plenums.</p> <p>R 408.30945a</p>	<p>504.4 Exhaust installation. Dryer exhaust ducts for clothes dryers shall terminate on the outside of the building, shall not terminate within 3 feet of a ventilated section in a soffit, and shall be equipped with a back-draft damper. Screens shall not be installed at the duct termination. Ducts shall not be connected or installed with sheet metal screws or other fasteners that will obstruct the exhaust flow. Clothes dryer exhaust ducts shall not be connected to a vent connector, vent, or chimney. Clothes dryer exhaust ducts shall not extend into or pass through ducts or plenums.</p> <p>R 408.30945a</p>	<p>R 408.30945a Ventilation; exhaust. Rule 945a. Sections 501.3, 504.4, and <u>504.9.2</u>, of the code are amended</p> <p>No change. Reenacts R 408.30945a</p>
<p>504.9.2 Duct installation. Dryer exhaust ducts shall be supported at 4-foot, 1,219 millimeters, intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.</p> <p>R 408.30945a</p>	<p>504.9.2 Duct installation. Dryer exhaust ducts shall be supported at 4-foot, 1,219 millimeters, intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.</p> <p>R 408.30945a</p>	<p>R 408.30945a Ventilation; exhaust. Rule 945a. Sections 501.3, 504.4, and <u>504.9.2</u>, of the code are amended</p> <p>No change. Reenacts R 408.30945a</p>

Section 507 Commercial Kitchen Hoods

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>507.6.1.1 Smoke test. The field test identified in section 507.6.1 of the code shall be conducted in accordance with the smoke testing procedures established by the bureau of construction codes, which are available at no cost from the bureau of construction code's website at www.michigan.gov/bcc, or from the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 West Ottawa Street, 1st Floor Ottawa Building, Lansing, Michigan 48933.</p>	<p>507.6.1.1 Capture and containment procedure. The field test identified in section 507.6.1 of the code shall be conducted in accordance with the smoke testing procedures established by the bureau of construction codes, which are available at no cost from the bureau of construction code's website at www.michigan.gov/bcc, or from the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 West Ottawa Street, First Floor Ottawa Building, Lansing, Michigan 48933.</p>	<p>R 408.30935a Performance test. Rule 935a. Section 507.6.1.1 is added to the code</p>

2021 MMC Significant Changes

Chapter 9 – Specific Appliances, Fireplaces and Solid Fuel-Burning Equipment

Section 901 – General

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
901.5 Solid fuel burning equipment. Solid fuel burning equipment shall be listed and labeled in accordance with section 301.4 of the code and installed in accordance with the manufacturer’s instructions and NFPA 211-2013 requirements.	901.5 Solid fuel burning equipment. Solid fuel burning equipment shall be listed and labeled in accordance with section 304.1 of the code and installed in accordance with the manufacturer’s instructions and NFPA 211-2019 requirements.	R 408.30928a Solid fuel burning equipment. Rule 928a. Section 901.5 is added to the code

Chapter 10 Boilers, Water Heaters and Pressure Vessels

Section 1 Scope

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
1001.2. Boilers. In addition to the other provisions of the code, this article governs the installation, alteration, and repair of water heaters and boilers. The installation of boilers shall comply with the provisions of this code and the Michigan boiler code. R 408.30936a	1001.2. Boilers. In addition to the other provisions of the code, this article governs the installation, alteration, and repair of water heaters and boilers. The installation of boilers shall comply with the provisions of this code and the skilled trades regulation act, 2016 PA407, MCL 339.5101 to 339.6133. R 408.30936a	R 408.30936a Scope of article. Rule 936a. Section 1001.2 is added to the code
1001.3. Alterations and repairs. Alterations and repairs to boilers shall be in accordance with the Michigan boiler act, 1965 PA 290, MCL 408.751 to 408.776. R 408.30946	1001.3. Alterations and repairs. Alterations and repairs to boilers shall be in accordance with the skilled trades regulation act, 2016 PA 407, MCL 339.5101 to 339.6133. R 408.30946	R 408.30946 Alterations and repairs. Rule 946. Section 1001.3 is added to the code

2021 MMC Significant Changes

Chapter 11 Refrigeration

Section 1101 General

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1101.1 Scope. This chapter shall govern the design, installation, construction and repair of refrigeration systems that vaporize and liquefy a fluid during the refrigerating cycle. Refrigerant piping design and installation, including pressure vessels and pressure relief devices, shall conform to this code. Permanently installed refrigerant storage systems and other components shall be considered as part of the refrigeration system to which they are attached.</p>	<p>1101.1 Scope. This chapter shall govern the design, installation, construction and repair of refrigeration systems that vaporize and liquefy a fluid during the refrigerating cycle. Refrigerant piping design and installation, including pressure vessels and pressure relief devices, shall conform to this code. Permanently installed refrigerant storage systems and other components shall be considered as part of the refrigeration system to which they are attached.</p> <p>1101.1.1 Refrigerants other than ammonia. Refrigerant piping design and installation for systems containing a refrigerant other than ammonia, including pressure vessels and pressure relief devices, shall comply with this chapter and ASHRAE 15.</p> <p>1101.1.2 Ammonia refrigerant. Refrigeration systems using ammonia as the refrigerant shall comply with IAR 2, IAR 3, IAR 4 and IAR 5 and shall not be required to comply with this chapter.</p>	<p>This deletes references to regulations governing ammonia refrigeration systems and refers instead to the IAR standards in the IMC.</p>
<p>1101.2 Factory-built equipment and appliances. Listed and labeled self-contained, factory-built equipment and appliances shall be tested in accordance with UL 207, 412, 471 or 1995. Such equipment and appliances are deemed to meet the design, manufacture and factory test requirements of this code if installed in accordance with their listing and the manufacturer's instructions.</p>	<p>1101.2 Factory-built equipment and appliances. Listed and labeled self-contained, factory-built equipment and appliances shall be tested in accordance with the applicable standards specified in Table 1101.2. Such equipment and appliances are deemed to meet the design, manufacture and factory test requirements of this code if installed in accordance with their listing and the manufacturer's instructions.</p>	
<p>1101.6 General. Refrigeration systems shall comply with the requirements of this code and, except as modified by this code, ASHRAE 15. Ammonia refrigerating systems shall comply with this code and, except as modified by this code, ASHRAE 15, IAR 2, IAR 3, IAR 4 and IAR 5.</p>	<p>1101.6 General. Refrigeration systems shall comply with the requirements of this code and, except as modified by this code, ASHRAE 15. Ammonia refrigerating systems shall comply with this code and, except as modified by this code, ASHRAE 15, IAR 2, IAR 3, IAR 4 and IAR 5.</p>	

2021 MMC Significant Changes

Section 1105 Machinery Room, General Requirements

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1105.6.3 Ventilation rate. For other than ammonia systems, the Mechanical ventilation systems shall be capable of exhausting the minimum quantity of air both at normal operating and emergency conditions, as required by Sections 1105.6.3.1 and 1105.6.3.2. The minimum required emergency ventilation rate for ammonia shall be 30 air changes per hour in accordance with IAR2. Multiple fans or multispeed fans shall be allowed to produce the emergency ventilation rate and to obtain a reduced airflow for normal ventilation.</p>	<p>1105.6.3 Ventilation rate. For other than ammonia systems, the Mechanical ventilation systems shall be capable of exhausting the minimum quantity of air both at normal operating and emergency conditions, as required by Sections 1105.6.3.1 and 1105.6.3.2. The minimum required emergency ventilation rate for ammonia shall be 30 air changes per hour in accordance with IAR2. Multiple fans or multispeed fans shall be allowed to produce the emergency ventilation rate and to obtain a reduced airflow for normal ventilation.</p>	
<p>1105.8 Ammonia Discharge. Pressure relief valves for ammonia systems shall be designed in accordance ASHRAE 15.</p>	<p>1105.8 Ammonia Discharge. Pressure relief valves for ammonia systems shall be designed in accordance ASHRAE 15.</p>	
<p>[F] 1105.9 Emergency pressure control system. Permanently installed refrigeration systems containing more than 6.6 pounds (3 kg) of flammable, toxic or highly toxic refrigerant or ammonia shall be provided with an emergency pressure control system in accordance with Section 606.10 of the International Fire Code.</p>	<p>[F] 1105.8 Emergency pressure control system. Emergency pressure control systems shall be provided in accordance with Section 608.11 of the International Fire Code.</p>	
	<p>[BE] 1105.9 Means of egress. Machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two exits or exit access doorways. Where two exit access doorways are required, one such doorway is permitted to be served by a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room. All portions of machinery rooms shall be within 150 feet (45 720 mm) of an exit or exit access doorway. An increase in exit access travel distance is permitted in accordance with Section 1017.1 of the International Building Code. Exit and exit access doorways shall swing in the direction of egress travel and shall be equipped with panic hardware, regardless of the occupant load served. Exit and exit access doorways shall be tight fitting and self-closing.</p>	<p>International Building Code requirement added to 2021 IMC.</p>

2021 MMC Significant Changes

Note: 2015 MMC Section 1107 Refrigeration Piping was replaced in its entirety by 2021 IMC Section 1107 through Section 1110.

Section 1107 Piping Material

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	1107.1 Piping. Refrigerant piping material for other than R-717 (ammonia) systems shall conform to the requirements in this section. Piping material and installations for R-717 (ammonia) refrigeration systems shall comply with IIAR 2.	
	1107.2 Used materials. Used pipe, fittings, valves and other materials that are to be reused shall be clean and free from foreign materials and shall be approved for reuse.	
	1107.3 Materials rating. Materials, joints and connections shall be rated for the operating temperature and pressure of the refrigerant system. Materials shall be suitable for the type of refrigerant and type of lubricant in the refrigerant system. Magnesium alloys shall not be used in contact with any halogenated refrigerants. Aluminum, zinc, magnesium and their alloys shall not be used in contact with R-40 (methyl chloride).	
1107.5 Materials for refrigerant piping and tubing. Piping materials shall be as set forth in Sections 1107.5.1 through 1107.5.5. 1107.5.1 Steel pipe. 1107.5.2 Copper and brass pipe. 1107.5.3 Copper tube. 1107.5.4 Copper tubing joints. 1107.5.5 Aluminum tube.	1107.4 Piping materials standards. Refrigerant pipe shall conform to one or more of the standards listed in Table 1107.4. The exterior of the pipe shall be protected from corrosion and degradation. 1107.4.1 Steel pipe Groups A2, A3, B2 and B3. The minimum weight of steel pipe for Group A2, A3, B2 and B3 refrigerants shall be Schedule 80 for sizes 1½ inches or less in diameter.	
	1107.5 Pipe fittings. Refrigerant pipe fittings shall be approved for installation with the piping materials to be installed, and shall conform to one of more of the standards listed in Table 1107.5 or shall be listed and labeled as complying with UL 207.	
	1107.6 Valves. Valves shall be of materials that are compatible with the type of piping material, refrigerants and oils in the system. Valves shall be listed and labeled and rated for the temperatures and pressures of the refrigerant systems in which the valves are installed.	
	1107.7 Flexible connectors, expansion and vibration compensators. Flexible connectors and expansion and vibration control devices shall be listed and labeled for use in refrigerant systems.	

2021 MMC Significant Changes

Section 1108 Joints and Connections

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1108.1 Approval. Joints and connections shall be of an approved type. Joints and connections shall be tight for the pressure of the refrigerant system when tested in accordance with Section 1110.</p> <p>1108.1.1 Joints between different piping materials. Joints between different piping materials shall be made with approved adapter fittings. Joints between dissimilar metallic piping materials shall be made with a dielectric fitting or a dielectric union conforming to dielectric tests of ASSE 1079. Adapter fittings with threaded ends between different materials shall be joined with thread lubricant in accordance with Section 1108.3.4.</p>	
	<p>1108.2 Preparation of pipe ends. Pipe shall be cut square, <u>reamed</u> and chamfered, and shall be free from burrs and obstructions. Pipe ends shall have full-bore openings and shall not be undercut.</p>	
	<p>1108.3 Joint preparation and installation. Where required by Sections 1108.4 through 1108.9, the preparation and installation of brazed, flared, mechanical, press-connect, soldered, <u>threaded</u> and welded joints shall comply with Sections 1108.3.1 through 1108.3.5.</p>	
	<p>1108.3.1 Brazed joints. Joint surfaces shall be cleaned. An approved flux shall be applied where required by the braze filler metal manufacturer. The piping being brazed shall be purged of air to remove the oxygen and filled with one of the following inert gases: oxygen-free nitrogen, <u>helium</u> or argon. The piping system shall be pre-purged with an inert gas for a minimum time corresponding to five volume changes through the piping system prior to brazing. The pre-purge rate shall be at a minimum velocity of 100 feet per minute (0.508 m/s). The inert gas shall be directly connected to the tube system being brazed to prevent the entrainment of ambient air. After the pre-purge, the inert gas supply shall be maintained through the piping during the brazing operation at a minimum pressure of 1.0 psi (6.89 kPa) and a maximum pressure of 3.0 psi (20.67 kPa). The joint shall be brazed with a filler metal conforming to AWS A5.8.</p>	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1108.3.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.</p> <p>1108.3.2.1 Flared joints. Flared fittings shall be installed in accordance with the manufacturer's instructions. The flared fitting shall be used with the tube material specified by the fitting manufacturer. The flared tube end shall be made by a tool designed for that operation.</p> <p>1108.3.2.2 Press-connect joints. Press-connect joints shall be installed in accordance with the manufacturer's instructions.</p>	
	<p>1108.3.3 Soldered joints. Joint surfaces to be soldered shall be cleaned and a flux conforming to ASTM B813 shall be applied. The joint shall be soldered with a solder conforming to ASTM B32. Solder joints shall be limited to refrigerant systems using Group A1 refrigerant and having a pressure of less than or equal to 200 psi (1378 kPa).</p>	
	<p>1108.3.4 Threaded joints. Threads shall conform to ASME B1.1, ASME B1.13M, ASME B1.20.1 or ASME B1.20.3. Thread lubricant, pipe-joint compound or <u>thread</u> tape shall be applied on the external threads only and shall be approved for application on the piping material.</p>	
	<p>1108.3.5 Welded joints. Joint surfaces to be welded shall be cleaned by an approved procedure. Joints shall be welded with an approved filler metal.</p>	
	<p>1108.4 Aluminum tube. Joints between aluminum tubing or fittings shall be brazed, mechanical, press-connect or welded joints conforming to Section 1108.3.</p>	
	<p>1108.5 Brass (copper alloy) pipe. Joints between brass pipe or fittings shall be brazed, mechanical, press-connect, threaded or welded joints conforming to Section 1108.3.</p>	
	<p>1108.6 Copper pipe. Joints between copper or copper-alloy pipe or fittings shall be brazed, mechanical, press-connect, soldered, <u>threaded</u> or welded joints conforming to Section 1108.3.</p>	
	<p>1108.7 Copper tube. Joints between copper or copper-alloy tubing or fittings shall be brazed, flared, mechanical, press-connect or soldered joints.</p>	
	<p>1108.8 Steel pipe. Joints between steel pipe or fittings shall be mechanical joints, threaded, press-connect or welded joints conforming to Section 1108.3.</p>	
	<p>1108.9 Steel tube. Joints between steel tubing or fittings shall be flared, mechanical, press-connect or welded joints conforming to Section 1108.3.</p>	

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Section 1109 Refrigerant Pipe Installation

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1107.1 General. The design of refrigerant piping shall be in accordance with ASME B31.5. Refrigerant piping shall be installed, tested, and placed into operation in accordance with this chapter.</p>	<p>1109.1 General. Refrigerant piping installations, other than R-717 (ammonia) refrigeration systems, shall comply with the requirements of this section. The design of refrigerant piping shall be in accordance with ASME B31.5.</p>	
	<p>1109.2 Piping location. Refrigerant piping shall comply with the installation location requirements of Sections 1109.2.1 through 1109.2.7. Refrigerant piping for Groups A2L and B2L shall also comply with the requirements of Section 1109.3. Refrigerant piping for Groups A2, A3, B2 and B3 shall also comply with the requirements of Section 1109.4.</p>	
<p>1107.2 Location. Refrigerant piping that crosses an open space that affords passageway in any building shall be not less than 7 feet 3 inches (2210 mm) above the floor unless the piping is located against the ceiling of such space. Refrigerant piping shall not be placed in any elevator, dumbwaiter or other shaft containing a moving object or in any shaft that has openings to living quarters or to means of egress. Refrigerant piping shall not be installed in an enclosed public stairway, stairway landing or means of egress.</p>	<p>1109.2.1 Minimum height. Exposed refrigerant piping installed in open spaces that afford passage shall be not less than 7 feet 3 inches (2210 mm) above the finished floor.</p>	
<p>1107.3 Pipe Enclosures. Rigid or flexible metal enclosures or pipe ducts shall be provided for soft, annealed copper tubing and used for refrigerant piping erected on the premises and containing other than Group A1 or B1 refrigerants. Enclosures shall not be required for connections between condensing units and the nearest riser box(es), provided such connections do not exceed 6 feet (1829 mm) in length.</p>	<p>1109.2.2 Refrigerant pipe enclosure. Refrigerant piping shall be protected by locating it within the building elements or within protective enclosures. Exception: Piping protection within the building elements or protective enclosure shall not be required in any of the following locations:</p> <ol style="list-style-type: none"> 1. Where installed without ready access or located more than 7 feet 3 inches (2210 mm) above the finished floor. 2. Where located within 6 feet (1829 mm) of the refrigerant unit or appliance. 3. Where located in a machinery room complying with Section 1105. 	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1107.2 Piping location. Refrigerant piping that crosses an open space that affords passageway in any building shall be not less than 7 feet 3 inches (2210 mm) above the floor unless the piping is located against the ceiling of such space. Refrigerant piping shall not be placed in any elevator, dumbwaiter or other shaft containing a moving object or in any shaft that has openings to living quarters or to means of egress. Refrigerant piping shall not be installed in an enclosed public stairway, stairway landing or means of egress.</p>	<p>1109.2.3 Prohibited locations. Refrigerant piping shall not be installed in any of the following locations:</p> <ol style="list-style-type: none"> 1. Exposed within a fire-resistance-rated exit access corridor. 2. Within an interior exit stairway. 3. Within an interior exit ramp. 4. Within an exit passageway. 5. Within an elevator, dumbwaiter or other shaft containing a moving object. 	
<p>1107.2.1 Piping in concrete floors. Refrigerant piping installed in concrete floors shall be encased in pipe ducts. The piping shall be isolated and supported to prevent damaging vibration, stress and corrosion.</p>	<p>1109.2.4 Piping in concrete floors. Refrigerant piping installed in concrete floors shall be encased in pipe, conduit or ducts. The piping shall be protected to prevent damage from vibration, stress and corrosion.</p>	
	<p>1109.2.5 Refrigerant pipe shafts. Refrigerant piping that penetrates two or more floor/ceiling assemblies shall be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with Section 713 of the International Building Code.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Systems using R-718 refrigerant (water). 2. Piping in a direct system using Group A1 refrigerant where the refrigerant quantity does not exceed the limits of Table 1103.1 for the smallest occupied space through which the piping passes. 3. Piping located on the exterior of the building where vented to the outdoors. 	
	<p>1109.2.6 Exposed piping surface temperature. Exposed piping with ready access having surface temperatures greater than 120 °F (49 °C) or less than 5 °F (-15 °C) shall be protected from contact or shall have thermal insulation that limits the exposed insulation surface temperature to a range of 5 °F (-15 °C) to 120 °F (49 °C).</p>	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1109.2.7 Pipe identification. Refrigerant pipe located in areas other than the room or space where the refrigerating equipment is located shall be identified. The pipe identification shall be located at intervals not exceeding 20 feet (6096 mm) on the refrigerant piping or pipe insulation. The minimum height of lettering of the identification label shall be 1/2 inch (12.7 mm). The identification shall indicate the refrigerant designation and safety group classification of refrigerant used in the piping system. For Group A2, A3, B2 and B3 refrigerants, the identification shall also include the following statement: "DANGER—Risk of Fire or Explosion. Flammable Refrigerant." For any Group B refrigerant, the identification shall also include the following statement: "DANGER—Toxic Refrigerant."</p>	
	<p>1109.3 Installation requirements for Group A2L or B2L refrigerant. Piping systems using Group A2L or B2L refrigerant shall comply with the requirements of Sections 1109.3.1 and 1109.3.2.</p>	
	<p>1109.3.1 Pipe protection. In addition to the requirements of Section 305.5, aluminum, copper and steel tube used for Group A2L and B2L refrigerants and located in concealed locations where tubing is installed in studs, joists, rafters or similar member spaces, and located less than 1 1/2 inches (38 mm) from the nearest edge of the member, shall be continuously protected by shield plates. Protective steel shield plates having a minimum thickness of 0.0575 inch (1.46 mm) (No. 16 gage) shall cover the area of the tube plus the area extending not less than 2 inches (51 mm) beyond both sides of the tube.</p>	
	<p>1109.3.2 Shaft ventilation. Refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The pipe, duct or conduit shall be level or pitched downward to the outdoors. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors.</p>	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1107.2.2 Refrigerant penetrations. Refrigerant piping shall not penetrate floors, ceilings, or roofs.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Penetrations connecting the basement and the first floor. 2. Penetrations connecting the top floor and a machinery penthouse or roof installation. 3. Penetrations connecting adjacent floors served by the refrigeration system. 4. Penetrations by piping in a direct system where the refrigerant quantity does not exceed Table 1103.1 for the smallest occupied space through which the piping passes. 5. In other than industrial occupancies and where the refrigerant quantity exceeds Table 1103.1 for the smallest space, penetrations for piping that connects separate pieces of equipment that are either: <ol style="list-style-type: none"> 1. Enclosed by an approved gas-tight, fire-resistive duct or shaft with openings to those floors served by the refrigeration system. 2. Located on the exterior of the building <u>where</u> vented to the outdoors or to the space served by the system and not used as an air shaft, closed court or similar space. 	<p>1109.5 Refrigerant pipe penetrations. The annular space between the outside of a refrigerant pipe and the inside of a pipe sleeve or opening in a building envelope wall, floor or ceiling assembly penetrated by a refrigerant pipe shall be sealed in an approved manner with caulking material or foam sealant or closed with a gasketing system. The caulking material, foam sealant or gasketing system shall be designed for the conditions at the penetration location and shall be compatible with the pipe, sleeve and building <u>materials</u> in contact with the sealing materials. Refrigerant pipes penetrating fire-resistance-rated assemblies or membranes of fire-resistance-rated assemblies shall be sealed or closed in accordance with Section 714 of the International Building Code.</p>	
	<p>1109.6 Stress and strain. Refrigerant piping shall be installed <u>so as to</u> prevent strains and stresses that exceed the structural strength of the pipe. Where necessary, provisions shall be made to protect piping from damage resulting from vibration, expansion, <u>contraction</u> and structural settlement.</p>	
<p>1107.4 Condensation. Refrigerating piping and fittings, brine piping and fittings that, during normal operation, will reach a surface temperature below the dew point of the surrounding air, and <u>are located in spaces or areas</u> where condensation will cause a safety hazard to the building occupants, structure, electrical equipment or any other equipment or appliances, shall be protected in an approved manner to prevent such damage.</p>	<p>1109.7 Condensate control. Refrigerating piping and fittings that, during normal operation, will reach a surface temperature below the dew point of the surrounding air, and <u>are located in spaces or areas</u> where condensation has the potential to cause a safety hazard to the building occupants, structure, electrical equipment or any other equipment or appliances, shall be insulated or protected in an approved manner to prevent damage from condensation.</p>	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1109.8 Stop valves. Stop valves shall be installed in specified locations in accordance with Sections 1109.8.1 and 1109.8.2. Stop valves shall be supported in accordance with Section 1109.8.3 and identified in accordance with Section 1109.8.4.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Systems that have a refrigerant pumpout function capable of storing the entire refrigerant charge in a receiver or heat exchanger. 2. Systems that are equipped with provisions for pumping out the refrigerant using either portable or permanently installed refrigerant recovery equipment. 3. Self-contained listed and labeled systems. 	
<p>1107.8 Stop valves. Refrigerating systems containing more than 6.6 pounds (3 kg) of a refrigerant in a system using positive-displacement compressors shall have stop valves installed as follows:</p> <ol style="list-style-type: none"> 1. At the inlet of each compressor, compressor unit or condensing unit. 2. At the discharge outlet of each compressor, compressor unit or condensing unit and of each liquid receiver. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Systems that have a refrigerant pumpout function capable of storing the entire refrigerant charge in a receiver or heat exchanger. 2. Systems that are equipped with provisions for pumping out the refrigerant using either portable or permanently installed refrigerant recovery equipment. 3. Self-contained listed and labeled systems. 	<p>1109.8.1 Refrigerating systems containing more than 6.6 pounds (3.0 kg) of refrigerant. Stop valves shall be installed in the following locations on refrigerating systems containing more than 6.6 pounds (3.0 kg) of refrigerant:</p> <ol style="list-style-type: none"> 1. The suction inlet of each compressor, compressor unit or condensing unit. 2. The discharge outlet of each compressor, compressor unit or condensing unit. 3. The outlet of each liquid receiver. 	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1109.8.2 Refrigerating systems containing more than 100 pounds (45 kg) of refrigerant. In addition to stop valves required by Section 1109.8.1, systems containing more than 100 pounds (45 kg) of refrigerant shall have stop valves installed in the following locations:</p> <ol style="list-style-type: none"> 1. Each inlet of each liquid receiver. 2. Each inlet and each outlet of each condenser where more than one condenser is used in parallel. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Stop valves shall not be required at the inlet of a receiver in a condensing unit nor at the inlet of a receiver that is an integral part of the condenser. 2. Systems utilizing nonpositive displacement compressors. 	
	<p>1109.8.3 Stop valve support. Stop valves shall be supported to prevent detrimental stress and strain on the refrigerant piping system. The piping system shall not be utilized to support stop valves on copper tubing or aluminum tubing 1 inch (25.4 mm) outside diameter or larger.</p>	
<p>1107.8.3 Identification. Stop valves shall be identified where their intended purpose is not obvious. Numbers shall not be used to label the valves, unless a key to the numbers is located near the valves.</p>	<p>1109.8.4 Identification. Stop valves shall be identified where their intended purpose is not obvious. Where valves are identified by a numbering or lettering system, legend(s) or key(s) for the valve identification shall be located in the room containing the indoor refrigeration equipment. The minimum height of lettering of the identification label shall be 1/2 inch (12.7 mm).</p>	

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Section 1110 Refrigeration Piping System Test replaced Section 1108 Field Test

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1108.1 General. Every refrigerant-containing part of every system that is erected on the premises, except compressors, condensers, vessels, evaporators, safety devices, pressure gauges and control mechanisms that are listed and factory tested, shall be tested and proved tight after complete installation, and before operation. Tests shall include both the high and low-pressure sides of each system at not less than the lower of the design pressures or the setting of the pressure relief device(s). The design pressures for testing shall be those listed on the condensing unit, compressor or compressor unit nameplate, as required by ASHRAE 15.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Gas bulk storage tanks that are not permanently connected to a refrigeration system. 2. Systems erected on the premises with copper tubing not exceeding 5/8-inch (15.8 mm) OD, with wall thickness as required by ASHRAE 15, shall be tested in accordance with Section 1108.1, or by means of refrigerant charged into the system at the saturated vapor pressure of the refrigerant at 70°F (21°C) or higher. 3. Limited-charge systems equipped with a pressure relief device, erected on the premises, shall be tested at a pressure not less than one and one-half times the pressure setting of the relief device. If the equipment or appliance has been tested by the manufacturer at one and one-half times the design pressure, the test after erection on the premises shall be conducted at the design pressure. 	<p>1110.1 General. Refrigerant piping systems, other than R-717 (ammonia) refrigeration systems, that are erected in the field shall be pressure tested for strength and leak tested for tightness, in accordance with the requirements of this section, after installation and before being placed in operation. Tests shall include both the high- and low-pressure sides of each system.</p> <p>Exception: Listed and labeled equipment, including compressors, condensers, vessels, evaporators, gas bulk storage tanks, safety devices, pressure gauges and control mechanisms, shall not be required to be tested.</p>	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1110.2 Exposure of refrigerant piping system. Refrigerant pipe and joints installed in the field shall be exposed for visual inspection and testing prior to being covered or enclosed.</p>	
<p>1108.2 Test gases. Tests shall be performed with an inert dried gas including, but not limited to, nitrogen and carbon dioxide. Oxygen, air, combustible gases and mixtures containing such gases shall not be used.</p> <p>Exception: The use of air is allowed to test R-717, ammonia, systems provided that they are subsequently evacuated before charging with refrigerant.</p>	<p>1110.3 Test gases. The medium used for pressure testing the refrigerant system shall be one of the following inert gases: oxygen-free nitrogen, helium or argon. For R-744 refrigerant systems, carbon dioxide shall be allowed as the test medium. For R-718 refrigerant systems, water shall be allowed as the test medium. Oxygen, air, combustible gases and mixtures containing such gases shall not be used as a test medium. Systems erected on the premises with tubing not exceeding 5/8 inch (15.9 mm) outside diameter shall be allowed to use the refrigerant identified on the nameplate label or marking as the test medium.</p>	
<p>1108.3 Test apparatus. The means used to build up the test pressure shall have either a pressure-limiting device or a pressure-reducing device and a gauge on the outlet side.</p>	<p>1110.4 Test apparatus. The means used to pressurize the refrigerant piping system shall have on its outlet side a test pressure measuring device and either a pressure-limiting device or a pressure-reducing device. The test pressure measuring device shall have an accuracy of ± 3 percent or less of the test pressure and shall have a resolution of 5 percent or less of the test pressure.</p>	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1108.2 Test gases. Tests shall be performed with an inert dried gas including, but not limited to, nitrogen and carbon dioxide. Oxygen, air, combustible gases and mixtures containing such gases shall not be used.</p> <p>Exception: The use of air is allowed to test R-717, ammonia, systems provided that they are subsequently evacuated before charging with refrigerant.</p>	<p>1110.3 Test gases. The medium used for pressure testing the refrigerant system shall be one of the following inert gases: oxygen-free nitrogen, helium or argon. For R-744 refrigerant systems, carbon dioxide shall be allowed as the test medium. For R-718 refrigerant systems, water shall be allowed as the test medium. Oxygen, air, combustible gases and mixtures containing such gases shall not be used as a test medium. Systems erected on the premises with tubing not exceeding 5/8 inch (15.9 mm) outside diameter shall be allowed to use the refrigerant identified on the nameplate label or marking as the test medium.</p>	
<p>1108.3 Test apparatus. The means used to build up the test pressure shall have either a pressure-limiting device or a pressure-reducing device and a gauge on the outlet side.</p>	<p>1110.4 Test apparatus. The means used to pressurize the refrigerant piping system shall have on its outlet side a test pressure measuring device and either a pressure-limiting device or a pressure-reducing device. The test pressure measuring device shall have an accuracy of ± 3 percent or less of the test pressure and shall have a resolution of 5 percent or less of the test pressure.</p>	
	<p>1110.5 Piping system pressure test and leak test. The refrigerant piping system shall be tested <u>as a whole</u> or separate tests shall be conducted for the low-pressure side and high-pressure side of the piping system. The refrigerant piping system shall be tested in accordance with both of the following methods:</p> <ol style="list-style-type: none"> 1. The system shall be pressurized for a period of not less than 60 minutes to not less than the lower of the design pressures or the setting of the pressure relief device(s). The design pressures for testing shall be the pressure listed on the label nameplate of the condensing unit, compressor, compressor unit, pressure vessel or other system component with a nameplate. Additional test gas shall not be added to the system after the start of the pressure test. The system shall not show loss of pressure on the test pressure measuring device during the pressure test. Where using refrigerant as a test medium in accordance with Section 1110.3, the test pressure shall be not less than the saturation dew point pressure at 77 °F (25 °C). 2. A vacuum of 500 microns shall be achieved. After achieving a vacuum, the system shall be isolated from the vacuum pump. The system pressure shall not rise above 1,500 microns for a period of not less than 10 minutes. 	

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2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
	<p>1110.5.1 Joints and refrigerant-containing parts in air ducts. Joints and all refrigerant-containing parts of a refrigerating system located in an air duct of an air-conditioning system that conveys conditioned air to and from human-occupied spaces shall be tested at a pressure of 150 percent of the higher of the design pressure or pressure relief device setting.]</p>	
	<p>1110.5.2 Limited charge systems. Limited charge systems with a pressure relief device, erected on the premises, shall be tested at a pressure not less than one and one-half times the pressure setting of the relief device. Listed and labeled limited charge systems shall be tested at the equipment or appliance design pressure.</p>	
<p>1108.1.1 Booster compressor. Where a compressor is used as a booster to obtain an intermediate pressure and discharges into the suction side of another compressor, the booster compressor shall be considered a part of the low side, <u>provided that it is protected by a pressure relief device.</u></p>	<p>1110.6 Booster compressor. Where a compressor protected by a pressure relief device is used as a booster to obtain an intermediate pressure, and such compressor discharges into the suction side of another compressor, the booster compressor shall be considered to be a part of the low-pressure side of the system.</p>	
<p>1108.1.1 Centrifugal/nonpositive displacement compressors. In field-testing systems using centrifugal or other nonpositive displacement compressors, the entire system shall be considered as the low-side pressure for field test purposes.</p>	<p>1110.7 Centrifugal/nonpositive displacement compressors. Where testing systems using centrifugal or other nonpositive displacement compressors, the entire system shall be <u>considered to be the low-pressure side for test purposes.</u></p>	
<p>1108.4 Declaration. A certificate of test shall be provided for all systems containing 55 pounds (25 kg) or more of refrigerant. The certificate shall give the name of the refrigerant and the field test pressure applied to the high side and the low side of the system. The certification of test shall be signed by the installer and shall be made part of the public record</p>	<p>1110.8 Contractor or engineer declaration. <u>The installing contractor or registered design professional of record shall issue a certificate of test to the code official for all systems containing 55 pounds (25 kg) or more of refrigerant. The certificate shall give the test date, name of the refrigerant, test medium and the field test pressure applied to the high-pressure side and the low-pressure side of the system. The certification of test shall be signed by the installing contractor or registered design professional and shall be made part of the public record.</u></p>	

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Chapter 15 Referenced Standards

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
ASHRAE 15-2013 Safety Standards for Refrigeration Systems	ASHRAE 15-2022 Safety Standards for Refrigeration Systems	R 408.30947b provides for the implementation of ASHRAE 15-2022 within the 2021 Michigan Mechanical Code. ASHRAE 15-2022 defines a clear path for and establishes safety standards associated with the utilization of A2L refrigerants, resulting from an Environmental Protection Agency (EPA) rule issued in late 2021. This EPA rule issued under the American Innovation and Manufacturing Act of 2020 (AIM), mandates an 85% reduction in the production and consumption of hydrofluorocarbon refrigerants by 2036. Although this drawdown is 12 years away, manufacturers have begun significant production and distribution of equipment utilizing A2L refrigerants. This rule supersedes the ASHRAE 15-2019 standard listed in the <i>Referenced Standards</i> section of the 2021 Michigan Mechanical Code. Ref: michigan.gov

Chapter 16 Automatic Sprinkler Systems; Fire Suppression Systems

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1600.1 Scope. The provisions of this article provide the minimum requirements for the design and installation of automatic sprinkler systems in all occupancies, except for 1- and 2-family dwellings. R 408.30995a</p> <p>1600.2. Installations. Installations shall be in compliance with the provisions of the code. Fire suppression systems shall be in compliance with the provisions of the building code and shall be installed in accordance with the code and NFPA-13-2010, NFPA-13D-2010, NFPA-13R-2010, and NFPA-24-2010, installation of sprinkler systems in 1- and 2- family dwellings and manufactured homes , installation of sprinkler systems in residential occupancies up to 4 stories in height, and standards of the national fire protection association listed in chapter 15.</p> <p>R 408.30995a</p>	<p>1600.1 Scope. The provisions of this article provide the minimum requirements for the design and installation of automatic sprinkler systems in all occupancies, except for 1- and 2-family dwellings.</p> <p>R 408.30995a</p> <p>1600.2. Installations. Installations shall be in compliance with the provisions of the code. Fire suppression systems shall be in compliance with the provisions of the building code and shall be installed in accordance with the code and NFPA-13-2019 or NFPA-13D-2019 or NFPA-13R-2019, and NFPA-24-2019, and standards of the National Fire Protection Association listed in chapter 15.</p> <p>R 408.30995a</p>	<p>R 408.30995a Automatic sprinkler systems generally. Rule 995a. Sections 1600.0, 1600.1, and 1600.2 are added to the code</p>

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Chapter 17 Process Piping

2015 Michigan Mechanical Code	2021 Michigan Mechanical Code	Analysis
<p>1700.1 Scope. The provisions of this chapter provide the minimum requirements for the design and installation of process piping systems pursuant to ASME B31.3-2010.</p> <p>1700.2 Process piping. Piping which is not part of a refrigeration system or part of a system designed to provide air conditioning. Process piping includes pipes which transfer chemicals and other fluids, gases, or vapors for systems other than air conditioning systems as covered by the Michigan Mechanical Code.</p>	<p>1700.1 Scope. The provisions of this chapter provide the minimum requirements for the design and installation of process piping systems pursuant to ASME B31.3-2022.</p> <p>1700.2 Process piping. Piping which is not part of a refrigeration system or part of a system designed to provide air conditioning. Process piping includes pipes which transfer chemicals and other fluids, gases, or vapors for systems other than air conditioning systems as covered by the Michigan mechanical code.</p>	<p>R 408.30996 Process piping. Rule 996. Sections 1700.0 and 1700.1 are added to the code</p>