2020

MINNESOTA UNDERSTANDING AMENDMENTS TO THE STATE BUILDING CODE

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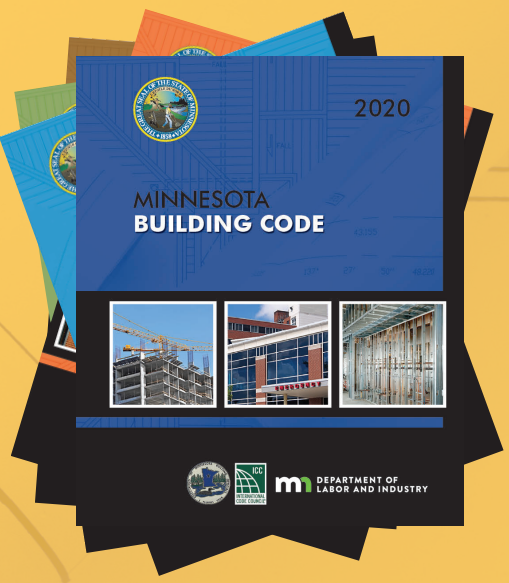

DEPARTMENT OF LABOR AND INDUSTRY

Understanding Amendments to the State Building Code is a compilation of the Rule-by-Rule analysis portion of the Statement of Need and Reasonableness (SONAR) of 10 Rule Chapters adopted as part of the State Building Code in 2019, 2020, and 2021. They are presented here in a single publication as a help to the user by providing both a brief technical explanation as well as an understanding of the purpose behind each of the amendments made to these 10 chapters. In some cases, explanation is provided for changes made as a result of comments received during a public hearing or the public comment period.

It is our intent that this information will contribute to accurate and uniform application of the code in the design and construction of buildings. The user should be aware that this document does not contain an explanation of all the amendments to the State Building Code but only those that were introduced as new or modified for 2020 and 2021. An explanation of legacy amendments has not been included here.

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MINNESOTA BUILDING CODE ADMINISTRATION

Chapter 1300, Building Code Administration, is not published separately. However, it can be found in all Minnesota Code books.

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Administration of the Minnesota State Building Code, Minnesota Rules, chapter 1300; Revisor's ID Number R-04508

INTRODUCTION

The Commissioner of the Department of Labor and Industry ("Commissioner") proposes to amend rules governing the administration of the Minnesota State Building Code, Minnesota Rules, Chapter 1300.

The Minnesota State Building Code consists of twenty-two separate chapters of Minnesota Rules.[1] Chapter 1300 incorporates the necessary administrative information from each administrative chapter found in the International Code Council ("ICC") model codes that are adopted by reference, with amendments, for use in Minnesota. This rule chapter also incorporates administrative requirements specific to Minnesota. Where specific administrative provisions are necessarily related to a specific rule chapter, the specific administrative provision will govern.

In consultation with the Construction Codes Advisory Council ("CCAC"), the Department of Labor and Industry ("Department") utilized a Technical Advisory Group ("TAG") to review existing rule Chapter 1300 and the 2018 ICC model building codes to propose reasonable and needed changes to the administrative provisions of the State Building Code, contained in that rule chapter. The TAG committee members were appointed by the CCAC to review and comment upon the 2018 ICC model codes and proposed changes to the Minnesota State Building Code. The proposed amendments in this rulemaking incorporate changes proposed by Chapter 1300 TAG members made to the administrative provisions in the 2018 ICC model codes that affect this chapter and other chapters of the Minnesota State Building Code.

[1] A complete list of the Chapters making up the Minnesota State Building Code can be found at Minnesota Rules, part 1300.0050 (2016).

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1300
STATE BUILDING CODE ADMINISTRATION

1300.0070 DEFINITIONS.

Subpart 11a. Electric substation. This definition is added to describe an electric substation as an enclosure that has an assemblage of equipment through which electric energy is passed through for the purpose of switching or modifying the electric energy's characteristics. The definition specifies the electric substation, including the equipment contained within, are only accessible to employees of the electric utility or those authorized by the electric utility and are not accessible by the public. This definition is necessary because a new subitem proposed below exempts electric substation facilities from permit requirements. *See* Part 1300.0120, subpart 4, item A (14).

Subpart 19a. Public building. The definition for "public building" is added to this chapter because the Commissioner, rather than a municipal building official, has the authority to administer and enforce the Minnesota State Building Code for all "public buildings and state-licensed facilities" located within the State of Minnesota. *See* Minnesota Statutes, section 326B.107, subdivision 1 (2018) (Administration by Commissioner). While "state licensed facilities" is defined in Subpart 26 of this rule part, the term "public building" is not defined. However, "public building" is defined in Minnesota Statutes, section 326B.103, subdivision 11 (2018). To ease understanding and better assist the user of this rule chapter, the definition of "public building" found in existing Minnesota law is now added to this definitional rule part. Providing easily accessible definitions for both "state licensed facilities" and "public building" in the same rule part is reasonable and will assist municipal building officials, design professionals, contractors, and the public in determining whether a particular building project will be reviewed, permitted, and inspected by the Commissioner or by a municipal building official.

1300.0110 DUTIES AND POWERS OF BUILDING OFFICIAL.

Subpart 13. Alternative materials, design, and methods of construction and equipment. This subpart is amended to require the building official to record the reasons for the rejection of a proposal to use alternative materials, design, or methods of construction and provide a written explanation of the reasons for the rejection of the proposal to the applicant upon request. It is reasonable to require building officials to record the reasons for rejection of a proposal to use alternative materials, design, or methods of construction in the files of the municipal building department because of the existing requirement that building officials record the reasons for the approval of a proposal to use alternative materials, design, or methods of construction. By maintaining a written record of either the reasons for approval or the reasons for rejection, the municipal building department is able to present consistent reasoning when evaluating proposals similar to those the department has previously approved or rejected and will facilitate more uniform enforcement practices in the future. Additionally, providing the applicant with a written explanation of the reasons for rejection will assist the applicant in better understanding what alternative materials, designs, or methods of construction would be acceptable, in addition to creating a record for appeal if the applicant disagrees with the building official's determination. *See* Minnesota Rules, part 1300.0230 (2015) (Board of Appeals).

1300.0120 PERMITS.

Subpart 4, subitem A (1). This subitem is amended to correct the numerical conversion contained in the current rule, as written. The current rule incorrectly converts 200 square feet as 60,960 square millimeters. The proposed rule fixes that error and correctly converts 200 square feet into 18.58 square meter units. The conversion of square feet into square meters in the proposed rule is also needed and reasonable as it is now consistent with the conversion of customary units to the International System of Units in the model ICC codes.

Subpart 4, subitem A (14). This subitem is added to exempt electric substation facilities from the permit requirements of the State building Code.[2] The proposed exemption from the permit requirements for electric substation facilities includes foundations that

[2] "Electric substation" is defined in proposed Minnesota Rules, part 1300.0070, subpart 11a, as "an enclosed assemblage of equipment, including switches, circuit breakers, buses, and transformers that are accessible only to employees of an electric utility or persons acting under the electric utility's control or direction, through which electric energy is passed for the purpose of switching or modifying the electric energy's characteristics to increase or decrease voltage or control frequency."

support electrical equipment, foundations and enclosures affixed with an Interstate Industrialized Buildings Commission ("IIBC") label that contain electrical equipment only, and fencing that encloses the substation facilities. Existing subitem D of this subpart already exempts from permit requirements the electrical equipment contained within electric substations because the electric substation equipment itself is exempt from inspection requirements under Minnesota Statutes, section 326B.36, subdivision 7. It is reasonable to exempt from permit requirements the facilities that contain these substations as well because of the nature of the facilities themselves and the inconsistent enforcement of electric substation facility permit requirements by municipal building departments throughout the state.

Electric substations and their facilities are owned, operated, and maintained by highly regulated electric utilities who have exclusive access and control over the facilities and their contents. Electric utilities are responsible for hiring designers, engineers, and contractors who ensure that the electric substation facilities and the equipment within them will be safely maintained and otherwise compliant with all requirements of the State Building Code. Electric substations are considered hazardous equipment enclosures and are not intended for human habitability or occupancy. Moreover, the equipment enclosure is considered an industrialized/modular building that is assembled in manufacturing facilities off the building site and have already been inspected by the Interstate Industrialized Buildings Commission before being placed in Minnesota. And as noted above, the electrical equipment located within the substation facilities enclosure is already exempt from inspection and permit requirements under existing Minnesota law. Therefore, exempting electric substation facilities from permit requirements as well is reasonable, efficient, cost effective, and has no negative impact on life or building safety.[3]

In addition to the unique nature of electric substation facilities themselves, the proposed rule is also reasonable and needed to address state-wide, inconsistent municipal permit enforcement over electric substation facilities. Some municipalities have required permits for electric substation facilities and other municipalities have not required electric utilities to obtain permits for the construction of electric substation facilities. Those municipalities that require a permit for the construction of electric substation facilities often differ in how they determine the permit fee. Some municipalities determine the permit fee valuations based on the value of the materials and labor necessary to build the foundation and the fencing for the electric substation facility. Other municipalities determine the permit valuation based on the total cost of labor and materials needed to build the entire electric substation facility, including the electrical equipment within it. However, the electrical equipment that is enclosed in the electric substation facility is currently exempt from permit and inspection requirements, and should not be included in the permit valuation

The lack of uniform enforcement has resulted in confusion for electric utilities as to the permit requirements for electric substation facilities and the anticipated fees for those permits. Elimination of the permit requirements for both electric substations and their facilities clarifies requirements and allows electric utilities to more accurately project expenses for the construction of electric substation facilities. Exempting electric substation facilities from permit requirements is reasonable as it will lead to more consistent and uniform enforcement of permit requirements across municipalities within the state of Minnesota.

While municipalities will no longer receive permit fee revenue for the construction of electric substation facilities in their jurisdictions, they will not be expending resources performing inspections of those foundations, enclosures and fencing, nor will they be performing services and administrative tasks related to permitting and inspections. Electric utilities will no longer be required to pay permit fees by some municipalities and will no longer spend as much time and effort determining municipal permit requirements, which will in turn tend to lower costs for the electric utility to provide service to its customers.

Subpart 4, subitem B (3). This subitem is amended to correct the unintended omission of the word "not" in the existing rule so portable fuel cell appliances that are neither interconnected to the power grid, nor connected to a fixed piping system, are exempt from gas permit requirements. This is reasonable and consistent with the existing exemption from mechanical permit requirements for portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid located in subitem C (8) of this subpart.

[3] It is important to note that the exemption from permit requirements for electric substation facilities does not otherwise exempt those facilities from other requirements of the State Building Code. *See* Minnesota Rules, part 1300.0120, subpart 4 (2015). Moreover, while electric substation facilities may be exempt from permit requirements, the facilities must also continue to comply with municipal land use and other ordinance requirements, including zoning and setback requirements. *See Id*.

1300.0160 FEES.

Subpart 3, exception C. This exception contained in subpart C is amended to reflect that the "Industrialized Building Commission" has changed its name to the "Interstate Industrialized Buildings Commission." This change is reasonable and necessary in order to reflect the correct name of the regulatory entity and its acronym.

Subpart 8, Work commencing before permit issuance. This subpart is changed to clarify the existing requirement that the fee charged by a municipal building department for an investigation of construction work performed before a permit is issued must be commensurate with and proportionate to the cost of the investigation conducted by the municipality. The existing language allows an investigation fee to be charged by the municipality up to the amount of the permit fee assessed. However, in their application of this subpart, some municipal building departments routinely and arbitrarily charge an investigation fee equal to the amount of the permit fee without regard to the actual costs of the investigation conducted contrary to existing Minnesota Rule, part 1300.0160, subpart 2 (Fees Commensurate with Service). It is common for the permit fee to well exceed the actual cost of a municipal building department's investigation of work that commenced before a permit was issued, resulting in an investigation fee that is punitive to the construction business rather than proportionate to the cost of the investigation.

A municipal building department that routinely charges an investigation fee that is not proportionate to and exceeds the efforts expended to investigate construction work that occurred before a permit was issued may lose revenue from incorrectly collected investigation fees. Conversely, a construction business that begins construction work before a permit is issued and is required to pay an investigative fee may have fewer costs. Clarification of this subpart is reasonable and necessary to ensure that the investigative fee is commensurate with and proportionate to the investigative service provided by the municipal building department, which will result in more uniform application of the rule.

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MINNESOTA PROVISIONS TO THE STATE BUILDING CODE

Chapter 1303, Provisions to the Minnesota State Building Code (including radon), is not a separate code book. It can be found in the 2020 Minnesota Residential Code and 2020 Minnesota Building Code.

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing Minnesota Provisions, Minnesota Rules, part 1303.2200, Simplified Wind Loads; Revisor's ID Number R-04521

INTRODUCTION

The Commissioner ("Commissioner") of the Department of Labor and Industry ("Department") has the authority to amend the State Building Code, which governs the construction, reconstruction, alteration, repair and use of buildings and other structures. The State Building Code provides basic and uniform performance standards along with reasonable safeguards for health, safety, welfare, comfort, and security of Minnesota residents. The State Building Code is comprised of twenty-one rule chapters.[4] The Minnesota State Legislature has directed the Department to establish a code of standards for the construction, reconstruction, alteration, and repair of buildings and to adopt model building codes generally accepted and in use throughout the United States when practicable.[5] The Department has also adopted rules that serve as the Minnesota Provisions to the State Building Code, Minnesota Rules, chapter 1303. The Minnesota Provisions address requirements that are mandated by Minnesota Statutes, are needed due to Minnesota's climatic conditions, or are other provisions not appropriately regulated by the model codes.[6]

The Commissioner proposes amending *Minnesota Rules*, part 1303.2200, Simplified Wind Loads. In 2007, the Department adopted this as a new rule part in compliance with the Minnesota Administrative Procedure Act.[7] The new rule part added an equation and tables to determine the net pressures of wind loads on buildings meeting the requirements described in Minn. R. part 1303.2200, subp. 1 (hereafter referred to as "simple buildings"). Wind loads are a type of force that applies pressure (net pressure) to the projections of a building surface. The projections of a building surface is the area of the building's surface that is expected to be impacted by the effects of wind. The net pressures must be accurately calculated to ensure that the building can withstand pressures caused by the force of wind. In 2014, the Department adopted amendments to this rule part that were intended to make the equation and tables consistent with procedural changes that occurred in the *International Building Code*. However, the equation as written is mathematically erroneous and provides no design value. The formatting of the variables is inconsistent with standard mathematical practice. The proposed amendments correct formatting and content errors in the current equation. The result will be a correct, usable equation that provides a simple, uniform method for the building industry to correctly and efficiently determine net pressures of wind loads applied to the projections of building surfaces. Some additional proposed amendments clarify the equation and add an alternate calculation method.

The Department published a Request for Comments on January 2, 2018, and received one comment regarding the tables corresponding with the equation. The comment requested that an additional method be provided to convert the values in the tables from ultimate wind design, as expressed by the equation variable V_{ult}, to allowable stress design ("ASD"). Both ultimate wind design and ASD are calculation methods accepted by the building industry for determining net pressures of wind loads applied to the projections of building surfaces. In response to the comment, the proposed rule amendment includes the method to convert values from ultimate wind design to ASD.

[4] *See* Minn. R. part 1300.0050.
[5] *See* Minn. Stat. § 326B.106.
[6] *See* Minn. R. part 1303.1100.
[7] *See State Register*, Volume 32, Number 1, pages 1-36, July 2, 2007 (32 SR 10) at https://www.revisor.mn.gov/state_register/?vol=32&num=1#page=10

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1303
MINNESOTA PROVISIONS OF THE STATE BUILDING CODE

1303.2200 SIMPLIFIED WIND LOADS.

Subp. 2. Simplified design wind pressures. The proposed amendment corrects the equation and reformats the variables. The proposed amendment italicizes the variables to be consistent with standard mathematical equation formatting. The proposed amendment corrects the placement of the square function ("x^2") and therefore corrects the order in which the mathematical operations are performed. That is, the proposed amendment directs the user to square the "V_{ult}" variable, square "115," and then divide the answers to determine the net pressures caused by the wind load, or force, that is applied to projections of building surfaces, or the area of the building's surface that is expected to be impacted by the effects of wind. The "V_{ult}" value is based on geographic location and the intended use of the building. For example, buildings such as schools, nursing homes, and those providing emergency services are designed to withstand greater ultimate design wind speeds. The "V_{ult}" value is based on the geographic location and use of the building as determined in the ASCE 7 and *International Building Code.*[8] Once the "V_{ult}" value is determined, the designer uses the "V_{ult}" value in the equation of this rule part. Without these modifications, the equation is meaningless when structural engineers and other building professionals attempt to use it. Instead, structural engineers and other building professionals must use a longer, more complex calculation in ASCE 7 that takes more time to calculate than the intended equation. As written, any results calculated from the current equation would result in an unnecessarily high calculation that would not be consistent with the longer calculation method provided in ASCE 7. The proposed amendments correct the equation so a designer can accurately and more quickly determine what pressures caused by wind conditions a building must be able to withstand. The proposed equation and the longer calculation method in ASCE 7 produce similar results.

Table *P_{alt}*. Reformatting "P_{alt}" to italics is a correction that is consistent with standard mathematical equation formatting. Footnote "a" clarifies that table values are for ultimate wind design ("*V_{ult}")* and directs the user to multiply the table values by 0.6 to convert them from ultimate wind design to ASD. ASD and ultimate wind design are two methods commonly used by designers and engineers to determine a structure's ability to withstand wind. The proposed amendments allow easy conversion of the ultimate wind design table values to ASD, which will be beneficial to structural engineers and designers who must make the calculation. The proposed amendments delete the existing notations that are indicated by asterisks and replace them with footnotes "b" and "c" to clarify the current rule. The footnotes provide specific instead of general information and clarify the meaning of the negative numbers.

There are no substantive changes insofar as the proposed amendments correct the existing equation to express what was intended and adds an additional calculation method.

[8] The designer can use either of these sources listed to determine the "V_{ult}" value. The *International Residential Code* refers code users to the *International Building Code* for the calculation of wind loads.

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MINNESOTA BUILDING CODE

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Adoption of the International Building Code, Minnesota Rules, chapter 1305; Revisor's ID Number R-04509

INTRODUCTION

The Commissioner ("Commissioner") of the Department of Labor and Industry ("Department") and certain local authorities enforce the Minnesota State Building Code, which consists of 22 chapters of the Minnesota Rules. One of those 22 chapters is chapter 1305, the Minnesota Building Code. *See* Minnesota Rules, part 1300.0050.

The Commissioner proposes to adopt amendments to the Minnesota Building Code, Minnesota Rules, Chapter 1305. The proposed rules will incorporate by reference the 2018 International Building Code ("IBC"), with amendments.

The International Code Council ("ICC") publishes the IBC. The ICC reviews and modifies the ICC Model Codes every three years to incorporate the most current construction code criteria to provide the construction industry with the most current code provisions for use throughout the nation. The IBC is the primary commercial, industrial and institutional code that provides minimum requirements to safeguard the public health, safety, and general welfare to occupants of new and existing buildings, facilities, and systems.[9]

The current chapter 1305 adopts and amends the 2012 edition of the IBC. *See* Minnesota Rules, part 1305.0011, subp. 1. Accordingly, the Department currently administers and enforces the 2012 edition of the IBC with amendments as contained in Minnesota Rules, chapter 1305. Although the ICC published a 2015 edition of the IBC, the Department did not adopt the 2015 edition of the IBC due to legislation that requires the Department to review and adopt the model codes with amendments every six years, beginning with the 2018 edition of the model codes.[10]

Minnesota Statutes, section 326B.106, subdivision 1(a), requires the Department to consult with the Construction Codes Advisory Council ("CCAC") in adopting amendments to the Minnesota State Building Code. The Department has consulted with the CCAC in connection with this rulemaking.

In consultation with the CCAC, the Department utilized a Chapter 1305 Technical Advisory Group ("Chapter 1305 TAG") to review the existing rule Chapter 1305 and the 2018 IBC to propose reasonable and necessary amendments to the existing rule and the model code. The Chapter 1305 TAG members were appointed by the CCAC to review and comment on the 2018 IBC and proposed changes to the Minnesota State Building Code. The Chapter 1305 TAG consisted of representatives from the Association of Minnesota Building Officials, Fire Marshals Association of Minnesota, American Institute of Architects Minnesota, and Department personnel. The proposed amendments in this rulemaking incorporate changes to the 2018 IBC proposed by the Chapter 1305 TAG members.

Because many of the requirements in Chapter 1305 need to coordinate with the requirements of the Minnesota State Fire Code, Chapter 7511, the Department also used a 1305 and 7511 Compatibility Technical Advisory Group ("Compatibility TAG"). The Compatibility TAG was also appointed by the CCAC, and consisted of representatives from the Association of Minnesota Building Officials, Fire Marshals Association of Minnesota, Department of Public Safety ("DPS") Minnesota State Fire Marshal Division, American Institute of Architects Minnesota, and Department personnel. The Compatibility TAG coordinated proposed changes to Chapter 1305 and Chapter 7511. The proposed amendments in this rulemaking incorporate changes reviewed by the Compatibility TAG members to ensure that the provisions of proposed Chapter 1305 do not conflict with the provisions of proposed Chapter 7511.

[9] The administrative chapter of the State Building Code (chapter 1300) specifies which structures must comply with chapter 1305, and which structures must comply with the Minnesota Residential Code, chapter 1309. *See* Minn. R. 1300.0040, subp. 2 (2017).
[10] *See* Minn. Stat. § 326B.106, subd. 1(c) (2018).

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1305
MINNESOTA BUILDING CODE

GENERAL.

References to IBC Editions and Minnesota Rule Parts. When referencing the IBC throughout the proposed rules, the year "2012" is deleted and replaced with the year "2018." The Department is proposing to adopt the 2018 edition of the IBC, replacing the 2012 edition, with amendments. References to "IBC" are added before references to specific IBC chapters and sections to clarify that the specific chapter or section that is being referenced in the proposed rule is a section of the IBC.

Definitions. Throughout the proposed rules and in this SONAR, specific terms are used to explain requirements contained in certain rule parts. These terms are defined in detail within Chapter 2 of the 2018 IBC or within Part 1305.0202 of the proposed rules, and are described in this "GENERAL" section so that referring to the IBC is not necessary to understand these terms.

Occupancy Groups. Throughout the proposed rules and in this SONAR, various "occupancy groups" are frequently mentioned when describing the application of specific requirements under the 2018 IBC and its proposed amendments to structures occupied and used by various groups of people. While not separately defined in Chapter 2 of the IBC, these occupancy groupings are described in detail in Sections 301 through 312 of the 2018 IBC. A brief summary of all occupancy groupings follows to assist the reader in more fully understanding the scope and application of the 2018 IBC to specific types of building occupancies.

Assembly Group A occupancies (A-1, A-2, A-3, A-4, and A-5). Generally, Group A occupancies are places where people assemble in small or large groups. Examples of Group A occupancies would include indoor symphony or concert halls, night clubs, restaurants, amusement arcades, places of worship, bowling alleys, gymnasiums, museums, outdoor amusement park structures, outdoor grandstands, and outdoor stadiums. Group A occupancies are more fully described in Section 303 of the IBC.

Business Group B occupancies. Group B occupancies are structures or buildings, or portions of them, that provide general business services for people, including the use for office, professional, or service-type transactions, and the storage of records and accounts. Group B occupancies are more fully described in Section 304 of the IBC.

Educational Group E occupancies. Group E occupancies are facilities or buildings that provide educational services for people, including the use of a building or structure, or a portion of it, by six or more persons at any one time for educational purposes through the twelfth grade. Group E occupancies are more fully described in Section 305 of the IBC.

Factory Group F occupancies (F-1 and-F-2). Group F occupancies are factory industrial buildings or structures used for assembly, disassembly, fabrication, finishing, manufacturing, packaging, repair or processing operations that are not otherwise classified as a Group H hazardous or Group S storage occupancy. Group F occupancies are more fully described in Section 306 of the IBC.

High-Hazard Group H occupancies (H-1, H-2, H-3, H-4, and H-5). Group H occupancies are generally buildings or structures used for the manufacturing, processing, generation or storage of materials in quantities that constitute a high physical or health hazard as established by various IBC provisions. Group H occupancies are more fully described in Section 307 of the IBC.

Institutional Group I occupancies (I-1, I-2, I-3, and I-4). Generally, Group I occupancies are facilities or buildings that provide care services for people, provide for long-term detention of people, or serve as a long-term residence for people who receive custodial care from persons other than parents or guardians. Examples of Group I occupancies would include assisted living facilities, group homes, rehabilitation facilities, hospitals, nursing homes, detoxification facilities, prisons, reformatories, and detention centers. Group I occupancies are more fully described in Section 308 of the IBC and in Minnesota Rules, part 1305.0308.

Mercantile Group M occupancies. Group M occupancies are buildings or structures, or portions of them, accessible to the public and

used for the display and sale of merchandise, including the stocking of goods, wares or merchandise incidental to such purposes. Group M occupancies are more fully described in Section 309 of the IBC.

Residential Group R occupancies (R-1, R-2, R-3 and R-4). Group R occupancies are typically places that people board for short or long periods of time, family dwellings, adult and child care facilities, congregate living facilities, and residential care or assisted living facilities. Examples of Group R occupancies include boarding houses, hotels, motels, apartment houses, fraternities, sororities, monasteries, one and two family dwellings, adult care facilities, smaller child day care facilities, and residential care/assisted living facilities. Group R occupancies are more fully described in Section 310 of the IBC and Minnesota Rules, part 1305.0310.

Storage Group S occupancies (S-1 and S-2). Group S occupancies are buildings or structures, or portions of them, used for storage that are not classified as high-hazardous occupancies under Section 307 of the IBC. Group S occupancies are more fully described in Section 311 of the International Building Code.

Utility and Miscellaneous Group U occupancies. Group U occupancies are buildings and structures of an accessory character and miscellaneous structural use not classified in any other specific occupancy group by the IBC. Group U occupancies are more fully described in Section 312 of the IBC.

1305.0011 ADOPTION OF THE INTERNATIONAL BUILDING CODE BY REFERENCE AND ADMINISTRATIVE AUTHORITY.

Subpart 1. General. This subpart is modified to incorporate by reference the 2018 IBC edition instead of the 2012 edition. The latest edition is the 2018 edition, which includes the most current construction criteria. This modification is necessary to properly incorporate by reference the 2018 edition of the IBC. This modification is reasonable because it incorporates the most current, nationally recognized minimum requirements to safeguard the public health, safety, and general welfare to occupants of new and existing buildings, facilities, and systems. This modification is also consistent with the following requirement in Minnesota Statutes, section 326B.106, subd. 1(a): "The code must conform insofar as practicable to model building codes generally accepted and in use throughout the United States …."

Subp. 1a. Deleted appendices. This proposed subpart deletes the IBC appendices. This is needed for clarity and consistency with current practice. Chapter 1305 does not refer to any of the appendices to the IBC, and the Department does not enforce anything in the appendices to the IBC. It is therefore appropriate to delete the appendices.

Subp. 2. Mandatory chapters. The first sentence of this subpart is amended by referring to IBC "chapters 2 through 35" instead of "chapters 2 through 33 and 35." In the 2012 IBC, chapter 34 concerned "Existing Structures." Because Minnesota has a separate rule chapter on existing commercial structures (chapter 1311), the current chapter 1305 did not adopt chapter 34 of the 2012 IBC. In the 2018 IBC, the ICC removed the chapter on "Existing Structures." Instead, chapter 34 of the 2018 IBC says "Reserved." Therefore, adopting chapter 34 of the 2018 IBC does not have any substantive effect on the Minnesota Building Code.

This subpart is also amended by eliminating references to IBC chapter 30 and Minnesota Rules, chapter 1307, the Minnesota Elevator Code. It is necessary to make these changes because, as part of a different rulemaking proceeding, the Department is proposing to repeal Minnesota Rule 1307.0095, which amends chapter 30 of the 2012 IBC governing elevators and conveying systems. The 2018 edition of the IBC, including chapter 30, is proposed to be incorporated by reference into chapter 1305 instead of chapter 1307, with proposed amendments to IBC chapter 30 in the proposed amendments to chapter 1305. The language of this subpart is amended to include some minor grammatical edits to provide clarity due to the elimination of references to IBC chapter 30 and Minnesota Rules, chapter 1307.

Subp. 3. Replacement chapters. Repeal. This subpart is repealed. Item A states that IBC chapter 1 is replaced with Minnesota Rules chapter 1300, the Minnesota Administration Code. This is already in section 1305.0101; item A is therefore redundant. Item B states that IBC chapter 34 is replaced with Minnesota Rules, chapter 1311, Minnesota Building Conservation Code. Chapter 34 is no longer in the 2018 IBC. Therefore, item B needs to be removed.

1305.0021 REFERENCES TO OTHER INTERNATIONAL CODE COUNCIL CODES

Subp. 2. Building code. Because the terms IBC and International Building Code are both used in the code

and in this chapter, "International Building Code" is added to this definition for ease of reference.

Subp. 3. Residential code. The amendment defines IRC as the abbreviation for International Residential Code. This is needed and reasonable because the 2018 IBC refers to the IRC.

Subp. 6. Mechanical code. This amendment adds "IMC" as an alternate reference for "International Mechanical Code." This amendment is needed and reasonable because chapter 1305 refers to the IMC.

Subp. 11. Fire code. The amendment defines IFC as the abbreviation for International Fire Code. This is needed and reasonable because chapter 1305 and the 2018 IBC refer to the IFC. This amendment also updates an old statutory citation. The fire code is now adopted and amended pursuant to section 326B.02. It is necessary and reasonable to update this statutory citation.

Subp. 12. International Existing Building Code. This amendment adds "IEBC" as an alternate reference for "International Existing Building Code." This amendment is needed and reasonable because chapter 1305 refers to the IEBC.

1305.0201 SECTION 201, GENERAL.

This amendment is needed and reasonable to update the web address for the Merriam-Webster Collegiate Dictionary. Also, the word "chapter" is changed to "code." When used in the IBC, the word "chapter" refers to the IBC chapter. To avoid confusion, it is necessary to change the word "chapter" to "code" in this section. This is not a substantive change.

1305.0202 SECTION 202, DEFINITIONS.

Subpart 1. Amended definitions. Several existing definitions in this rule part or in the 2018 IBC are amended.

Alternating tread device. The definition of alternating tread device is amended to add the phrase "'Alternating tread device' means" at the beginning. This is for consistency with the format of the other definitions. The definition is also amended to provide the correct reference to the rule part describing requirements for ships ladders. The current rule references part 1305.1209. However, that in turn references the Minnesota Mechanical Code. The reference in the proposed rule has therefore been changed to the Minnesota Mechanical Code for ease of reference.

Ambulatory care facility. When used in the IBC, the word "chapter" refers to the IBC chapter. To avoid confusion, it is necessary to change the word "chapter" to "code" in this definition. This is not a substantive change.

Historic Building. The definition of historic buildings located in the 2018 IBC is modified to the term "historic building" for clarity. The amended definition refers to the definition of "historical building" located in Minnesota Rules, part 1300.0070. Minnesota Rules, chapter 1300, contains the administrative provisions of the Minnesota State Building Code. This definition allows for broader interpretation of what is a historic building than the definition located in the 2018 IBC. The definition of historical building located in rule 1300.0070 includes buildings that are listed on the National or State Register of Historic Places or are eligible to be listed in the opinion of the State Historic Preservation Officer or Keeper of the National Register of Historic Places. It is needed and reasonable for the definitions of "historic building" and "historical building" to be consistent in all rules chapters that comprise the Minnesota State Building Code.

Standpipe System, Classes of. This definition of classes of standpipe system located in the 2018 IBC is modified to include systems with 1½ inch hose connections as Class I standpipe systems and to delete the definition of Class III standpipe systems. Class III standpipes are intended for use primarily by building occupants trained in firefighting techniques. These systems are seldom used and are costly to install. Where the 2018 IBC requires Class III standpipe systems, the other proposed amendments to this chapter either eliminate the requirements for Class III standpipe systems or allow for the use Class I standpipe systems in their place. Class III standpipe systems are equipped to accommodate both 2½ inch fire hoses and 1½ inch fire hoses. It is therefore reasonable to amend the definition of Class I standpipe systems to include 1½ inch hose connections because of the proposed amendments allowing the use of Class I standpipe systems in place of Class III standpipe systems.

Subp. 2. Added definitions. Definitions that are not included in chapter 2 of the 2018 IBC are included in this subpart.

Adult day care center or adult day services center. This definition is added because, although the model code uses the term "day care center" for adults, it does not include any definition of an adult day care center. Moreover, the definition is needed because the term "adult day services center" is used in the proposed rule, because this term is preferred by the Minnesota Department of Human Services ("DHS"). Adding this definition will

clarify that an "adult day services center" and a "day care center for adults" mean the same thing.

The substance of the proposed definition is consistent with both DHS rules and the fire code. The current fire code definition is in part 7511.0202, which states in pertinent part:

ADULT DAY CARE CENTER. A facility, licensed by the Department of Human Services under Minnesota Rules, parts 9555.9600 to 9555.9730, that provides a program of adult day care services to functionally impaired adults for periods of less than 24 hours per day in a setting other than a participant's home or the residence of the facility's operator.

Simultaneously with this rulemaking, the department is proposing to amend this provision of the fire code to include the phrase "adult day services center." The substance of both the proposed building code definition and the current fire code definition is from the following definition in a DHS rule, Minnesota Rule part 9555.9600, subp. 4:

> Subp. 4. **Adult day care center, adult day services center, or center.** "Adult day care center," "adult day services center," or "center" means a facility that provides adult day care or adult day services to functionally impaired adults on a regular basis for periods of less than 24 hours a day in a setting other than a participant's home or the residence of the facility operator.

It is reasonable for the definitions to be consistent between the state building code, the state fire code, and the rules of the licensing agency (DHS).

Code. This definition is amended to delete the phrase "For purposes of this chapter." This phrase is unnecessary and could cause confusion because the word "chapter" is used in the IBC to mean the IBC chapter.

General evacuation signal. A general evacuation signal is a signal that is to be provided to building occupants in the event of emergency or fire. Section 907 of the 2018 IBC uses the phrase "general evacuation signal," but that phrase is not defined in section 907 or in Chapter 2 of the 2018 IBC. A definition is therefore needed. "General evacuation signal" is defined as the fire alarm system annunciation at the fire control unit, which begins occupant notification upon activation. This definition is reasonable because it is consistent with the requirements for occupant notification systems located in section 907.5 of the 2018 IBC.

1305.0302 CARE FACILITY CLASSIFICATIONS.

IBC Table 302.2, Care facilities. This table provides classifications for the various types of licensed, registered, and unlicensed care facilities for application and use of the Minnesota Building Code and is being revised for consistency with changes to the 2018 IBC and the licensing provisions of MDH and DHS. The current table was added during the adoption of the 2012 IBC to incorporate the occupancy classification portion of a publication entitled "*Quick Reference Guide to Care Facilities in Minnesota*" that was developed by the Department in cooperation with appropriate staff from, MDH, DHS, and the DPS State Fire Marshal Division. This was necessary because MDH, DHS, or both agencies license many of the care facilities identified in this table. Building officials have struggled in the past with correctly classifying these facilities because the national model codes are not consistent with MDH or DHS licensing provisions. Proper occupancy classifications are based on the number of care recipients permitted by the classification, the capabilities of those care recipients to respond during emergencies, and permitted uses within a dwelling unit. As licensed care facilities, each may or may not be subject to additional construction requirements as determined by the appropriate licensing agency, which can be overlooked if code officials improperly classify the use of the building. Without clear guidance, building officials may place these facilities in a more restrictive occupancy classification than is intended by statute or rule.

The 2015 IBC contains Condition 1 and Condition 2 sub-categories for occupancy Groups I-1, I-2 and R-4. *See* IBC sections 308.2 and 310.5. These conditions were not in the 2012 IBC.[11] Both Condition 1 and Condition 2 for occupancy Groups I-1 and R-4 include buildings where all persons are receiving custodial care. Condition 1 for Group I-1 and R-4 occupancies includes buildings whose occupants are capable of appropriately responding to an emergency situation and self-preservation without assistance. On the other hand, no one in an I-2 (hospital) occupancy is assumed to have self-preservation capability. Condition 1 for an I-2 occupancy means there are no patients in emergency care, trauma, surgery, obstetrics, or inpatient stabilization for psychiatric or detoxification treatment. Condition 2 for an I-2 occupancy includes some or all of these care functions. Condition 2 for Group I-1 and R-4 occupancies indicates a building where some occupants may require verbal or

[11] Because these conditions were added as part of the 2015 IBC, they were not incorporated by reference in the current rule.

physical assistance to appropriately respond to emergency conditions and evacuate the building. The table is revised to reflect the addition of the Condition 1 and Condition 2 sub-categories to occupancy Groups I-1, I-2 and R-4.

The column heading entitled "Number or Type of Residents" is changed to "Number or Type of Care Recipients" because several of the facilities listed in the column are not specific to residents but rather those receiving care in the programs. For the same reason and for consistency, the terms "occupants" and "impaired adults" appearing in that column have been changed to "care recipients."

The table is also amended to add "without assistance" following "self-preservation" in several rows, in the "Number or Type of Care Recipients" column. This language is added because the 2018 IBC describes buildings where the occupants are capable of self-preservation without assistance, capable of self-preservation with verbal or physical assistance, or are incapable of self-preservation. Without the addition of "without assistance," building officials may be confused as to whether the facility occupants are expected to be capable of self-preservation without assistance or are capable of self-preservation with verbal or physical help. Similarly, the phrases "all of whom are capable of self-preservation without assistance" and "of which some may require limited assistance for self-preservation" are added for clarification.

The description for Family Child Care Home under Number or Type of Care Recipients is changed by adding footnote number 1. The term "school age" is defined in Minnesota Statutes section 245A.02, subd. 16 (2018). Footnote 1 clarifies the table by referring to the statutory definition.

The age of the children has been changed in the column "Number or Type of Care Recipients" in one of the rows labeled "Child Care (Day Care), Child Care Center < 24 hours per day." Specifically, "< 2.5 years of age" has been changed to "≤2.5 years of age." That's because, in the next row, the age of the children is listed as ">2.5 years of age." Therefore, the earlier row must have been intended to cover children who are equal to 2.5 years of age.

The phrase "and not classified as E" has been added to the column "Number or Type of Residents" in one of the rows labeled "Child Care (Day Care), Child Care Center < 24 hours per day." This is needed to distinguish this row from the earlier row labeled "Child Care (Day Center), Child Care Center < 24 hours per day," which is classified as E.

The parenthetical "Day Services" is added after the general category "Adult Day Care," and the term "Adult Day Care Center" is changed to "Adult Day Services Center." The term "adult day services center" is preferred terminology used DHS. However, the model code sometimes uses the term "adult day care center," so the table has been modified to include both "adult day care" and "adult day services."

The rows in the table for Day Services Facilities are deleted because the category is the same as Adult Day Care (Day Services); the information from the Day Services Facilities rows has been moved to the Adult Day Care (Day Services) rows.

Family Adult Day Services has an added descriptor ("located in care giver's primary residence") because that is a qualifying definition of this type of use. The descriptor is included in the table in order to reduce confusion because the number of qualifying care recipients exceeds the lowest threshold listed for an Adult Day Services Center, which is not required to be located in a care provider's home.

Also in the Family Adult Day Services row, "impaired adults" is changed to "care recipients age 13 and older." There is no definition of "impaired," and the phrase "care recipients" accurately describes the individuals receiving care without the need to define the reason for the care. Also, the term "adults" is inaccurate, because an adult is defined by statute as a person age 18 or older.[12] Some of the care recipients may be over 12 and under age 18 years of age. The phrase "age 13 and older" is added to clarify that care recipients over the age of 12 are classified the same as adults.

Within Adult Day Services, the term "occupants" is changed to "care recipients" since occupants can technically also include support staff, and the phrase "age 13 and older" is added to clarify that care recipients over the age of 12 are classified the same as adults.

In the second row of Adult Day Care (Day Services), the phrase "unless meet criteria for E below" has been added to clarify that, if all of the individuals are capable of preservation without assistance, then the occupancy classification would be E under proposed rule 1305.0308, subp. 4, section 308.5.1.1. This is also the reason that the next row (with occupancy classification E) is added. Similarly, in the fourth row of Adult Day Care (Day Services), the phrase "E if compliant with all of

[12] *See* Minn. Stat. §645.45(3) (2018).

308.5.1.2" is added. This clarifies that, under certain circumstances, Adult Day Care (Day Services) can be classified as E even if it serves both persons capable and not capable of self-preservation without assistance. Because the list of circumstances is long, the table refers to the proposed rule rather than spelling out all the circumstances.

A new row is added to include "Day Training and Habilitation" facilities, which provide vocational training opportunities for persons requiring physical or cognitive support to facilitate the work environment. Staff to program participant ratios are typically 1:6 and are increased to 1:4 when program participants require significant assistance and/or require assistance with self-preservation in the event of an emergency. Because of the high support staff ratios, these facilities are classified as per their primary function which is typically B, business, or F-1 manufacturing, but can be any of the occupancy groups recognized in the model code.

The type of facility labeled "Housing with Services Facility" has been changed to "Housing with Services Establishment" for consistency with the terminology in the second column. The number of adult residents has been changed in the column "Number or Type of Care Recipients" in the last row labeled "Housing with Services Establishment." Specifically, "16 adult residents" has been changed to ">16 adult residents." That's because, in the prior row, the number of adult residents is listed as 6-16. Therefore, the last row must have been intended to cover establishments with more than 16 adult residents.

In two of the rows for Boarding and Lodging facilities, the term "Bed and Breakfast" has been changed to "Lodging facilities." This is needed and reasonable because "bed and breakfast" is commonly understood to include breakfast. Because these facilities may not provide breakfast, the more general term "lodging facilities" avoids confusion.

On two rows of the chart, the number of care recipients has been changed from "< 5 residents" to "≤ 5 residents": the "Boarding Care" row for R-3 dwelling units, and the "Chemical Dependency and Mental Health Treatment Programs" row for R-3 dwelling units. These amendments are for clarification. In each case, the next row applies to 6-16 residents. Therefore, the amended line must apply to 5 residents.

The rows that are labeled "Chemical Dependency Treatment Programs" in the current rule are changed to "Chemical Dependency and Mental Health Treatment Programs." This is a clarification rather than a substantive change. In the current code, Mental Health Treatment Programs fall under the umbrella of Supervised Living Facilities, Class A, which have the same occupancy criteria as Chemical Dependency Treatment Programs. *See* current part 1305.0302.

In the last two rows labeled "Chemical Dependency and Mental Health Treatment Programs," the phrase "all of whom may not be capable of self-preservation without assistance" has been added. This is consistent with IBC sections 308.2.2 and 310.5.2.

The final three rows of the table are added in order to create a more comprehensive table. The information on these three rows is from the 2018 IBC, Sections 304.1 and 308.3, as amended by this proposed rule.

1305.0308 SECTION 308, INSTITUTIONAL GROUP I.

Subpart 1. IBC section 308.2, Institutional Group I-1. This subpart is amended by renumbering the IBC section references because the corresponding sections were renumbered in the 2018 IBC. The phrase "and its subsections" is added for clarity. The phrase "custodial care" is amended to "custodial care services," and the word "homes" is added after "Boarding care" for consistency with the Minnesota State Fire Code. *See* Minnesota Rule 7511.0202, definition of Occupancy Classification, Group I-1.

A sentence is added to clarify that subsections 308.2.1, 308.2.2, and 308.2.3 are unchanged from the model code. The current rule language amending sections 308.3.1 and 308.3.2 is no longer needed. The current rule 308.3.2 is now covered in model code section 308.2.3. The current rule 308.3.1 is now rewritten as 308.2.4, discussed below.

308.2.4, Five or fewer persons receiving custodial care. Section 308.2.4 in the 2018 IBC is comparable to section 308.3.1 in the current rule. The existing section 308.3.1 is therefore proposed to be deleted and renumbered as section 308.2.4 for consistency with the 2018 IBC. The phrase in the current rule "such as the above" has been deleted because it is unnecessary. The phrase "such care" has been changed to "custodial care" for clarity.

Subp. 2. IBC section 308.3, Institutional Group I-2. This subpart is amended by renumbering the IBC section references because the corresponding sections were renumbered in the 2018 IBC. The other changes to the first sentence and to section 308.3 are for clarity. A sentence has been added at the end to clarify that subsections 308.3.1, 308.3.1.1 and 308.3.1.2 of the model code are not amended.

308.3.2, Five or fewer persons receiving care. The phrase "such as above" is deleted because it is unnecessary. The phrase "such care" has been changed to "care consistent with Group I-2 occupancies" for clarity.

Subp. 4. IBC section 308.5, Group I-4, day care and day services facilities. Almost all of the language in this subpart is new. One sentence in proposed section 308.5.4 is in current part 1305.0308, subp. 4.

308.5, Group I-4, day care and day services facilities. The first paragraph of this first section is comparable to the model code and almost identical to the fire code. *See* Minn. R. 7511.0202, definition of "occupancy classification," group I-4. The only substantive change from the current fire code language, which is also included in proposed amendments to the fire code, is to update references to adult "day care" to "day services."

308.5.1, Classification as Group E. This introductory sentence is needed because the specific classification requirements have been divided into three subsections, 308.5.1.1 through 308.5.1.3.

308.5.1.1, Adult day services centers serving only persons capable of self-preservation. This subsection has been added to coordinate with the Minnesota State Fire Code, Minnesota Rules, chapter 7511. The Minnesota State Fire Code allows adult day services facilities to be classified as Group E occupancies when all persons served at the facility are capable of self-preservation. *See* Minnesota Rules, part 7511.8100, IFC section 8102.1.1. The language of proposed rule 308.5.1.1 is comparable to this provision of the fire code.

308.5.1.2, Adult day services centers serving both persons capable and persons not capable of self-preservation. This subsection has been added to coordinate with the Minnesota State Fire Code, Minnesota Rules, chapter 7511. The Minnesota State Fire Code allows some adult day services facilities to be classified as Group E occupancies when at least 50 percent of the persons served at the facility are capable of self-preservation. *See* Minnesota Rules, part 7511.8100, IFC section 8102.1.3. In addition, the rooms where adult day services are provided must be on the level of exit discharge and the evacuation area must be easily accessible without use of stairs. The proposed rule as well as proposed amendments to the fire code would also require an automatic fire alarm system in the hazardous areas. Proposed section 308.5.1.2 allows an adult day services facility to be classified as a Group E occupancy rather than an Institutional Group I-4, day services facility that has more stringent life-safety requirements. It is reasonable to allow less stringent life-safety protections where at least half of those cared for at the facility are capable of self-preservation without assistance, the evacuation area is easily accessible, and there is an automatic fire alarm system.

308.5.1.3, Child day care. This proposed subsection is added to specify the requirements for child day care facilities to be classified as Group E occupancies rather than Group I-4 occupancies. A child day care facility classified as a Group E occupancy has less stringent life-safety requirements than a child day care facility classified as a Group I-4 occupancy. A child day care facility classified as Group E is limited in the number of children receiving care and must be on the level of exit discharge. Each room providing care must have an exit door directly to the exterior allowing for rapid evacuation in the event of an emergency. The proposed requirements for the classification of a child day care facility as a Group E occupancy are the same as the requirements in the 2018 IBC, section 308.5.1. The 2018 IBC requirements have been reformatted in the proposed rule as a list, for clarity.

A sentence is added at the end to clarify that model code sections 308.5.2 and 308.5.3 are not amended.

308.5.4, Five or fewer persons receiving care in a dwelling unit. This subpart is amended by renumbering the IBC section reference because the corresponding section was renumbered in the 2018 IBC. The language of the rule part is amended by deleting "a facility such as above" and replacing it with "adult day services or child day care" for clarity. The 2018 IBC is modified by specifying that adult day services or child day care located in a one- or two-family dwelling or townhouse must be constructed in accordance with either the IBC or the International Residential Code ("IRC"). This is consistent with the language of the IBC. However, the proposed rule adds the requirement that, if constructed in accordance with the IRC, the dwelling must have an automatic fire sprinkler system installed when required by section 903.2.8 of the IBC. This is a needed and reasonable life-safety precaution, as discussed below.

The ICC produces two model documents for the general regulation of building construction, the IBC and the IRC. If a jurisdiction adopts only the IBC, then the provisions for one-family dwellings, two-family dwellings and townhouses that are normally in the scope of the IRC must then be included in the IBC adopted by that jurisdiction. However, Minnesota adopts both the IRC with amendments (Chapter 1309), and the IBC with amendments (Chapter 1305). Many small licensed adult or child day care facilities are located in residential dwellings constructed to the requirements of the IRC. Dwellings in Minnesota that are constructed to the requirements of the IRC are not required to have an automatic fire sprinkler system, because Minnesota does not adopt the sprinkler

requirement contained in the IRC for all one- and two-family dwellings and townhouses. It is reasonable to allow adult or child day care facilities serving five or fewer persons to be located in a dwelling constructed to the requirements of the IRC due to the lower costs of construction for buildings built to that code. It is reasonable to cross-reference section 903.2.8 because that section specifies when sprinklers are required in Group R occupancies.

1305.0310 SECTION 310, RESIDENTIAL GROUP R.

Subp. 1. IBC section 310.1, Residential Group R. This subpart is amended by renumbering the IBC section references because the corresponding section references are renumbered in the 2018 IBC. The existing language referencing sections 310.5 and 310.6 is deleted and replaced with an exception that refers to Table 302.2. Table 302.2 coordinates the IBC residential occupancy classifications with the licensed facility classifications of MDH and DHS. The current amendment to Section 310.1 acknowledges the exclusion of buildings regulated by the International Residential Code, as amended by the chapter 1309 (the Minnesota Residential Code). However, the current rule incorporates allowances for R-3 and R-4 occupancies contained in sections 310.5 and 310.6 to be constructed in accordance with chapter 1309 when permitted as licensed uses by MDH or DHS. The proposed rule rephrases the amendment to Section 310.1 as an exception and provides more specific information. This amendment is reasonable because it clarifies what types of care facilities may be built to the requirements of chapter 1309. It is reasonable to cross-reference section 903.2.8 because that section specifies when sprinklers are required in Group R occupancies.

A sentence is added at the end of this section stating that residential occupancies are classified according to subsections 310.2 to 310.5. This is needed for readability and clarity.

IBC section 310.2, Residential Group R-1. Section 310.2 in the current rule is deleted because it is not necessary. Section 201.1 of the 2018 IBC states: "unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter." Therefore, all the definitions in chapter 2 apply throughout the code unless otherwise specified. It is unnecessary to state that chapter 2 contains definitions.

Section 310.2 in the 2018 IBC addresses Residential Group R-1 occupancies, which was addressed by section 310.3 in the 2012 IBC. Section 310.3 in the current rule is therefore renumbered 310.2. The current rule contains language in the R-1 occupancy for "bed and breakfast facilities with six or more guest rooms." It also includes language redirecting "bed and breakfast facilities with fewer than six guest rooms" to the R-3 occupancy. The 2012 IBC had no language addressing bed and breakfast facilities or other types of smaller lodging facilities.

The 2015 IBC model code introduced a new definition for "lodging houses" that parallels what Minnesota allowed in the 2015 Minnesota Building Code for bed and breakfast facilities. The term lodging house eliminated the "breakfast" portion which has little to do with the greatest hazards associated with providing overnight guest accommodations, and clarified that the allowance to the R-3 occupancy was specific to facilities where at least one person is a permanent resident. The proposed rule eliminates the term "bed and breakfast facility" wherever it occurs, in favor of "lodging house" because "bed and breakfast" is not a defined term and "lodging house" is now defined. "Lodging House" is defined in the 2018 IBC as: "A one-family dwelling where one or more occupants are primarily permanent in nature and rent is paid for guest rooms." The 2018 IBC categorizes lodging houses with five or fewer guest rooms and 10 or fewer occupants as an R-3 occupancy. The proposed new language is needed for clarity because the 2018 IBC does not specifically provide guidance for lodging houses with more than five guest rooms or with more than 10 guest accommodations. The amendment to Section 310.2 is necessary to clarify that these larger lodging house facilities are to be classified as an R-1 occupancy and to be consistent with the application of the current Minnesota amendment. The language redirecting bed and breakfast facilities with fewer than six guest rooms to the R-3 occupancy is eliminated from the R-1 occupancy list because language in now included in Section 310.4 for the R-3 occupancy group.

However, model code section 310.4 (like the proposed section 310.4 below) includes in the group R-3 classification lodging houses with five or fewer guest rooms and 10 or fewer occupants. It is reasonable to classify larger lodging houses as group R-1 because that is the appropriate classification for larger occupancies with sleeping units where the occupants are primarily transient in nature. The new language is identical to proposed language for the Minnesota State Fire Code. *See* proposed amendment to Minn. R. 7511.0202, definition of "occupancy classification," group R-1.

IBC section 310.3, Residential Group R-2. Section 310.3 is amended for consistency with the list of facilities that are classified as Group R-2 occupancies in the 2018 IBC. The references to "boarding houses (nontransient) with more than 16 occupants" and "monasteries" are deleted and relocated under the heading

titled "congregate living facilities (nontransient) with more 16 occupants." It is reasonable to relocate boarding houses and monasteries under this heading for consistency with the occupancy classifications in the 2018 IBC. Finally, a hyphen is added to "time-share" to correct a spelling error in the current rule.

IBC section 310.4, Residential Group R-3. Section 310.4 is amended for consistency with the 2018 IBC by reformatting the section and including additional residential purposes. The references to boarding houses are deleted and relocated under headings appropriate to their congregate living facility type. Boarding houses with 16 or fewer nontransient occupants are located under "congregate living facilities (nontransient) with 16 or fewer occupants." Boarding houses with 10 or fewer transient occupants are relocated under the "congregate living facilities (transient) with ten or fewer occupants" heading. The listing for "buildings that do not contain more than two dwelling units" is added because this language is in model code section 310.4. Dormitories, fraternities, sororities, convents, and monasteries are added under the heading "congregate living facilities (nontransient) with 16 or fewer occupants." It is reasonable to include those types of use under that heading because they are congregate living facilities and may have fewer than 16 occupants. This is consistent with the language in the 2018 IBC. The words "two or fewer" are added to "Dwelling units in mixed occupancy buildings" because this subsection is limited to R-3 residential occupancies. A mixed occupancy building with more than two dwelling units would be classified as an R-2 residential occupancy. *See* proposed rule 1305.0310, amending section 310.3 of the IBC. The added language on lodging houses is identical to the language in the 2018 IBC.

The final sentence of section 310.4 is deleted and relocated to section 420. Section 420 addresses special detailed requirements based on use and occupancy for Groups I-1, R-1, R-2, R-3, and R-4 occupancies. It is reasonable to modify section 420 to include the language cross-referencing the Minnesota Rules, chapter 1309, durability requirements for dwellings because chapter 4 addresses special requirements and is where designers and other code users look for other special requirements based on use and occupancy.

IBC section 310.4.1, Care facilities within a dwelling. This item is amended by renumbering the item to coordinate with the renumbering of the 2018 IBC. For clarity, a sentence is added at the end stating that subsection 310.4.2 remains unchanged.

IBC section 310.5, Residential Group R-4. This item is amended by renumbering the item to coordinate with the renumbering of the 2018 IBC. Also, the sentence regarding capability of self-preservation is deleted, and is replaced with a sentence at the end specifying that the buildings will be classified as either condition 1 or 2. This change is needed because, in the 2018 IBC, there are differences in the two conditions regarding the amount of assistance needed to evacuate a building in the event of an emergency. Individuals receiving custodial care in buildings classified as condition 1 are capable of evacuating without any assistance. *See* section 310.5.1 of the 2018 IBC. Individuals receiving custodial care in buildings classified as condition 2 may need limited verbal or physical assistance to evacuate. *See* section 310.5.2 of the 2018 IBC.

1305.0402 SECTION 402, COVERED MALL AND OPEN MALL BUILDINGS.

Subpart 1. IBC section 402.4.2.2.2, Property lines. Repeal. This subpart is repealed because the 2018 IBC requirements include provisions for property lines in malls. Section 706.1.1, exception 1, of the 2018 IBC specifically addresses openings in party walls separating anchor buildings and the mall and makes allowances for openings per Section 402.4.2.2.1. Section 402.4.2.2.1 allows the openings with building code related conditions. The 1305 TAG determined that these provisions in the model code adequately address the safety concerns.

Subp. 3. IBC section 402.7.2, Smoke Control. This subpart is amended to correct a spelling error by deleting "postfire" and replacing it with "post-fire." Also, the cross-reference at the end of the rule is changed to reflect the renumbering of the 2018 IBC.

1305.0403 SECTION 403, HIGH-RISE BUILDINGS.

Subp. 3. IBC section 403.4.8.3, Standby power loads. This subpart is amended by renumbering section reference numbers to coordinate with renumbering changes made to the 2018 IBC.

1305.0406 SECTION 406, MOTOR VEHICLE-RELATED OCCUPANCIES.

Subpart 1. IBC section 406.2.4, Floor surface. This subpart is amended by renumbering section reference numbers to coordinate with the renumbering of the 2018 IBC.

1305.0407 SECTION 407, GROUP I-2.

Subpart 1. IBC section 407.2.1, Spaces open to the corridor. This language is the existing language in 1305.0407. It has been numbered as subpart 1 because of the need to add additional subparts. Also, the phrase

"automatic fire detection" has been changed to "automatic smoke detection." These spaces are equipped with automatic sprinkler systems, based on requirements elsewhere in the IBC. An automatic sprinkler system is a type of automatic fire detection system that activates based on an increase in temperature. Automatic smoke detection detects smoke and therefore provides additional life safety protection. It is therefore reasonable to require automatic smoke detection in addition to the sprinkler system.

Subp. 2. IBC section 407.4.4.5.1, Area. The first sentence of the proposed section 407.4.4.5.1 is identical to the 2018 IBC. The exception to section 407.4.4.5.1 of the 2018 IBC is modified to add the requirement in proposed item 2 of the exception. Specifically, the exception would only apply in the described Group I-2 occupancies if the sleeping rooms are arranged to allow visual supervision by care providers. This proposed modification of the exception promotes life safety and is consistent with MDH's requirements pursuant to the NFPA 101 Life Safety Code, which that agency enforces. *See* Minn. Stat. § 144.50, subd. 6(c) (2018); Minn. R. 4664.0370, subp. 1(A) (2017). The modifications are reasonable to avoid conflicting requirements between the Minnesota Building Code and MDH.

Subp. 3. IBC Section 407.4.4.5.2, Exit access. The language of Section 407.4.4.5.2 of the 2018 IBC is not modified but included to provide context for subsections 407.4.4.5.2.1 and 407.4.4.5.2.2. Subsection 407.4.4.5.2.1 requires that a sleeping room or care suite of more than 1,000 square feet located in a Group I-2 occupancy has one of the means of egress from the suite directly to a corridor or exit. "Corridor" is a defined term: "An enclosed exit access component that defines and provides a path of egress travel." 2018 IBC, section 202. Subsection 407.4.4.5.2.2 requires that an exit access door, providing a path from the suite to the exit, must be less than 100 feet from any point in the sleeping suite and the exit must be less than 200 feet from any point in the sleeping suite. These proposed modifications promote life safety and are consistent MDH's requirements pursuant to the NFPA 101 Life Safety Code, which that agency enforces. *See* Minn. Stat. § 144.50, subd. 6(c) (2018); Minn. R. 4664.0370, subp. 1(A) (2017). The modifications are reasonable to avoid conflicting requirements between the Minnesota Building Code and MDH.

Subp. 4. IBC section 407.4.4.6.1, Area. This section is modified so care suites in Group I-2 occupancies that do not contain sleeping rooms are limited to 10,000 square feet in area. This proposed modification promotes life safety and is consistent with MDH's requirements pursuant to the NFPA 101 Life Safety Code, which that agency enforces. *See* Minn. Stat. § 144.50, subd. 6(c) (2018); Minn. R. 4664.0370, subp. 1(A) (2017). The modification is reasonable to avoid conflicting requirements between the Minnesota Building Code and MDH.

Subp. 5. Section 407.4.4.6.2, Exit access. The first sentence of proposed section 407.4.4.6.2 is identical to the model code. The proposed rule adds a second sentence that requires a care suite, without a sleeping room, where at least two exit access doors are required, to have at least one of those exits directly to a corridor or exit. Proposed subsection 407.4.4.6.2.1 requires that an exit access door be less than 100 feet from any point in the care suite and that the exit be less than 200 feet from any point in the care suite. This proposed modification promotes life safety and is consistent with MDH's requirements pursuant to the NFPA 101 Life Safety Code, which that agency enforces. *See* Minn. Stat. § 144.50, subd. 6(c) (2018); Minn. R. 4664.0370, subp. 1(A) (2017). The modification is reasonable to avoid conflicting requirements between the Minnesota Building Code and MDH.

Subp. 6. IBC section 407.5.1, Smoke compartment size. Section 407.5.1 of the 2018 IBC is modified to eliminate the exceptions to this section allowing for larger smoke compartments in Group I-2 occupancies if certain criteria are met. Smoke compartments are a space enclosed by smoke barriers that prevent smoke from moving into a space. Smoke compartments are necessary in care suites because of the varying self-preservation capabilities of patients. By modifying the code sections to eliminate the exceptions, the smoke compartments cannot have an area larger than 22,500 square feet. Restricting the size of the smoke compartments promotes life safety, and is necessary for consistency with MDH's requirements for licensed facilities pursuant to the NFPA 101 Life Safety Code, which that agency enforces. *See* Minn. Stat. § 144.50, subd. 6(c) (2018); Minn. R. 4664.0370, subp. 1(A) (2017). The modification is reasonable to avoid conflicting requirements between the Minnesota Building Code and MDH.

1305.0408 SECTION 408, GROUP I-3

Subp. 3. IBC section 408.9, Windowless buildings. The 2018 IBC includes section 408.9 addressing windowless buildings. The 2012 IBC did not include a section with requirements for windowless buildings. The introductory language "by adding a new subsection" is deleted and replaced with "is amended" because existing section 408.9 of the 2018 IBC is amended by this subpart. Also, the sentence is revised to correct a spelling error in the first sentence.

1305.0410 SECTION 410, STAGES, PLATFORMS AND TECHNICAL PRODUCTION AREAS

IBC section 410.7, Standpipes. This rule part is added to delete the 2018 IBC requirement that stages be equipped with standpipe systems that comply with section 905. Current rule 1305.0905, subp. 7, deletes the requirement in the 2012 IBC that stages be equipped with a Class III standpipe system. Because section 410.7 of the 2012 IBC remained in the code, however, some building officials interpreted the general provisions of section 905 as applying to stages, and therefore required stages to be equipped with a Class I standpipe system. The deletion of section 410.7 of the 2018 IBC clarifies that standpipe systems are not required for stages. This is needed and reasonable to provide consistent application and uniform enforcement of the code.

1305.0413 SECTION 413, COMBUSTIBLE STORAGE.

IBC section 413.3, Fire protection of floors. This subpart is amended by requiring Group R-4 occupancies used for combustible storage to comply with the requirements of the existing amendment to this chapter for the fire protection of floors. Group R-4 occupancies are required to meet all the requirements for Group R-3 construction unless otherwise stated in this code. The existing amendment to this section requires Group R-3 occupancies used for combustible storage to have fire protection of floors. Because Group R-4 occupancies are required to meet the code requirements for Group R-3 construction, it is reasonable to require that Group R-4 occupancies used for combustible storage must also have fire protected floors. The proposed amendments to this rule also renumber section 420.6 to section 420.12 for consistency with renumbering of the 2018 IBC.

1305.0420 SECTION 420, GROUPS I-1, R-1, R-2, R-3 and R-4.

Group R-4 occupancies are added to the rule part headnote because proposed subparts 1and 11 include construction requirements for Group R-4.

Subpart 1. IBC section 420.1, General. This subpart is amended by requiring Group R-4 occupancies to comply with the requirements of this section. Because Group R-4 occupancies are required to meet the code requirements for Group R-3 construction, it is reasonable to specify that Group R-4 occupancies are required to meet the requirements of section 420 of the 2018 IBC. Section 420.1 of the IBC is modified by changing the section references "420.1 through 420.6" to "420.1 through 420.12." The 2018 IBC section 420 has been revised to include additional sections. As a result, the existing amendment adding section 420.6, is renumbered to section 420.12. A new section, 420.11, is added to address the durability requirements for Group R-3 and R-4 occupancies previously located in part 1305.0310. The notation that "[s]ections 420.2 to 420.5 remain unchanged" is deleted because it is unnecessary.

Subp. 1a. IBC section 420.7, Group I-1 assisted living housing units. The first sentence and items 1, 2 and 6 are identical to section 420.7 of the 2018 IBC. Items 3, 4, and 5 of Section 420.7 of the 2018 IBC are modified to replace "automatic fire detection system" with "automatic smoke detection." An automatic sprinkler system is an automatic fire detection system because the sprinkler system activates by detecting the heat of the fire. Section 420.4 of the 2018 IBC, which is not proposed for amendment, requires an automatic sprinkler system throughout Group I-1 occupancies. Section 420.7 is proposed for amendment to clarify that, for life safety reasons, automatic smoke detection is required in Group I-1 assisted living occupancies in addition to an automatic sprinkler system.

Subp. 1b. IBC section 420.10, Group R-2 congregate living cooking facilities. Section 420.10 of the 2018 IBC concerns only domestic cooking appliances for use by residents of Group R-2 college dormitories. The proposed rule modifies section 420.10 to allow all Group R-2 congregate living cooking facilities to meet requirements for domestic cooking appliances located in sections 420.10.1 and 420.10.2. The 2018 IBC requirements for domestic kitchen appliances located in Group R-2 college dormitories are more lenient than the requirements for domestic kitchen cooking facilities and appliances located in other Group R-2 congregate living facilities. Congregate living facilities are classified in the Group R-2 occupancy category due to their similar uses and risk hazards. Because Group R-2 congregate living facilities have similar uses and risk hazards, it is reasonable that all Group R-2 congregate living facilities have the same requirements for domestic cooking facilities and appliances. Having the same requirements for domestic cooking facilities and appliances for all Group R-2 congregate living facilities will lead to more uniform enforcement and application of code requirements for Group R-2 congregate living facilities.

In proposed section 420.10.1, the proposed rule changes "domestic cooking appliances" to "installed domestic cooking appliances." This is reasonable because the building code can only regulate items installed in the building, not portable items such as portable microwaves and coffee makers.

Section 420.10.2 is identical to the 2018 IBC.

Subp. 2. This subpart adds two new subsections to IBC section 420. Both of these subsections are comparable to current Minnesota rules.

IBC sections 420.11, Group R-3 and R-4 durability. The requirements in this new subsection for Group R-3 occupancies are currently located in Minnesota Rules, part 1305.0310, amending section 310.5 of the 2012 IBC (renumbered 310.4 in the 2018 IBC). This current rule affects both Group R-3 and R-4 occupancies because current rule 1305.0310, amending section 310.6 of the 2012 IBC (renumbered 310.5 in the 2018 IBC), states: "Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code." Proposed subpart 2 requires Group R-3 and R-4 occupancies to meet certain building durability requirements. The current rule directs code users to specific durability and moisture requirements for residential dwellings that are located in Minnesota Rules, Chapter, 1309, the Minnesota Residential Code (MRC), and not the IBC. The MRC is intended to be used for construction of one-family and two-family dwellings and townhouses. Therefore, some of the required durability and moisture requirements for these structures have been located in the MRC. Because Group R-3 and R-4 occupancies in the IBC are licensed facilities that are one-family and two-family dwellings and townhouses, designers must be directed to the durability provisions that are located in the MRC. Because these durability requirements are detailed special requirements based on occupancy and use for Groups R-3 and Group R-4 that are licensed facilities, it is reasonable to relocate these requirements to this rule part (instead of current part 1305.0310). This rule part addresses special detailed requirements for Groups I-1, R-1, R-2, R-3, and R-4. Designers look to this rule part for information regarding special requirements for Group R-3 and Group R-4 occupancies rather than part 1305.0310, which describes what uses of dwellings are classified as Group R.

The proposed subpart clarifies that the durability requirements apply to both Group R-3 and R-4 occupancies. Furthermore, the proposed rule changes the numbers of the cross-references for the durability requirements because of the renumbering of sections in the 2018 IRC. This is consistent with amendments being proposed to chapter 1309.

IBC section 420.12, Fire protection of floors. This subsection is the same as the language in current subdivision 2 of part 1305.0420. This subsection is renumbered to correspond with the new subsection numbers in the 2018 IBC.

1305.0423 SECTION 423, STORM SHELTERS.

Subparts 1 and 2. IBC section 423.3, Critical emergency operations, and IBC section 423.4, Group E occupancies. These two new subparts modify sections 423.3 and 423.4 of the 2018 IBC. In both subparts, the model code language referencing Figure 304.2(1) of the ICC 500 (Standard on the Design and Construction of Storm Shelters) is replaced with a list of counties in Minnesota where the speed for tornadoes is 250 miles per hour. Figure 304.2(1) of the ICC 500 is a map of United States illustrating wind speed for tornadoes in different areas of the country. The map is difficult to interpret because wind speed for tornados varies within the state and the map does not show distinct geographic boundaries for where tornado wind speed changes. As a result, it is difficult for code users to interpret where in the state tornado wind speeds are 250 miles per hour. Replacing the reference to Figure 304.2(1) of the ICC 500 with a list of counties provides clarity as to what counties are affected by tornadoes with speeds of 250 miles per hour.

In subpart 1, the language of section 423.3 of the 2018 IBC is reformatted to include subsections 423.3.1 and 423.3.2. This makes the subpart easier to understand. In subpart 2, the language is reformatted for clarity. The exceptions are identical to the exceptions in the 2018 IBC.

A sentence is added at the end of subpart 2 to clarify that IBC sections 423.4.1 and 423.4.2 are not modified.

1305.0429 SECTION 429, GROUP E OCCUPANCIES.

This rule part is renumbered from 1305.0425 to 1305.0429 because of numbering changes made to the 2018 IBC. The section reference numbers are amended to coordinate with changes made to the 2018 IBC. With one exception, the language and content of this rule part remain unchanged. The only change is in the last sentence of proposed section 429.2.2. The current rule refers to "this subpart." Because this is language that is being substituted into the model code, the rule should refer to this "section;" portions of the IBC are not referred to as "subparts." This corrects an error in the current rule.

1305.0503 SECTION 503, GENERAL BUILDING HEIGHT AND AREA LIMITATIONS

IBC section 503.1.4.1, Enclosures over occupied roof areas. This new rule part modifies section 503.1.4.1 of the 2018 IBC. The first sentence is identical to the 2018 IBC. The 2018 IBC contains one exception, which has been reformatted into exception 1 and 2 for clarity. The proposed rule add two additional exceptions, exceptions 3 and 4. These new exceptions allow taller structures to enclose occupied roof areas and provide better wind protection for occupants. This revision is due

to the climatic conditions in Minnesota. The improved wind protection will allow the roof to be occupied for more of the year. Exception number 3 allows enclosures that are more than 48 inches in height on occupied roofs, when the occupied roof is considered a story of the building and complies with IBC requirements for stories and floor area of a building. IBC requirements for stories and floor area are dependent upon the construction, occupancy classification, and whether there is an automatic sprinkler system installed throughout the building. An occupied roof that complies with the requirements for stories and floor area of a building is equipped with the life-safety features required for buildings of that type and occupancy classification. Exception number 4 allows enclosure walls that are unlimited in height where a standpipe is readily accessible from the roof. Standpipes are a type of rigid water piping in buildings that fire hoses can be connected to and provide firefighters with water supply on higher stories of buildings. These exceptions allow enclosures that are more than 48 inches in height and provide for the comfort of occupants while ensuring the necessary life-safety precautions for a taller enclosure on an occupied roof.

1305.0504 SECTION 504, BUILDING HEIGHT AND NUMBER OF STORIES

Subpart 1. IBC Table 504.3, Allowable building height in feet above grade plane. Table 504.3 is modified by deleting footnote (d) from all occupancies. Footnote (d) addresses existing buildings. Because this table relates only to new buildings, footnote (d) needs to be deleted to avoid confusion. Amending the text of footnote (d) to "Not used" is reasonable to avoid having to re-letter the remaining footnotes.

Subp. 2. IBC Table 504.4, Allowable building height in stories above grade plane. Table 504.4 is modified by deleting footnote (d). Footnote (d) addresses existing buildings. Because this table relates only to new buildings, footnote (d) needs to be deleted to avoid confusion. Amending the text of footnote (d) to "Not used" is reasonable to avoid having to re-letter the remaining footnotes.

1305.0506 SECTION 506, BUILDING AREA

IBC Table 506.2, Allowable area factor in square feet. Table 506.2 is modified by deleting footnote (d). Footnote (d) addresses existing buildings. Because this table relates only to new buildings, footnote (d) needs to be deleted to avoid confusion. Amending the text of footnote (d) to "Not used" is reasonable to avoid having to re-letter the remaining footnotes.

1305.0507 SECTION 507, UNLIMITED AREA BUILDINGS. Repeal.

Section 507 of the 2018 IBC now contains requirements that are comparable to the requirements in current rule 1305.0507. This part is therefore no longer necessary.

1305.0509 SECTION 509, SPECIAL PROVISIONS. Repeal.

Section 509 of the 2012 IBC has been renumbered and amended as Section 510 in the 2018 IBC. The rule is no longer needed because Section 510.2, items 4 and 5, of the 2018 IBC contain requirements comparable to the requirements in current rule 1305.0509.

1305.0603 SECTION 603, COMBUSTIBLE MATERIALS IN TYPE I AND TYPE II CONSTRUCTION.

IBC section 603.1, Allowable materials. This subpart is amended by renumbering existing exception number 26 to exception number 27 to coordinate with renumbering of the 2018 IBC. The existing amendment is modified to extend use of wood above the roof deck from 24 inches to 48 inches. Most membrane and built-up asphalt roof systems require plywood backing as a substrate at the back side of parapets. Increasing the allowable amount of wood from 24 inches to 48 inches above the roof deck makes backing of parapets much easier without requiring transition of materials and corresponds to the modular sizing of plywood panels. The technical advisory group discussed this and concluded that the small additional amount of potential fuel added outside of the building envelope did not appreciably increase the hazard of the roof construction.

1305.0707 SECTION 707, FIRE BARRIERS

IBC section 707.5, Continuity. Section 707.5 of the 2018 IBC is amended to add exception number 3. Exception number 3 does not require the fire barrier to extend through the attic and allows the top enclosure of the fire barrier to be capped at the exterior wall, fire wall, or another fire barrier. Currently, fire barriers are required to extend up to the underside of the roof sheathing through an attic unless the fire barrier is for a stair shaft or elevator shaft. In small enclosures, such as trash shaft access rooms in apartment buildings, the requirement that the fire barrier extend through the roof sheathing results in multiple small enclosed spaces within the attic that are challenging to ventilate and insulate. The difficulty ventilating and insulating these spaces results in moisture accumulating in the attic, making the building less durable. The proposed exception will allow trash chute access rooms and similar spaces to be capped with a fire barrier at the top of the shaft

with a horizontal fire barrier and perimeter fire barrier walls rather than extending the shaft through the attic. The proposed exception to section 707.5 is reasonable because a similar exception exists for elevator and stair shafts that provides sufficient fire protection. *See* 2018 IBC section 707.5, exception 2.

1305.0709 SECTION 709, SMOKE BARRIERS

Subpart 1. IBC section 709.1, General. The first sentence of this section is identical to Section 709.1 of the 2018 IBC. The proposed second sentence is new, and adds a reference to section 909.5.3. Section 909.5.3 describes the technical requirements for smoke barrier installation. It is reasonable to provide a reference to the section describing the technical requirements for the installation of smoke barriers in the section describing the requirements for smoke barriers.

Subp. 2. IBC section 709.5, Openings. This section is amended to add exception number 3 to exempt doors located in smoke barriers within Group I-3 occupancies from complying with the opening protection requirements for smoke barriers. The occupants of Group I-3 facilities are incapable of self-preservation due to the security measures in place at the facility. Group I-3 facilities include jails, prisons, correction centers, and reformatories. The doors within Group I-3 facilities must comply with specific requirements as a security precaution and cannot comply with the requirements of this section for the protection of openings within a smoke barrier. Because Group I-3 facilities have different security requirements for doors than other facilities, the doors in Group I-3 facilities cannot be protected in the same way that other openings in smoke barriers are.

1305.0714 SECTION 714, PENETRATIONS.

Subpart 1. IBC section 714.5.1, Through Penetrations. The existing language of this subpart is deleted and relocated to subpart 3, which will be discussed below. In the proposed new subpart 1, the language of exception number 1 to section 714.5.1 of the 2018 IBC is amended by adding the phrase "not utilized as ducts for conveying air" in the first sentence. The rest of the exception is identical to exception 1 in section 714.5.1 the 2018 IBC. The additional phrase is needed to specify that mechanical ducts used to convey air for the ventilation of a building are not exempt from the requirements for through penetrations of horizontal assemblies. Horizontal assemblies are fire-resistance-rated floor assemblies that are designed to restrict the spread of fire. Electrical, plumbing, and mechanical items, such as conduits, pipes, tubes, ducts, and plumbing, are through penetrations into the horizontal assemblies. These through penetrations can be seen from either side of the floor. The opening for the through penetration of the horizontal assembly must be protected to prevent the spread of fire. Exception number 1 allows through penetrations by steel, ferrous or copper conduits, pipes, tubes or vents to follow an alternative method to protect the opening made in the horizontal assembly from fire. Some designers may incorrectly interpret this exception to include ductwork used to convey air, such as conduits and tubes. An opening in a horizontal assembly allowing for the penetration of ductwork that conveys air requires additional protection to prevent the potential for the spread of fire through the ductwork. It is reasonable to specify that exception number 1 does not apply to ductwork used to convey air because this type of penetration requires extra fire protection. The current code (2012 IBC section 714.1.1) requires this type of extra fire protection; for life safety reasons, it is reasonable to maintain this level of protection in the proposed amendments.

Subp. 2. IBC section 714.5.2, Membrane penetrations. Exception number 1 to IBC section 714.5.2 is amended by adding the phrase "not utilized as ducts for conveying air" in the first sentence. The rest of the exception is identical to exception 1 in section 714.5.2 of the 2018 IBC. As in subpart 1, the additional phrase is needed to specify that mechanical ducts used to convey air for the ventilation of buildings are not exempt from the fire protection requirements for membrane penetrations that are part of a horizontal assembly. Horizontal assemblies are fire-resistance-rated floor assemblies that are designed to restrict the spread of fire. Electrical, plumbing, and mechanical, such as conduits, pipes, tubes, ducts, and plumbing, breach the membrane of the horizontal assembly. By breaching the membrane of the horizontal assembly, these items do not penetrate through the entire floor assembly as to be visible from the other side. By breaching the membrane of the horizontal assembly, the item is contained within the floor assembly and only visible from the side it enters into the floor assembly from. The membrane penetration must be protected so the horizontal assembly may retain its fire-resistance properties to prevent the spread of fire. Exception number 1 allows penetrations through the membrane by steel, ferrous or copper conduits, pipes, tubes or vents to follow an alternative method to protect the opening into the membrane and the horizontal assembly from fire. Some designers may incorrectly interpret this exception to include ductwork used to convey air as conduits and tubes. A penetration of the membrane to allow ductwork that conveys air requires additional protection to prevent the potential for the spread of fire through the ductwork. It is reasonable to specify that exception number 1 does not apply to ductwork used to convey air because this type of penetration requires extra fire protection. The current code (2012 IBC section 714.1.1) requires this type of extra fire protection; for life safety reasons, it is reasonable to

maintain this level of protection in the proposed amendments.

Subp. 3. IBC section 714.5.2, Membrane penetrations. This is the text of the current part 1305.0714, which is proposed to be relocated to subpart 3. This subpart is further amended by renumbering the IBC section references because the corresponding sections were renumbered in the 2018 IBC.

1305.0717 SECTION 717, DUCTS AND AIR TRANSFER OPENINGS.

Subp. 2. IBC section 717.6.1, Through penetrations. IBC section 717.6.1 is amended by renumbering the IBC section references because the corresponding sections were renumbered in the 2018 IBC. The word "a" is deleted in the first sentence to correct a grammatical error.

The first sentence of exception 1 is rephrased for clarity. Item (a) of exception number 1 is amended to clarify the two options for protection of the horizontal assembly from the spread of fire where a duct is within a wall that is either above or below the horizontal assembly. Items that penetrate fire-resistive assemblies (walls, floors, roofs) are traditionally required to be tested to ensure that the penetrating item (conduit, pipe, duct, and plumbing) does not negatively affect the fire-resistive assembly that is being penetrated. The first option is to enclose the duct within the wall both above and below the horizontal assembly. A duct enclosed within the wall does not come in contact with combustibles but the space around the duct must be protected to prevent the spread of fire. The amendment requires the area surrounding the duct, or annular space, within the wall cavity to be filled with fire blocking materials that resist the spread of fire.

The second option does not require the duct to be enclosed within the wall but requires the annular space around the penetrating duct be filled with an approved through-penetration firestop system having both an F rating and a T rating that is equivalent to the rating of the horizontal assembly. The testing agency assigns an F and T rating to the penetrating item. An F rating designates the time frame used to determine the acceptance (1, 2 or 3 hour fire-resistivity) and the T rating determines whether the temperature of the penetrating item gets so hot that it is likely to ignite something combustible that it may be in contact with on the non-fire side of the assembly. The approved through-penetration firestop system must have both an F rating and T rating so the designer knows how long the system can resist fire and how hot the temperature may become.

The amendments to item (a) of exception number 1 clarify the two existing options for preventing the spread of fire through a penetration in a wall for a duct. The amendment to the first option is reasonable because it clarifies that fire blocking is required for the spaces around ducts that are enclosed within the wall. This provides additional fire protection that can slow the spread of fires. The amendment to the second option is also reasonable because it clarifies the requirements for the through-penetration firestop system. These changes clarify existing requirements, which lead to more uniform application and enforcement of the code.

Subp. 3. IBC section 717.6.3, Non-fire-resistance-rated floor assemblies. The first sentence of Section 717.6.3 of the model code is modified to refer to the Minnesota Mechanical Code rather than the International Mechanical Code. It is reasonable to direct readers to the applicable Minnesota code. Items 1 and 2 are identical to Items 1 and 2 in Section 717.6.3 of the 2018 IBC. Item number 3 of section 717.6.3 is modified to keep the 2012 IBC language. Item number 3 in 2018 IBC requires the floor assembly to be constructed from noncombustible materials. It is unnecessary to use noncombustible materials because the duct is protected with an approved noncombustible material and a fire damper is installed in the duct at each floor to close automatically when heat is detected to prevent the spread of fire. It is reasonable not to require the additional expense of constructing the floor from non-combustible materials because there are sufficient other protections to prevent the spread of fire. Other than removing the language requiring the floor to be composed of noncombustible materials, the rest of item 3, including the exception, is substantively the same as item 3 in the 2018 IBC.

1305.0803 SECTION 803, WALL AND CEILING FINISHES.

IBC section 803.3, Heavy timber exemption. This is a new rule part and modifies section 803.3 of the 2018 IBC by deleting the language at the end that requires heavy timber used for interior exit stairways, interior exit ramps, and exit passageways to comply with interior finish requirements. Other portions of building elements constructed from heavy timber are not required to comply with the interior finish requirements. The requirements for interior finish and decorative materials are intended to slow the spread of fire and the development of smoke. Heavy timber has inherent fire resistance qualities that slow the spread of fire. Walls that have fire resistance properties serve as enclosures for interior exit stairways, interior exit ramps, and exit passageways. A fire event that ignites the heavy timber used for the construction of interior exit stairways, interior exit ramps, and exit

passageways will compromise the enclosure whether the requirements for interior finish are adhered to or not. It is reasonable to exempt heavy timber used for interior exit stairways, interior exit ramps, and exit passageways from the interior finish requirements because heavy timber has fire resistance qualities and the enclosure surrounding the interior exit stairways, interior exit ramps, and exit passageways is fire resistant. The proposed amendment will ensure sufficient safeguards against the spread of fire while reducing construction costs.

1305.0806 SECTION 806, DECORATIVE MATERIALS AND TRIM.

IBC section 806.2, Combustible decorative materials. The 2018 IBC and 2018 IFC permit decorative materials to cover 10 percent of the wall or ceiling areas. In current part 7511.0807, subpart 1, the Minnesota State Fire Code permits decorative materials to cover 20 percent of the wall and ceiling areas and does not limit the amount of decorative materials in compliance with NFPA 701 that may cover wall and ceiling areas. The current Minnesota Building Code (chapter 1305) does not contain these amendments addressing combustible decorative materials, and therefore there is a conflict between the Minnesota State Fire Code and the Minnesota Building Code. In order to prevent conflict and confusion between codes, this new part 1305.0806 is proposed, and is identical to the contemporaneous amendments being proposed to part 7511.0807, subpart 1. Both of these proposed rules allow combustible decorative materials to cover 20 percent of the wall or ceiling areas in Groups A, B, E, I, M, and R-1 occupancies and Group R-2 dormitories, which is also permitted by the current Minnesota State Fire Code (rule 7511.0807, subpart 1).

Exception number 1 addresses combustible materials in Group A occupancies. Exception 1 is identical to exception 1 in section 806.2 of the 2018 IBC. A new exception number 2 is added to allow an unlimited amount of suspended decorative materials in existing Group A occupancies. By cross-referencing section 806.4 of the 2018 IBC, exception number 2 requires decorative materials to be flame resistant as determined by NFPA 701 or NFPA 289 flame propagation testing. This amendment is necessary so that existing theaters or auditoriums that are not equipped with an automatic sprinkler system may continue to use decorative materials such as stage curtains. Requiring stage curtains and other decorative materials to be flame resistant as determined by NFPA 701 or NFPA 289 testing is reasonable because it decreases the hazards to life and safety posed by combustible decorative materials while allowing for the use of existing Group A occupancies.

Exception number 2 of the 2018 IBC is renumbered to exception number 3. The only change to the 2018 IBC language is the grammatical correction of the word “ceiling” to “ceilings.”

Exception number 3 of the 2018 IBC is renumbered to exception number 4. The language of the exception is modified to permit Group A and E occupancies, in addition to Group B and M occupancies, to have an unlimited amount of combustible fabric partitions suspended from the ceiling. Under Section 806.4, the combustible fabric partitions must be determined to be flame resistant as determined by NFPA 701 or NFPA 289 flame propagation testing. This amendment is necessary so gymnasiums in Group A and E occupancies may use fabric room dividers. If this amendment is not adopted then gymnasiums are limited to 20 percent of the wall or ceiling area for combustible materials. Fabric partitions used in gymnasiums can easily exceed this amount. Requiring fabric partitions to be flame resistant as determined by NFPA 701 or NFPA 289 testing is reasonable because it decreases the hazards to life and safety posed by combustible fabric partitions while allowing for their use.

Exception number 4 of the 2018 IBC is renumbered to exception number 5. The language is modified from “10 percent limit” to “20 percent limit” because the language in section 806.2 is amended to allow combustible decorative materials to cover 20 percent of the wall or ceiling area. The rest of this exception is identical to exception 4 of the 2018 IBC.

IBC Section 806.2.1, Fixed or movable walls and partitions, paneling, wall pads, and crash pads. Section 806.2 is also modified by adding section 806.2.1. Section 806.2.1 permits fixed or movable walls and partitions, paneling, wall pads and crash pads covering less than 10 percent of the wall or ceiling area to comply with the requirements for decorative materials or furnishings. Fixed or movable walls and partitions, paneling, wall pads and crash pads that cover more than 10 percent of the wall or ceiling area must comply with the requirements for interior finish in section 803. The 2018 IBC requires all fixed or movable walls and partitions, paneling, wall pads and crash pads to comply with the requirements for interior finish without regard to the size of the item and its size relative to the ceiling or floor area. The requirements for interior finish are more restrictive than the requirements for decorative materials. It is reasonable to allow fixed or movable walls and partitions, paneling, wall pads and crash pads that cover 10 percent or less of the wall or ceiling area to comply with the requirements for decorative materials because the interior finish requirements are too restrictive for a small amount of material covering the walls.

The exception to section 806.2.1 allows fixed or movable walls and partitions, paneling, wall pads and crash pads to cover up to 20 percent of the wall or ceiling area in existing buildings if the room or area is protected by an automatic sprinkler system. Existing buildings used for wrestling rooms, gymnasiums, exercise areas, martial arts studios, and other similar purposes often use wall pads that cover more than 10 percent of the wall area. The replacement of wall pads in an average high school wrestling room can cost as much as $30,000 to $40,000. Foam plastic acoustic tiles are commonly used to cover the ceilings in existing buildings and are costly to replace. Adding an exception to allow up to 20 percent of wall or ceiling areas in existing buildings to be covered with fixed or movable walls and partitions, paneling, wall pads and crash pads is reasonable because of the cost of compliance for an existing building that was constructed to the requirements of a previous edition of the code. The requirement that the room or space with fixed or movable walls and partitions, paneling, wall pads and crash pads be protected by an automatic sprinkler system is reasonable because the additional combustible material may pose a hazard to life and safety during a fire and an automatic sprinkler system will ensure occupant safety.

1305.0901 SECTION 901, GENERAL.

IBC [F] section 901.6.3 Fire alarm systems. This rule part is amended by changing the reference section to match the corresponding reference section changed in the model code from 901.6.2 to 901.6.3.

1305.0903 SECTION 903, AUTOMATIC SPRINKLER SYSTEMS.

Subp. 1a. IBC [F] section 903.2.3, Group E. This proposed language is the same as the 2018 IBC, with three differences. Items two and three have been modified to add the word "Whenever" at the beginning. This is for clarification only, and does not change the meaning. Also, the exception to item 2 is modified to clarify that the exterior exit door must discharge at a "*level of exit discharge,*" a defined term, rather than the less clear "ground level." The change is necessary in order to avoid confusion or misinterpretation of the undefined term "ground level." The change is reasonable because the change is consistent with other similar exiting requirements such as for I-4 day care found in section 903.2.6, Exceptions 2 and 3.

Subp. 1b. IBC [F] section 903.2.8, Group R. Subpart 1a in the current rule is renumbered subpart 1b to maintain the numerical order of the sections being amended. In subpart 1b, IBC section 903.2.8 is amended to coordinate with the Minnesota State Fire Code. The sentence in the current rule indicating that firewalls, party walls, or attached multiple fire-resistive exterior walls only create separate buildings where providing separation from occupancies other than Group R is proposed for deletion. This change is necessary because the current language forces sprinkler requirements for residential uses across property lines. Furthermore, the purpose of fire walls is to create separate buildings to contain and limit the spread of fire to compartments. The change is reasonable because the model code generally allows creating fire compartments as a passive design method to prevent the spread of fire as an alternative to installing automatic sprinkler systems throughout. The passive fire control technique is no less valid for residential occupancies than for other uses.

Exception 1 has been rephrased to avoid the ambiguity of the phrase "combined fire areas." Exception 2 has been modified to clarify that the exception is not applicable if DHS licensing requirements mandate a sprinkler system; such a system would be mandated by DHS in day care uses.

IBC [F] section 903.2.8.1, Group R-3. This subsection is reformatted to be exclusive to Group R-3 and clarifies that an NFPA 13, 13R or 13D automatic sprinkler system is acceptable in this occupancy. The change is necessary to separately clarify differing requirements for R-4 occupancies because the model code added Condition 1 and Condition 2 sub-categories under the R-4 occupancy group and the conditions have different sprinkler requirements. Also, the current rule requires that the sprinkler system comply with section 903.3.1.3. Those requirements are less onerous that the requirements of either section 903.3.1.2 or 903.3.1.1. It is reasonable that, if the less onerous requirements are acceptable, the sprinkler systems that comply with more stringent requirements (903.3.1.2 or 903.3.1.1) should also be acceptable.

IBC [F] section 903.2.8.2, Group R-4. The current subsection specific to State Licensed Facilities (subsection 903.2.8.2 in the current rule) is renumbered to 903.2.8.3. A new subsection 903.2.8.2 is added to be exclusive to Group R-4 and to clarify that an NFPA 13 or 13R automatic sprinkler system is acceptable in this occupancy. There is also an added exception for newly created Condition 1 which allows use of an NFPA 13D automatic sprinkler system. Since R-4, Condition 1 has an exception to allow the NFPA 13D, then the only remaining occupancy in the R-4 category is R-4, Condition 2, which serves some people not capable of self-preservation. The higher level of sprinkler protection afforded by the NFPA 13 and the NFPA 13R systems is required because this vulnerable group needs more protection.

IBC [F] section 903.2.8.3, State licensed facilities. This subsection is renumbered from 903.2.8.2 to 903.2.8.3.

IBC [F] section 903.2.8.4, Residential hospice facilities. This subsection is renumbered from 903.2.8.3 to 903.2.8.4. This section overwrites the model code section pertaining to care facilities which is covered by amended section 903.2.8.3. The proposed amendments to the exception are for clarity, with no substantive change.

Subp. 1c. IBC [F] section 903.2.9, Group S-1. This proposed language is identical to IBC section 903.2.9 except that item 5 is deleted. Item 5 addresses Group S-1 occupancies that are used to store upholstered furniture and mattresses. This situation is addressed in a separate sub-section, 903.2.9.3. The last sentence clarifies that subsections 903.2.9.1 and 903.2.9.2 are not modified.

903.2.9.3 Group S-1 upholstered furniture and mattresses. Section 903.2.9, item 5, of the 2018 IBC requires an automatic sprinkler system if the following condition exists: "A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m^2)." Instead of incorporating item 5, the proposed rule adds section 903.2.9.3. The first sentence of the proposed section is comparable to item 5. The exception is added to provide a code compliance path that does not require the sprinkling of one- or two-story self-storage facilities when every space has direct access to the building exterior. Minnesota has many existing one-story self-storage facilities where each compartment has direct access to the exterior. Adding the requirement to sprinkle these types of facilities would add substantial cost to their construction. These buildings have not proven to represent a significant hazard when constructed without sprinkler systems and it is reasonable to allow the practice to continue.

Subp. 1d. IBC [F] section 903.2.11.4, Fire protection for exhaust systems. The reference to the International Mechanical Code is changed to Minnesota Rules chapter 1346 because that chapter adopts and amends the International Mechanical Code. The other amendments to the first sentence of section 903.2.11.4 are for clarity. The amendment to the second sentence is necessary to eliminate an ambiguity in the current rule. Specifically, the current rule is ambiguous regarding whether there is a choice to prevent water accumulation in the duct or design the duct to not flow water back to equipment. The amendment clarifies that water is not allowed to accumulate within the duct, and water flow back to equipment is only prohibited if it would result in a hazardous condition. The change is reasonable because the current fire code contains this requirement, which is more restrictive than the current building code. *See* part 7511.0903, subp. 2. The change is also reasonable because ductwork support is not designed to sustain the weight of water filling the ductwork and to do so would add significant cost to the construction. The change may result in fewer final field modifications of ductwork to comply with the fire code and to that end, save construction costs.

Subp. 2b. IBC [F] section 903.3.1.1.1, Exempt locations. The phrase "required to have NFPA 13 systems" is added for clarification and as a convenient cross-reference. The other minor amendments are for clarity, and for consistency with the way in which this subpart has been interpreted.

Subp. 2c. IBC [F] section 903.3.1.2.1, Protection of decks and balconies. This proposed language is almost identical to the current Minnesota State Fire Code, part 7511.0903, subp. 3, which amends section 903.3.1.2.1 of the 2012 IFC. The only change is that "Group R-1 and R-2" is changed to "Group R-1 or R-2." This same amendment is being proposed for chapter 7511 as a clarification consistent with the intent of the rule. This subpart is needed and reasonable for consistency with the Minnesota State Fire Code.

Subp. 3a. IBC [F] section 903.3.1.3, NFPA 13D sprinkler systems. This subpart is amended by adding language specific to Group R-4, Condition 1. The change is necessary to address the newly created Condition 1 in the 2018 IBC and clarify that NFPA 13D sprinkler systems are not permissible in Group R-4, Condition 2 uses.

Subp. 5a. IBC [F] section 903.3.1.6, Modification to sprinkler standards. Subsection 903.3.1.6.2 is added, with an exception. Also, subsection 903.3.1.6.4 is amended to include a reference to section 23.2.1.1 of NFPA 13. The language of section 23.2.1.1 is also added. With two minor differences, these amendments make section 903.3.1.6 identical to the current Minnesota State Fire Code, part 7511.0903, subp. 4, which amends section 903.3.1.6 of the 2012 IFC. One minor difference is the substitution of "that" for the word "and" in the exception to subsection 903.3.1.6.2. This change is made for clarity. Also, the NFPA section was renumbered from 22.2.1.1 to 23.2.1.1. Amendments are being proposed to the Minnesota State Fire Code, with these same corrections. The amendments to this subpart are needed and reasonable for consistency with the Minnesota State Fire Code.

Subp. 6a. IBC [F] section 903.3.9, Sprinkler system design pressure safety margin. The section number is changed for consistency with the 2018 IBC. Also, an exception is added. This exception is identical to an exception in the current Minnesota State Fire Code. *See*

Minn. R. 7511.0903, subp. 4a (2017). The same exception is needed in chapter 1305 for consistency.

Subp. 7a. IBC [F] section 903.4.2, Alarms. IBC [F] section 903.4.2 is amended to include visible alarms and to require that a visible alarm be located above the building exterior fire department connection to draw immediate attention to its location. The addition of the visual alarm is consistent with current industry practice and is necessary to enhance and facilitate firefighter response. Audible devices work well when firefighters are outside their vehicle, but visible devices can be seen as fire department personnel arrive on scene directing the vehicle towards the fire department connection. With sirens operating, firefighters are required to wear hearing protection and won't hear the audible alarm sounding. There will be minimal cost for adding one visible alarm or a device that includes both a visible and audible alarm. There is an approximate $20 difference between an audible-only device and a combination audible/visual device.

1305.0904 SECTION 904, ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS.

This proposed amendment modifies the model code by using the phrase "congregate living facilities" instead of "college dormitories." This change is needed because the proposed amendment to section 420.10 addresses cooking appliances for all Group R-2 congregate living facilities, not just college dormitories.

1305.0905 SECTION 905, STANDPIPE SYSTEMS.

Standpipes are water supply systems typically installed in tall or large buildings. The purpose of standpipes is to provide a fixed water supply and a hose connection inside the buildings so that fire personnel do not have to advance hose lines from firetrucks to the building interior and up multiple stories. Most fire engines carry a limited amount of fire hose and typically not enough to be able to stretch up multiple stories in a building.

Subpart 1. IBC [F] Section 905.2.1, Modifications to standards. The intent of this subpart in the current rule was to not require standpipe pressure and flow requirements in fully sprinklered, non-high-rise buildings.[13]

The current subpart states, in part: "a Class I or III standpipe system need only meet the pressure requirements for the sprinkler system when such systems comply with Sections 905.2.1.1 through 905.2.1.5."

Contrary to intent, this is being interpreted as requiring NFPA 14 standpipe flow, pressure and pipe size criteria due to the reference to Sections 905.2.1.2, 905.2.1.3 and 905.2.1.4. This is resulting in an increase of pipe sizing (e.g. 4-inch increased to 6-inch) for all or portions of the supply piping. Again, this is contrary to intent. The revisions to the first paragraph of section 905.2.1 clarify the intent of the section.

Furthermore, the deletion of Class III in the introductory paragraph is needed because Class III standpipes are being eliminated. See the discussion in connection with the definition of Classes of Standpipe Systems, proposed part 1305.0202, subp. 1.

Current section 905.2.1.1, Municipal water supply. The language of the current subsection 905.2.1.1 relates to municipal water supplies. This language is being deleted and replaced in the new subsection 905.2.1.2.

Proposed section 905.2.1.1, System pipe size. Current section 905.2.1.2 is renumbered as 905.2.1.1. The first two sentences of the current subsection 905.2.1.2 are deleted because those concern pressure, flow and testing. Those requirements are addressed in the new subsection 905.2.1.2. The third sentence of the current subsection 905.2.1.2 is amended to refer to combined standpipe systems. The current rule language implies, but does not specifically identify, that this amendment is applicable to **combined** standpipe systems. The 2016 edition of NFPA 14, *Installation of Standpipe and Hose Systems*, Section 3.3.17.3, includes the following definition: "**Combined System.** A standpipe system that supplies both hose connections and automatic sprinklers." Adding the word "combined" in the proposed subsection 905.2.1.1 clarifies the type of system the amendment applies to. The 2016 edition of NFPA 14 is one of the referenced standards in chapter 35 of the 2018 IBC and, as such, is incorporated by reference under proposed part 1305.0011, subp. 1. Also, the NFPA 14 installation standard is required in the introductory paragraph of section 905.2 of the 2018 IBC, which is not being amended.

Finally, the language, "Pipe sizes … shall be not be less than four inches (101.6 mm)" in Section 905.2.1.1 mirrors the minimum pipe sizing in NFPA 14, Section 7.6.2.1, which states: "Where the building is protected throughout by an approved automatic sprinkler system in accordance with NFPA 13 or NFPA 13R, the minimum

[13] *See* pages 15-16 of the Statement of Need and Reasonableness dated 9/18/06, for the amendments to chapter 1305 that became effective in 2007. https://www.leg.state.mn.us/archive/sonar/SONAR-03551.pdf.

standpipe size shall be 4 in. for systems hydraulically designed in accordance with 7.8.1." However, since the Section 7.6.2.1 language refers to "hydraulically designed in accordance with 7.8.1" and the amendment does not require hydraulic design of the standpipe, minimum standpipe size language should be included in the amendment. This would assure a minimum standpipe size of four inches on the occasion that the hydraulic calculations for the sprinkler system would be satisfied with pipe size less than four inches.

905.2.1.2, System design flow and pressure. As described above, this subsection is being added as a replacement for the current subsection 905.2.1.1. The proposed subsection 905.2.1.2 is a subsection of 905.2.1, which modifies the installation standard (NFPA 14). When compared with current section 905.2.1.1, proposed section 905.2.1.2 provides for greater design flexibility with respect to the municipal water supply and redirects requirements to final results.

NFPA 14 is based on hydraulic calculations for systems having two or more standpipes, and therefore could require a flow rate in excess of 500 gallons per minute (gpm). This proposed subsection relaxes this requirement for fully sprinklered buildings and instead sets a minimum flow rate of 250 gpm at the two most hydraulically remote hose connections (500 gpm total). This acknowledges that higher flow rates are not necessary in a fully sprinkler-protected building. Higher flow rates will often require the costly installation of a fire pump, and the requirements are relaxed in order to avoid this.

The minimum pressure of 100 psi is reasonable because this is the minimum pressure allowed in NFPA 14 (Section 7.8.1). The minimum flow rate of 250 gpm at the two most hydraulically remote hose connections (for a total of 500 gpm) is reasonable because this is the minimum flow rate set by NFPA 14 (Section 7.10.1.1.1).

Current section 905.2.1.4, Hose connection. This language is being deleted because it is redundant; this language mirrors the language in NFPA 14, Sections 7.12.3 and 6.4.5.

Proposed 905.2.1.4, Automatic sprinkler system demand. Current section 905.2.1.5 is renumbered as 905.2.1.4. This language is being amended to clarify that the municipal water supply system is responsible for both the inside and outside hose stream demands. This was an oversight in the current code. Both inside and outside hose stream demands should have been included in the current code. NFPA 13 has requirements for both inside and outside hose stream demands.

Subp. 1a. IBC [F] section 905.3, Required installations. This new subpart modifies model code section 905.3 to expand the scoping through 905.3.10 because of reformatting within the model code. The rest of the language is the same as the 2018 IBC.

Subp. 1b. IBC [F] section 905.3.1, Height. Section 905.3.1 is modified to indicate Class I standpipes since Class III standpipes are eliminated. Separate and apart from this classification system, the installation standard (NFPA 14) defines whether a standpipe is wet, dry, automatic or manual. The word "wet" is added to section 905.3.1 for clarification, because the intent of the section is to require a wet standpipe by default. The first six exceptions in the model code are deleted because they pertain to allowing Class I standpipes under given conditions; these are no longer needed since the amended 905.3.1 would already allow Class I standpipes. The seventh exception in the model code has been redrafted into subsection 905.3.1.1 (see below). The proposed rule's exception is a new exception. This exception is needed and reasonable because it will prevent a wet standpipe system from being subjected to freezing temperatures that might damage it and put the system out of service.

IBC [F] section 905.3.1.1, Lowest level. This is a slightly revised version of exception 7 to IBC section 905.3.1. The first sentence has been rephrased for clarity. The word "areas" has been substituted for the IBC word "conditions" because it is more accurate to describe the fire department vehicle having difficulty accessing the building in certain areas.

Subp. 2. IBC [F] section 905.3.2.1, Group A exhibition. This subpart is modified to reflect the elimination of Class III standpipes from this code.

Subp. 3. IBC [F] section 905.3.4, Stages. This subpart is amended to clarify that standpipes are not required for stage areas. Some jurisdictions have interpreted the current rule as meaning that, since the Class III standpipe requirement was deleted, this meant that Class I standpipes were required. This was never the Department's intent. The proposed amendment alleviates the confusion. Because standpipes are not required for stage areas, subsection 905.3.4.1 also needs to be deleted.

Subp. 4a. IBC [F] section 905.3.6, Helistops and heliports. This model code section is modified to eliminate the option for Class III standpipes, and substitute Class I standpipes instead. See the discussion in connection with the definition of Classes of Standpipe Systems, proposed part 1305.0202, subp. 1.

Subp. 6. IBC [F] section 905.3.9, Detention and correctional facilities. This section is modified to

eliminate the option for Class III standpipes, and substitute Class I standpipes instead. This is needed and reasonable for the same reasons that Class III is proposed to be deleted from section 905.2.1 (as described above).

Subp. 6a. IBC [F] section 905.3.10, Group R-2 occupancies small hose connections. This subpart is amended by spelling out "fire department" instead of using the undefined acronym "FD." This is for clarity.

Subp. 8. IBC [F] section 905.6, Location of Class III standpipe hose connections. This section and the subsections are deleted because Class III standpipes are eliminated from the Minnesota Building Code. See the discussion in connection with the definition of Classes of Standpipe Systems, proposed part 1305.0202, subp. 1.

1305.0907 SECTION 907, FIRE ALARM AND DETECTION SYSTEMS.

Subp. 1a. IBC [F] section 907.1.2, Fire alarm shop drawings. Section 907.1.2 is amended to delete the reference to NFPA 72, which provides requirements for shop drawings. The proposed rule instead provides the list of requirements right in the code. This is needed and reasonable because not all designers and code officials have direct access to NFPA 72. Inclusion in the building code will therefore enhance compliance and field coordination.

Section 907.1.2 is also amended to include language from section 907.1.2 of the 2015 IBC that clearly delineated which particular shop drawing documents are required for a complete plan review. It is reasonable to include an itemized list for the convenience of the designers to ensure a comprehensive submittal for plan review and permitting purposes.

Subp. 1b. IBC [F] section 907.2, Where required in new buildings and occupancies. Current subpart 1a is renumbered 1b to maintain the numerical order of the sections being amended. The section reference numbers are changed to coordinate with the reformatting of the 2018 IBC. The title of this section is changed for consistency with the Minnesota State Fire Code, part 7511.0907, subp. 2. There are no technical changes.

Subp. 2a. IBC [F] section 907.2.1, Group A, General. The last sentence of item 4 has been deleted for clarity, because it is not necessary. There is no technical change.

Subp. 11. IBC [F] section 907.2.3.1, Initiation. The word "janitors'" is updated to "custodial," which is the preferred term now used in the industry. The section is also amended so that exception 1 is expanded to include a fire alarm system and only require manual boxes in the main office and a custodial area. Exception 1 will not be numbered to be consistent with model code formatting because exception 2 is deleted. Exception 2 is deleted because exception 1 as modified now incorporates exception 2 with less restrictive criteria. The change was made to make alarm systems more secure against live-shooter activation by providing fewer manual pull stations in publicly accessible areas. Automatic activation of the alarm systems is much more prevalent than in the past, making manual pull stations less critical. This proposed change will allow the vast majority of schools to remove most of their common-use manual fire alarm boxes (a.k.a. pull stations) in order to reduce the possibility of an active shooter initiating a fire alarm evacuation signal in order to draw occupants out into common areas. Due to the recent mass shooting event in Parkland, Florida, the State Fire Marshal Division and local fire code officials have received numerous inquiries from schools about removing their fire alarm pull stations. Reduction of publicly accessible manual pull stations also reduces the overall hazard by reducing alarm fatigue in the form of nuisance alarms and false alarms.

Group E shops, labs, kitchens and boiler rooms will either have sprinkler protection or fire alarm system detection; pull stations in these areas are not essential. Either sprinkler heads or detection devices will eventually activate and initiate the fire alarm evacuation signal. Group E schools are also controlled and supervised environments, and all Group E emergency plans require staff to immediately notify administration of an unwanted fire. In this case, due to the negligible benefit pull stations provide for these areas, removing these devices in deference to security concerns is warranted.

The code change will result in a reduction in construction costs.

Subp. 13. IBC [F] section 907.2.3.3, Notification. The section is amended to provide more specific direction as to requirements by adding references to Sections 907.5.2.2 and 907.6, requiring both visible and audible/voice alarm communications rather than just a general audible alarm.

The 2018 IBC includes the requirement for an emergency voice/alarm communications system. Such systems are critical in Group E occupancies because schools greatly benefit from the ability to communicate detailed instructions to occupants during any type of emergency such as fire, lockdown, tornado, etc. In essence, the fire alarm system functions as a complete all-hazard emergency communications system. Such systems also allow schools to safely implement a delayed or defend-in-place response to fire alarm activations, allowing staff to

investigate the source of an alarm and ensure there is no intruder or active shooter threat.

An exception is added so that E occupancies with less than 100 occupants need not provide both components of the emergency voice/alarm communication system. This is comparable to section 907.2.3, exception 2, of the 2018 IBC. It is reasonable to exempt schools with an occupant load of 100 or less because these are small schools where there is a general awareness of the reason for the general evacuation signal, such as the presence of smoke.

The addition of an emergency voice/alarm communication system is estimated to add, on average, an additional 20-percent to the cost of a fire alarm system in a Group E occupancy. General fire alarm system installation for new school construction is estimated to be up to $0.75/square foot. The average size of a school building in Minnesota is approximately 100,000 square feet. Thus, as an example, a fire alarm system installed in a new 100,000 square foot school building would cost approximately $75,000. Including a voice/alarm communications system would increase the cost by approximately 20-percent, resulting in an additional cost of $15,000. This section only applies to new construction or a change in use, and thus would not apply to existing Group E occupancies.

Subp. 17. IBC [F] section 907.2.5, Group H, general. The only change to this subpart is changing "IFC" to "Minnesota State Fire Code." This is reasonable because the Minnesota State Fire Code is applicable in Minnesota.

Subp. 18. IBC [F] section 907.2.5.1, Initiation. The only change to this subpart is changing "2012 IFC" to "Minnesota State Fire Code." This is reasonable because the Minnesota State Fire Code is applicable in Minnesota. Also, the proposed amendments to chapter 7511 adopt the 2018 IFC, not the 2012 IFC.

Subp. 22. IBC [F] Section 907.2.6, Group I, general. There are several reference number changes due to reformatting of the 2018 IBC. Also, in several places the phrase "janitors' closets" has been changed to "custodial closets." "Custodial" is an updated term that is used in the industry. References to "janitors'" were previously changed to "custodial" in the Minnesota State Fire Code; updating the term in chapter 1305 is therefore reasonable for consistency with the fire code.

Subp. 25. IBC [F] section 907.2.8, Group R-1, general. A few references in this subpart are being changed due to reformatting of the 2018 IBC. In exception 2, the phrase "smoke detectors" has been changed to "smoke alarms." This is needed for consistency with the fire code. *See* current rule 7511.0907, subp. 10. Also, several locations have been added to the list of locations where approved automatic fire detectors are needed under subsection 907.2.8.1. The new locations (soiled linen rooms, kitchens, custodial closets, and lounges) are all potentially hazardous areas because of the nature of the use. For example, soiled linen rooms and custodial closets contain potentially flammable materials. Cooking appliances in kitchens make them hazardous. Lounges are included because they can be used by a large number of people.

Subp. 26. IBC [F] section 907.2.9, Groups R-2 and R-4, general. Reformatting in the model code precipitated the need to consolidate requirements specific to R-4 occupancies into this subpart. The section and subsections are renumbered to follow the modified format of the model code. The substantive requirements for R-2 occupancies have not changed. The section is expanded to include R-4 occupancies within the scoping.

In subsection 907.2.9.1, item 1 has been changed to require a fire alarm system in Group R-2 occupancies where any sleeping or dwelling unit is located two more stories above the lowest level of exist discharge, rather than three or more stories. This is for consistency with the current Minnesota State Fire Code, part 7511.0907, subp. 11, item 1 under current section 907.2.9. The proposed amendments to the fire code renumber this subsection as 907.2.9.1, but do not change item 1.

In subsection 907.2.9.1.1, several locations have been added to the list of locations where automatic fire detectors are needed. The new locations (common kitchens, locker rooms and lounges) are all potentially hazardous areas because of the nature of the use. For example, cooking appliances in common kitchens make them hazardous. Locker rooms and lounges are included because they can be used by a large number of people.

The amended requirements for R-4 occupancies previously located in 907.2.10 are relocated into this section and renumbered as 907.2.9.2 and its subsections. (The language regarding IBC section 907.2.10 is currently located in rule 1305.0907, subpart 26b.) Code reference citations within the body of the subsections are renumbered to correspond with formatting changes in the model code. Minor wording changes in the revised exceptions to section 907.2.9.2 are for clarity.

In 907.2.9.2.1, several locations have been added to the list of locations where automatic fire detectors are needed. The new locations (soiled linen rooms, common kitchens and lounges) are all potentially hazardous areas because of the nature of the use. For example, soiled linen

rooms contain potentially flammable materials. Cooking appliances in kitchens make them hazardous. Lounges are included because they can be used by a large number of people.

The word "multistation" in section 907.2.9.3 has been changed to "multiple-station" for clarification.

Subp. 26b. IBC [F] section 907.2.10. Repeal. As previously discussed, the amended requirements for R-4 occupancies were previously located in 907.2.10, current part 1305.0907, subp. 26b. Those requirements have been renumbered as 907.2.9.2 and its subsections, in proposed rule 1305.0907, subp. 26. Therefore, current subpart 26b is no longer needed and can be repealed.

Subp. 27. IBC [F] section 907.2.11.4, Power source. Repeal. This subpart is repealed. The requirements listed in this subpart are now obsolete due to advances in smoke alarm technology and changes in the model codes regarding smoke alarm design and function. At the time of adoption of the current rule, there were very few hard wired smoke alarms with battery back-up. It is now commonplace that hardwired smoke alarms come with battery back-up. Repealing subpart 27 will also delete the exceptions which allow dwelling units and sleeping units in R-1 and R-2 occupancies to have hard wired smoke alarms without battery backup. It is during power outages that the need for battery operated smoke alarms is highest because people use candles and fueled space heaters which increase the fire risk. The cost differential between the smoke alarms with or without battery back-up is negligible.

Subparts 27b and 27c. IBC [F] section 907.2.22, Battery rooms, and Table 907.2.22. The model code is modified to add section 907.2.22 and Table 907.2.22. Both section 907.2.22 and Table 907.2.22 are being proposed for consistency with the Minnesota State Fire Code. Section 907.2.22 of the 2018 IFC states: "An automatic smoke detection system shall be installed in areas containing stationary storage battery systems as required in Section 1206.2." Section 1206.2 of the 2018 IFC states: "Stationary storage battery systems having capacities exceeding the values shown in Table 1206.2 shall comply with Section 1206.2.1 through 1206.2.12.6, as applicable." Table 1206.2 in the 2018 IFC is identical to proposed table 907.2.22 in proposed subdivision 27c of part 1305.0907. Minnesota is proposing to adopt 2018 IFC sections 907.2.22, 1206.2 and its subsections, and Table 1206.2 without amendment.

Energy storage is a developing technology. The 2018 IFC requirements for stationary storage battery systems are new requirements to add safeguards to battery storage systems, which are becoming more common. Proposed subparts 27b and 27c of 1305.0907 include the same requirements as the requirements being incorporated into the fire code. Including these requirements in the building code to show battery capacity limits will increase the likelihood of compliance due to convenience and does not change the fire code requirements.

Subp. 27d. IBC [F] section 907.2.23, Capacitor energy storage systems. The model code is modified to add the requirements referred to in the fire code so that capacitor limits are also included in the building code. These fire code requirements are being proposed for incorporation into the Minnesota State Fire Code, without amendment. *See* 2018 IFC section 1206.3. Energy storage is a developing technology. The 2018 IFC requirements for capacitor energy storage systems are new requirements to add safeguards to capacitor energy storage systems, which are becoming more common. Including these requirements in the building code will increase the likelihood of compliance due to convenience and does not change the code requirement.

Subp. 28. IBC [F] section 907.2.24, Residential hospices. The first sentence of section 907.2.24 is amended to clarify that both sections 907.2.24.1 and 907.2.24.2 apply to residential hospices. In subsection 907.2.24.1, the proposed rule changes "janitors' closets" to "custodial closets." "Custodial" is an updated term that is used in the industry. References to "janitors" were previously changed to "custodial" in the Minnesota State Fire Code; updating the term in chapter 1305 is therefore reasonable for consistency with the fire code. The cross reference in the exception to subsection 907.2.24.1 is amended for consistency with the renumbering of the model code.

Subp. 31. IBC [F] section 907.3, Fire safety functions. The first sentence of section 907.3 is amended to clarify that the reference to section 907.2 is to the Minnesota Building Code. Also, the reference to the IFC is changed to the Minnesota State Fire Code because that applies in Minnesota. Finally, the sentence "Subsection 907.3.4 remains unchanged" has been added to the end. This is for clarification only.

Subp. 31a. IBC [F] section 907.6.5. Repeal. This subpart is being repealed. Section 907.6.5 of the 2012 IBC concerned monitoring. The monitoring provisions have been moved to section 907.6.6 of the 2018 IBC, and are addressed in proposed new subpart 32a.

Subp. 31b. IBC [F] section 907.5.2.1.2, Maximum sound pressure. The proposed new language relates to maximum sound pressure. Beginning with the second sentence, this section is identical to section 907.5.2.1.2 of the model code. The first sentence has been

added to require lower maximum sound pressures in quieter ambient environments. The model code introduced the new section 907.5.2.1.1, "average sound pressure," which specifies the maximum average sound pressure. If the overall maximum sound pressure is set at 110 decibels (dB) (which is the threshold for pain), then the minimum sound pressure to balance the average may not be sufficient in some cases to alert occupants of an alarm condition. The amendment to the first sentence is necessary to establish a more even sound pressure throughout quieter environments so that sound pressures can be reduced under alarm conditions.

Fire alarm designers consistently design fire alarm systems to exceedingly high levels to ensure the fire alarm can be heard in all areas. However, this often leads to complaints by building occupants due to painfully high noise levels when the fire alarm activates. The intent of the code is, and always has been, that the fire alarm be designed at 15 decibels above the ambient sound pressure level (as stated in section 907.5.2.1.1) and not be excessively loud to the point where it physically hurts people's ears when exposed to the fire alarm audible appliances. This proposal establishes a sound pressure cap of 35 dB above the average or peak ambient sound level, to ensure that alarms are not excessively loud but can still be heard above the ambient sound levels for the designed space. This code change is reasonable because it establishes a cap that fire alarm designers must adhere to when designing fire alarm systems to ensure audibility levels are not excessive. As an example, school classrooms are assigned an ambient sound pressure of 45 dB. The model code requires a minimum of 15 dB above the ambient sound pressure or 60 dB minimum for an alarm in that environment. The model code also requires a maximum sound pressure of 110 dB for an alarm at any location. The amendment will fit within the model code minimum and maximum, and will limit the average sound pressure to 45 dB + 35 dB or 80 dB so that the systems are not so startlingly and painfully loud when they need not be so. Overly loud alarms can contribute to confusion, fear, and can inhibit critical communication and evacuation during emergency conditions. A human voice shouting is approximately 88 dB and a chainsaw is approximately 90 dB as points of comparison. The selection of 35 dB above the average or peak ambient sound level as the maximum is reasonable so that, for example, in school environments, a teacher's shouted instructions to the students (at 88 dB) could be heard above the alarm (80 dB).

Subpart 32a. IBC [F] section 907.6.6, Monitoring. Section 907.6.5 in current chapter 1305 and 7511 has been renumbered 907.6.6 in the updated model codes. The current rule in the Minnesota Building Code regarding monitoring is 1305.0907, subpart 31a, which states: "IBC [F] section 907.6.5 and its subsections are deleted in their entirety." This differs from the current rule in the fire code (7511.0907, subp. 15b) which states: "IFC section 907.6.5 is deleted." This was an error in the building code, as explained below.

The intent of the current rule in the fire code was to delete section 907.6.5 and its exceptions, but to still leave in its subsections (907.6.5.1 and 907.6.5.2, which have been renumbered as 907.6.6.1 and 907.6.6.2 in the 2018 IFC and IBC). The current complete Minnesota Building Code (including IBC provisions) states "deleted" for section 907.6.5 and does not include subsections 907.6.5.1 and 907.6.5.2.[14] On the other hand, the current complete Minnesota State Fire Code (including IFC provisions) states "deleted" for section 907.6.5 but does include subsections 907.6.5.1 and 907.6.5.2. [15] This understandably causes confusion. Proposed subpart 32a therefore amends model code section 907.6.6 to include one sentence referring to the two subsections. This change corrects the error in the building code and is consistent with the intent of the current fire code. The exceptions are still deleted, as in the current rule. A comparable amendment is being proposed to the fire code.

The sentence "Subsections 907.6.6.1 and 907.6.6.2 remain unchanged" is added for clarification.

1305.0908 SECTION 908, EMERGENCY ALARM SYSTEMS. Repeal.

IBC [F] section 908.7, Carbon monoxide alarms. Repeal. This part is being repealed because the 2018 IBC addresses the topic of carbon monoxide detection in section 915. As discussed below, a new part 1305.0915 is proposed, which amends the new model code language.

1305.0909 SECTION 909 SMOKE CONTROL SYSTEMS.

Subp. 1c. IBC [F] section 909.4.8, Door opening force. This existing subpart is amended to renumber the subsection due to the addition of a subsection in the model code. A code section citation

[14] https://codes.iccsafe.org/content/MBC2015/chapter-9-fire-protection-systems
[15] https://codes.iccsafe.org/content/MFC2015/chapter-9-fire-protection-systems

within the subsection is also renumbered to correspond to model code modifications.

Subp. 1d. IBC [F] section 909.22, High-rise and covered mall smoke-exhaust systems. This subpart is added to coordinate with and include the same language found in the Minnesota State Fire Code. The requirement is in the current fire code. *See* Minn. R. 7511.0909, subp. 2 (amending section 909.21 of the 2012 IFC). Inclusion into the building code will ensure that designers don't overlook the requirement.

1305.0910 SECTION 910, SMOKE AND HEAT REMOVAL.

Subpart 1. IBC [F] section 910.1.1, Required venting method. This section is amended to correct a spelling error.

Subp. 2. IBC [F] section 910.4, Mechanical smoke exhaust. This subpart is amended to correct a cross-reference in the current code. Also, a sentence is added at the end for clarification.

Subp. 2a. IBC [F] section 910.4.3.1, Supply Air. This subpart is amended to reflect numbering changes in the model code. This is relocated from subpart 4 to maintain numerical order consistent with the renumbering of the model code sections.

Subp. 3. IBC [F] section 910.4.4, Operation. This subpart is amended to reflect the renumbering of sections within the model code, and to eliminate the redundant words "in addition."

Subp. 5. IBC [F] section 910.5, Calculated engineering design of mechanical smoke exhaust. The first sentence of subpart 5 is amended because the 2018 IBC has a section 910.5, which is being replaced. (Section 910.5 of the 2018 IBC concerns maintenance, which is addressed in subpart 6 below.) Subsection 910.5.5 is amended to reference both subsections 910.4.5 and 910.4.6 in the requirements for wiring and controls. This is reasonable because subsection 910.4.5 addresses manual controls while subsection 910.4.6 addresses wiring. Also, in subsection 910.5.5 the term "interlocks" has been changed to "interlock controls." This is for clarification, because the term used in the industry is interlock controls.

Subp. 6. IBC [F] section 910.6, Testing and maintenance. This new subpart modifies the current rule by creating a separate subpart for section 910.6. Also, the reference in section 910.6.1 is clarified. No substantive changes are made to the language in section 910.6.

1305.0915 SECTION 915, CARBON MONOXIDE DETECTION.

This new rule part addresses modifications to the IBC requirements for carbon monoxide alarms in new buildings. These changes are necessary to avoid conflict with Minnesota Statutes sections 299F.50-51, which regulate CO alarms in single family and multifamily dwellings. Also, these changes are needed for consistency with the scope of the Minnesota Building Code.

Subpart 1. IBC section 915.1, General. The first sentence of proposed section 915.1 is identical to the first sentence of section 915.1 of the 2018 IBC. The second sentence in the 2018 IBC has been deleted because it relates to existing buildings. Requirements for existing buildings are beyond the scope of chapter 1305, and are found in Minnesota Rules chapter 1311. The first sentence of proposed subsection 915.1.1 is identical to subsection 915.1.1 of the 2018 IBC. The proposed rules adds an exception. This exception is needed and reasonable because it incorporates the requirements in Minnesota Statutes section 299F.51, subd. 5(a) for localized detection and centralized alarm systems for multi-family buildings with a centralized carbon-monoxide producing fixture. A sentence is added at the end of subsection 915.1.1 to clarify that model code sections 915.1.2 through 915.1.6 are not amended.

Subp. 2. IBC section 915.2, Locations. The first sentence of proposed section 915.2 is identical to the model code. In both subsection 915.2.1, "Dwelling units" and subsection 915.2.2, "Sleeping units," the IBC requires carbon monoxide detectors to be located "in the immediate vicinity" of the bedrooms or sleeping units. The proposed rule deletes this vague language and replaces it with specific language, "within 10 feet." This is the consistent with Minnesota Statutes section 299F.51, subd. 2(1), which requires the owner of each multifamily dwelling to "provide and install one approved and operational carbon monoxide alarm within ten feet of each room lawfully used for sleeping." Proposed subsection 915.2.1 also adds language requiring a carbon monoxide detector within a bedroom if a fuel-burning appliance is located within the bedroom or its attached bathroom. This is needed for safety because of the increased risk of fire when there is a fuel-burning appliance. This is comparable to the requirement in subsection 915.2.2 and its exception which, when read together, require a carbon monoxide detector in a sleeping unit where the unit or its attached bathroom has a fuel burning appliance and is not served by a forced air furnace. Section 915.2.2 of the model code, with its exception, contains a comparable requirement. A sentence is added at the end of proposed subsection 915.2.2 to clarify that model code section 915.2.3 is not amended.

[Note: Current part 1305.0916 SECTION 916, POST FIRE EXHAUST SYSTEM is renumbered as part 1305.0919. See below.]

1305.0916 SECTION 916, GAS DETECTION SYSTEMS.

IBC section 916.2, Documentation. The first sentence of the model code section is deleted because it refers to the fire code for all of the documentation required for permits. Instead, the specific documentation requirements from the fire code are included within the building code for ease of reference. Subsection 916.2.1 is identical to the model code. Subsection 916.2.2 is added so that the fire authority is given notice when a gas detection system is proposed. Fire authorities have not had a mechanism whereby they are notified of specialized systems prior to their first inspection. This requirement will provide them with an opportunity for input prior to construction or modification.

1305.0917 SECTION 917, MASS NOTIFICATION SYSTEMS.

IBC section 917.1 College and university campuses. This section is being deleted because it concerns mass notification systems. Those systems are beyond the scope of the building code.

1305.0918 SECTION 918, EMERGENCY RESPONDER RADIO COVERAGE.

IBC section 918. This section is deleted. The section refers to the fire code for requirements and the proposed amended fire code deletes these requirements.

1305.0919 SECTION 919, POST FIRE EXHAUST SYSTEM.

IBC section 919. This part is identical to the current part 1305.0916 except for the renumbering of the rule and subsections, as required by the renumbering of the model code.

1305.1006 SECTION 1006, NUMBER OF EXITS AND EXIT ACCESS DOORWAYS.

Subpart 1. IBC Table 1006.2.1, Spaces with one exit or exit access doorway. Except as discussed below, proposed Table 1006.2.1 is identical to the 2018 IBC.

Table 1006.2.1 of the 2018 IBC includes Group I-4 occupancies in the same row with Group I-1 and I-2 occupancies. Group I-1 and I-2 occupancies must be equipped with an automatic sprinkler system but, under the Minnesota code, Group I-4 occupancies are permitted to forego an automatic sprinkler system under certain circumstances. The IBC table is therefore modified to create a new row for Group I-4 occupancies listing the maximum common path of egress travel distance for Group I-4 occupancies equipped with automatic sprinkler systems and Group I-4 occupancies not equipped with automatic sprinkler systems. The common path of egress travel is the distance an occupant must cover from the most distant point of a room or space to an exit. For a Group I-4 occupancy, whether or not it is equipped with an automatic sprinkler system, the maximum distance permitted from the most distant part of the room or space to an exit is 75 feet. The same requirement exists in the 2012 IBC. The modifications to include Group I-4 occupancies on a separate row and to permit a maximum common path of egress travel of 75 feet in those occupancies is reasonable because it ensures that requirements are consistent with other code provisions, which will provide consistent application and uniform enforcement.

Table 1006.2.1 of the 2018 IBC is modified for Group R-1, R-2, R-3, and R-4 occupancy classifications to provide a maximum common path of egress travel distance of 75 feet for Group R-1, R-2, R-3, and R-4 occupancies that are not equipped with an automatic sprinkler system. Unlike the Minnesota code, the 2018 IBC requires sprinkler systems in all R occupancies. The table in the model code therefore does not have values for non-sprinklered residential occupancies. The proposed modification of this table carries forward the 2012 IBC requirement of a 75 foot maximum common path of egress travel distance for residential occupancies not equipped with an automatic sprinkler system.[16] This will provide consistent application and uniform enforcement while maintaining current life safety requirements for residential occupancies.

Footnote (e) in Table 1006.2.1 of the 2018 IBC is deleted because it limits the maximum common path of egress travel distance for a Group R-3 occupancy only where it is located in a mixed occupancy building. A building might have a Group R-3 occupancy as the only occupancy type in the building. Because Group R-3 occupancies may be located in buildings with mixed occupancy groups or a single occupancy group, it is reasonable to delete footnote (e) so the maximum common

[16] *See* Table 1014.3 of the 2012 Minnesota Building Code, https://codes.iccsafe.org/content/MBC2015/chapter-10-means-of-egress.

path of egress travel distance applies to ensure the safety of occupants.

Footnotes (f) and (g) in Table 1006.2.1 of the 2018 IBC are re-lettered as footnotes (e) and (f). The new footnote (e) has been rephrased slightly for clarity, but the substance of the footnote is the same as the substance of footnote (f) in Table 1006.2.1 of the 2018 IBC.

Subp. 2. IBC section 1006.2.2.1, Boiler, incinerator, and furnace rooms. Section 1006.2.2.1 of the 2018 IBC is modified by adding a sentence at the end of the section to specify the required distance between the two means of egress in boiler, incinerator, and furnace rooms. Means of egress is the path of travel from the boiler, incinerator and furnace rooms to the public way. Boiler, incinerator, and furnace rooms are often located below ground level so stairs or a ladder are required to reach the exit and the public way. The stair or ladder is usually in the same location as the main door into the space. The stair or ladder and door are considered two separate means of egress; however, because of their proximity within the space they are effectively the same means of egress with only one path to the public way in the event of an emergency. The proposed changes will ensure that the two means of egress do not meet and there are two separate exits to the public way. It is reasonable to require two separate exits and paths to each exit in boiler, incinerator, and furnace rooms due to the hazards they pose to occupants in those rooms. In the event of an emergency, one means of egress may be obstructed by fire or debris so a second means of egress is a necessary life and safety precaution for occupants in boiler, incinerator, and furnace rooms.

Subp. 3. IBC section 1006.2.2.4, Group E and I-4 means of egress. Section 1006.2.2.4 of the IBC refers to Group I-4 facilities rather than Group E facilities. Proposed section 1006.2.4 changes "I-4" to "E and I-4" but is otherwise identical to the model code. Under proposed section 308.5.1.3 (in proposed part 1305.0308, subp. 4), a child day care facility with 10 to 100 children age 2½ or less would be classified as Group E if each room providing day care is on the level of exit discharge and has an exit door directly to the exterior. The I-4 occupancy already requires two means of egress under the same conditions listed here for the E occupancy. The purpose of this amendment is to apply one of the I-4 requirements to day care facilities reclassified as E occupancy. This is a life and safety precaution.

Subp. 4. IBC section 1006.2.2.7, Educational occupancy laboratories and prep areas. This section has been relocated from current part 1305.1015, item 4, due to a change in the model code numbering structure. The requirement that laboratories and prep areas that are more than 500 square feet and contain hazardous chemicals have two means of egress when located in a Group E occupancy is unchanged. The language of the amendment has been revised for clarity. The language "not less than two means of egress" is added to indicate that more than two means of egress are permitted. "Prep room" is revised to "prep area" because a laboratory prep space may not necessarily be a room, which is an 80 percent enclosed area. The changes to this section are reasonable because they maintain the existing requirement but with clarifications that will result in more uniform enforcement and application of the code.

Subp. 5. IBC section 1006.3.3, Single exits. The first sentence and items two through four listed in this proposed section are identical to the 2018 IBC. Items 1 and 5 in this section are modified to add sleeping units. This would require sleeping units to comply with the same requirements as dwelling units in order for a single exit or access to a single exit to be permissible. Dwelling units have spaces intended for living, sleeping, eating, cooking and sanitation. Sleeping units must have spaces intended for sleeping and may have spaces for living or eating but can have either spaces for sanitation or kitchen facilities but not both. It is reasonable that sleeping units have the same requirements as dwelling units for a single exit or access to a single exit because sleeping units do not have any additional hazards or fire risks. Item 5.1 in the model code has been re-written to add sleeping units. Item 5.2 in the model code has been rewritten for clarity and to add sleeping units. A sentence has been added at the end of section 1006.3.3 to clarify that subsection 1006.3.3.1 remains unchanged.

1305.1009 SECTION 1009, ACCESSIBLE MEANS OF EGRESS.

The existing part 1305.1009 has been renumbered 1305.1011 because of the renumbering of the IBC. Proposed amendments to 1305.1011 are discussed below.

A new part 1305.1009 is proposed to correspond with section 1009 of the 2018 IBC. The proposed rule modifies Section 1009.1 of the 2018 IBC to add exception number 3. Exception number 3 does not require alterations or renovations to an existing building to include an accessible means of egress. An accessible means of egress is a continuous and unobstructed path of travel from any accessible point in a building to a public way. For some existing buildings, the installation of an accessible means of egress is technically infeasible because of the structural conditions of the building or so costly as to make the renovation and reuse of an existing building cost-prohibitive. The exception to the accessible means of egress requirement exists in the 2012 IBC, Section 1007.1, Exception 1, and the 2018 edition of the International

Existing Building Code ("IEBC"), Section 305.6, Exception 2. An existing building renovated using the prescriptive method of the IEBC must comply with IBC requirements with exceptions. Because some existing buildings are renovated to the requirements of the IBC, it is reasonable to include in the IBC exceptions for existing buildings from IBC requirements. Exception number 3 clarifies code requirements and allows for cost-effective renovation and reuse of existing buildings.

1305.1010 SECTION 1010, DOORS, GATES, AND TURNSTILES.

Current rule 1305.1008 is renumbered as 1305.1010, and the section reference numbers are renumbered because the corresponding sections were renumbered in the 2018 IBC. All other proposed amendments are discussed below.

Subp. 5. IBC section 1010.1.5, Floor elevation. The only amendment other than renumbering is to remove the word "Exceptions." Because only one exception is modified and the other exceptions are not reprinted, the word "exceptions" should be deleted.

Subp. 5a. IBC section 1010.1.9.2, Hardware height. This exception to section 1010.1.9.2 of the 2018 IBC needs to be amended. The purpose of the exception is to allow hardware for latches in gates protecting pools, spas and hot tubs to be high (54 inches), in order to prevent young children from being able to reach the latch and access the water. The exception as written in the model code would allow these latches to have 54 inch high hardware on both sides of the gate. The proposed rule rewrites the exception to make sure that the latch is high only on the access side of the gate; the proposed rule is needed so as not to inhibit egress by all (including young children) in the event of an emergency.

Subp. 6. IBC section 1010.1.9.4, Locks and latches. The subpart is modified, items renumbered, and new items added as follows:

Items number 1, 2, 2.1, 2.2, 3, 4, and 5 are identical to the current rule.

Item number 2.3 is changed to correct the spelling of "revocable."

Item number 6 is added to the subpart, and is identical to item 6 in the 2018 IBC.

Items number 6 and 7 of the current rule are renumbered as items 7 and 8. Also, the cross references are renumbered to reflect renumbering in the 2018 IBC. In proposed item 8, the phrase "Special locking arrangements" is replaced with "Controlled egress doors." "Controlled egress doors" is the newer terminology used in the 2018 IBC.

Item number 8 of the current rule is renumbered to item 9. "Electromagnetic" is deleted and replaced with "electrically" to be consistent with the code language as written in sections 1010.1.9.9 and 1010.1.9.10 of the 2018 IBC. Electromagnetic locks are the most common type of electrical locks but not the only type of electric locking hardware. Other electric locks perform the same function as electromagnetic locks. Item number 8 has also been amended to refer to both sections 1010.1.9.9 and 1010.1.9.10. The current rule refers only to section 1008.1.9.9 of the 2012 IBC because this was the only section in the 2012 IBC dealing with release of electromagnetically locked egress doors. In the 2018 IBC, there are two sections dealing with this issue: section 1010.1.9.9 concerning sensor release of electrically locked egress doors, and section 1010.1.9.10 concerning door hardware release of electrically locked egress doors. It is therefore reasonable to reference both sections of the 2018 IBC.

Item number 9 of current rule 1305.1008, subpart 6, is renumbered to item 10. The IBC section reference is renumbered because the corresponding section was renumbered in the 2018 IBC. The language is revised to clarify that the cells referred to are detention cells intended to restrict an occupant's movement for safety or security reasons. The amendment is reasonable because monastic cells are a type of cell, but occupants of monastic cells are not being restrained for safety or security reasons.

Item number 11 is new. This item is added for consistency with section 1010.1.9.12 of the 2018 IBC. Exception number 3 to that section, as amended by proposed rule 1305.1010, subp. 7a, allows exit doors in stairways serving not more than four stories to be locked, as long as the door is operable from the egress side. Item 11 in proposed rule 1305.1010, subp. 6, is needed and reasonable because this is an example of a situation where locks are permitted to prevent the operation of doors – in this case, from the side opposite the egress side.

Subp. 6a. IBC section 1010.1.9.7, Controlled egress doors in Group I-1, I-2, R-3, and R-4 occupancies. The language in this subpart is revised for consistency with the language in section 1010.1.9.7 of the 2018 IBC. The title is changed for consistency with the 2018 IBC. "Approved special door locking arrangements" is replaced with "Controlled egress door locking systems, including electromechanical locking systems and electromagnetic locking systems." Throughout the 2018 IBC, the phrase "special locking arrangements" is replaced with the newer terminology, "controlled egress

doors." The new language providing examples of controlled egress door locking systems clarifies code requirements as to what type of locking system is permitted. Electric locking systems are installed on doors so egress from a space can be controlled. Electric locking systems and controlled egress doors must meet condition number 1 through condition number 11. The last sentence before condition number 1 has been deleted because similar language has been moved to the Exceptions, consistent with the 2018 IBC. The other changes in the paragraph before item 1 are for clarity.

The amendments to items 1 through 6 as well as 8 and 9 are for clarity and consistency with the 2018 IBC. In addition, the phrase "fire-detection system" in item 1 is replaced with "smoke-detection system" because the automatic systems detect smoke, not fire. The phrase is added at the end of item 1 to clarify that the locks must unlock with the means of egress served by the locked area. This is needed and reasonable to allow escape in an emergency.

In item 3, the words "or switch" are added because the fire command center may use switches to unlock the locking system. A sentence is added at the end to clarify that the signal or switch must directly break power to the lock, rather than signaling a person to manually break the power.

In item 5, the reference to the IFC is changed to the Minnesota State Fire Code for ease of reference.

Item 7 is amended to clarify that both sides of the door with a controlled egress locking device must have emergency lighting. This is needed to ensure that emergency egress is not hindered by dark conditions.

Item 8 is amended to add "resident or" because the occupancies covered by this rule include assisted nursing homes and other occupancies where the individuals are more commonly known as residents than patients.

Item number 11 is added to require the door locks to be listed as UL 294. UL is an acronym for Underwriters Laboratories, a product safety and testing organization. The requirement that door locks be listed as UL 294 is contained in item 8 of the 2018 IBC.

Exceptions number 1 and 2 are identical to the 2018 IBC. Exception number 3 is similar to the existing "Exception to item #10" in Minnesota Rules 1305.1008, subpart 6a. The existing exception applies only to R-3 occupancies. It is reasonable for this exception to also apply to R-4, Condition 1 occupancies because the criteria for I-1 and R-4 occupancies are very similar except R-4 occupancies are limited to 16 occupants. The language has also been modified to update the cross-reference to the 2018 IBC, and for clarity.

Subp. 7. IBC section 1010.1.9.8 and 1010.1.9.8.1. The current subpart 7 has been substantially rewritten for consistency with the model code. Sections 1010.1.9.7 and 1010.1.9.7.1 in the 2012 IBC have been renumbered as sections 1010.1.9.8 and 1010.1.9.8.1 in the 2018 IBC. All differences from sections 1010.1.9.8 and 1010.1.9.8.1 of the 2018 IBC will be discussed below.

1010.1.9.8, Delayed egress door locks. The proposed rule has three changes from section 1010.1.9.8 of the 2018 IBC. First, where the proposed rule says "an approved smoke detection system," the model code says "an approved smoke or heat detection system." The proposed rule eliminates the option of a heat detection system because a smoke detection system provides the earliest warning for occupants; if there is no smoke detection system but only a heat detection system, occupants will not have as much time for emergency egress, which is a risk to life safety.

The second change in the proposed rule is the addition of the phrase "throughout the means of egress" before item 1. This phrase is added for clarity.

The third change is the wording of item 2. The model code's item 2 states: "Group E classrooms with an occupant load of less than 50." In the proposed rule, item 2 states: "Group E in locations where the means of egress does not serve an assembly use area." This is consistent with the current Minnesota State Fire Code, Minn. R. rule 7511.1008, subp. 2. For life safety reasons, it is important that school assembly areas not have delayed egress door locks; it's possible to have an assembly area where the occupant load is less than 50. If a delayed egress door were allowed in such an assembly area, this would delay egress from the assembly area in an emergency situation, and pose a life safety risk.

The proposed exception is identical to the exception in the model code.

1010.1.9.8.1, Delayed egress locking system. This new subsection parallels the 2018 IBC, with some amendments.

The first sentence of the proposed rule and items 1, 2 and 3 are identical to the 2018 IBC.

Item 4 parallels the 2018 IBC, but the model rule has been amended to reflect the increased life safety requirements in the current rule. Specifically, the IBC uses the phrase "physical effort" without defining it. The

proposed rule, like the current fire code (Minn. R. 7511.1008, subp. 2), uses the phrase "of not more than 15 pounds" to qualify the maximum amount of force. This is needed and reasonable to ensure that the amount of force needed to open the door is not excessive. (Note that the current fire code says that 66 N[17] is the equivalent of 15 pounds of force. This is an error and is corrected in the proposed item 4 to 67 N.) Item 4 of the model code states that the door must open when the physical force is applied for "not more than 3 seconds." The proposed rule amends this to "not more than 1 second." This one-second phrase is in the current fire code, Minn. R. 7511.1008, subp. 2. This shorter period of time is needed to ensure prompt egress in an emergency. In the model code, the last sentence of item 4 before the exception uses the term "rearming." This word has been changed to "relocking" in both the proposed rule and the current rule. "Relocking" is a more accurate term, because this section is dealing with locks rather than alarm systems. Also, the proposed rule adds the phrase "from an approved location." This is a clarification of the intent of the rule. Finally, the phrase "to item 4" is added after the word "exception" to clarify that the exception is only an exception to item 4.

Item 5 is identical to the 2018 IBC, except that the phrase "to item 5" has been added after the word "exceptions" for clarification.

Item 6 is identical to the 2018 IBC, except that the phrase "to item 6" has been added after the word "exception" for clarification.

Items 7 and 8 are identical to the 2018 IBC.

Subp. 7a. IBC section 1010.1.9.12, Stairway doors. The section reference numbers are renumbered to coordinate with renumbering changes made to the 2018 IBC. The subpart is otherwise unchanged.

Subp. 8. IBC section 1010.1.11, Special detention arrangements, and subsections 1010.1.11.1, 1010.1.11.2, 1010.1.11.3 and 1010.1.11.4. The section reference numbers are renumbered to coordinate with renumbering changes made to the 2018 IBC. The only other proposed amendment is to section 1010.1.11.1. The proposed amendment to the last sentence of this section states that the conditions are specified in items 1 through 6 above, rather than just saying that the conditions are specified above, and deletes the word "of." These changes are for clarification only and do not change the substantive meaning.

1305.1011 SECTION 1011, STAIRWAYS.

This rule part is being renumbered and relocated because this section was renumbered from Section 1009 to Section 1011 in the 2018 IBC. The title is changed for consistency with the 2018 IBC.

Subpart 1. IBC Section 1011.14, Alternating tread devices. This subpart is amended by renumbering the section reference numbers to coordinate with numbering changes made in the 2018 IBC. The word "and" is added for clarification.

Subp. 2. IBC section 1011.15, Ships ladders. This subpart is amended by renumbering the section reference numbers to coordinate with numbering changes made in the 2018 IBC. The first sentence is amended to clarify that the proposed language replaces all of 1011.15, including its subsections. The current rule cross-references current part 1305.1209. However, that in turn cross-references the Minnesota Mechanical Code. The reference in the proposed rule has therefore been changed to the Minnesota Mechanical Code for ease of reference. The word "less" has been changed to "fewer" in item 2 and the subitems under item 2 have been numbered for consistency with the current Minnesota State Fire Code, Minn. R. 7511.1009, subp. 2 (2017). Item 3 has been amended to generally reference the Minnesota Mechanical Code rather than a specific section of that code. This is reasonable to avoid the need to amend this rule whenever the Minnesota Mechanical Code is amended.

Current 1305.1015 SECTION 1015, EXIT AND EXIT ACCESS DOORWAYS. Repeal.

This rule part is being repealed because IBC section 1015 was renumbered to section 1006, and all new language has been proposed for the amendment of section 1006. The reasons for the new language are described above in connection with proposed rule 1305.1006.

New 1305.1015 SECTION 1015, GUARDS.

Part 1305.1013 is being renumbered as part 1305.1015 because this section in the 2018 IBC was renumbered.

Subpart 1. IBC section 1015.2, Where required. The 2018 IBC has been renumbered from 1013.2 to 1015.2 so the section reference number must be renumbered to coordinate with the change. The other changes are not substantive, but are for clarity and consistency with the grammatical construction used in the 2018 IBC.

[17] N is the abbreviation for the unit of force known as "Newtons."

Subp. 2. IBC section 1015.3, Height. This section of the 2018 IBC has been renumbered from 1013.3 to 1015.3 so the section reference number must be renumbered to coordinate with the change. The reference to section 1028.14 in the 2012 IBC is renumbered to section 1029.17 to correspond with renumbering in the 2018 IBC.

Subp. 2a. IBC section 1015.6, Mechanical equipment, systems, and devices. This subpart is added to modify section 1015.6 of the 2018 IBC to direct the user to the appropriate rules governing guard requirements for mechanical equipment. Because this section is specific to the requirements for guards needed for the installation and service of mechanical equipment, it is reasonable to direct the user to the Minnesota Mechanical Code.

Subp. 3. IBC section 1015.8, Window openings. This section of the 2018 IBC has been renumbered from 1013.8 to 1015.8 so the section reference number must be renumbered to coordinate with the change. Similarly, cross-references have been modified in accordance with the new numbering of sections in the 2018 IBC. The section heading is changed from "[w]indow sills" to "window openings" because the section heading is changed in the 2018 IBC. Language regarding subsection 1013.8.1 is no longer needed because identical language (except for the cross-reference number) is now in subsection 1015.8.1 of the 2018 IFC. A sentence has been added at the end of section 1015.8 to clarify that subsection 1015.8.1 remains without amendment. Exception 5 in the current rule is deleted because the Minnesota Building Code does not cover repairs or replacement windows. Repairs and alterations are governed by chapter 1311, the Minnesota Conservation Code for Existing Buildings.

1305.1018 SECTION 1018, AISLES.

Part 1305.1017 is being renumbered as part 1305.1018 because this section in the 2018 IBC was renumbered. Because the entire model code section 1018 is being replaced, the section heading is added for clarity. All subsections are renumbered and two section reference numbers are amended to coordinate with changes made to the 2018 IBC. For improved clarity, a sentence is rewritten in section 1018.2. In sections 1018.2.1 and 1018.2.2, references to the Minnesota Accessibility Code are added for clarification and for consistency with the Minnesota Accessibility Code. Under that code, certain aisles will need to be wider to allow for wheelchair access. In section 1018.2.2, the word "that" is added for clarity.

1305.1020 SECTION 1020, CORRIDORS.

Part 1305.1018 is being renumbered as part 1305.1020 because this section in the 2018 IBC was renumbered.

Subpart 1. IBC Table 1020.1, Corridor Fire-Resistance Rating. This table of the 2018 IBC has been renumbered from 1018.1 to 1020.1; the section reference number must be renumbered to coordinate with the change. A title has been added to the table for improved readability. The table is changed to add a new row for Group I-4 occupancies. Some conditions or uses of Group I-4 occupancies are exempt from the requirement to be equipped with an automatic sprinkler system if the building corridors have a 1-hour fire-resistance rating. The change to Table 1020.1 is therefore reasonable and needed to recognize that not all Group I-4 occupancies are required to be sprinklered and that buildings that are not equipped with an automatic sprinkler system must have a 1-hour fire-resistive corridor system to protect the exit system from smoke and fire.

The table is also changed by requiring a half-hour or 1-hour fire-resistance rated corridor in buildings containing residential occupancies equipped with automatic sprinkler systems. Footnote (d) is added to require buildings containing Group R-3 and R-4 occupancies to have 1-hour fire-resistance rated corridors when the automatic sprinkler system is installed in accordance with the requirements of section 903.3.1.3, which cross references NFPA 13D. NFPA 13D compliant automatic sprinkler systems are smaller systems that can use the pipes that serve other plumbing fixtures and only use two heads to control a fire. They are intended for use in one- and two-family dwellings and townhouses. Automatic sprinkler systems compliant with NFPA 13R are served by their own pipes and use a maximum of four heads to control a fire. They are intended for use in residential occupancies that are up to four stories in height. Because NFPA 13D systems provide less life-safety protection in the event of fire, it is reasonable to require the additional protection provided by a corridor with a fire resistance rating of 1-hour.

Subp. 2. IBC section 1020.6, Corridor continuity. This section of the 2018 IBC has been renumbered from 1018.6 to 1020.6 so the section reference number must be renumbered to coordinate with the change. Exception number 3 is added to clarify that elevator lobbies that comply with section 1016.2, item 1 are not intervening rooms within an exit system. This exception is identical to the 2018 IBC, section 1020.6, exception 2.

1305.1023 SECTION 1023, INTERIOR EXIT STAIRWAYS AND RAMPS.

Part 1305.1022 is being renumbered as part 1305.1023 because this section in the 2018 IFC was renumbered. The proposed amendments more closely reflect the language in section 1023.5 of the 2018 IBC.

With the proposed amendments, the introductory phrase (before the numbered items) is identical to the 2018 IBC. The items are numbered for readability. Proposed items 1, 2, 6 and 7 are identical to items 1, 2, 5 and 6 in the model code. In item 1, the current language regarding sprinkler piping and standpipes is no longer necessary because those are part of the fire protection systems (item 2). Proposed items 3 and 5 are revised versions of items 3 and 4 in the model code. These items have been amended to limit penetrations for security systems and two-way communication systems to those serving the exit stairway or ramp. This amendment is reasonable because the enclosures for interior exit stairways and ramps are fire barriers that are fire-resistance-rated wall assemblies intended to restrict the spread of fire. This amendment would reduce the number of permitted penetrations, to limit any negative effect to the fire-resistance of the enclosure. The new model code significantly reduced the protection requirements for these critical exit enclosures. This amendment retains the level of protection required by the 2015 Minnesota Building Code. Proposed item 4 is new: "Wiring that serves the exit stairway or ramp." This addition is reasonable because penetrations for wiring that are not properly protected can negatively affect the fire resistance of the exit stairway or ramp. The amended language at the end of section 1023.5 is almost identical to the 2018 IBC. The last sentence has been modified to change the model code language, "between adjacent interior exit stairways and ramps," to the following: "between adjacent interior exit stairways and ramps or adjacent exit passageways." This amendment is needed to limit penetrations to all adjacent features that could negatively affect the fire-resistance of the enclosure.

Section 1023.5 of the IBC is also modified by deleting the exception to the section. The exception is deleted because it would permit miscellaneous penetrations for items such as electrical pipes, plumbing pipes, outlets, or mechanical ducts. These penetrations may cause oversized holes around the items penetrating the wall and could potentially allow fire or smoke to enter the protective enclosure, thus jeopardizing fire protection for occupants while exiting downward in an exit enclosure during a fire.

1305.1024 SECTION 1024, EXIT PASSAGEWAYS.

Current rule 1305.1023 is being renumbered as 1305.1024, and the IBC references are renumbered, for consistency with the 2018 IBC.

IBC section 1024.6, Penetrations. This modifies section 1024.6 of the 2018 IBC to limit penetrations into or through an interior exit passageway to items necessary for fire protection or those that are serving the interior exit passageway. The proposed amendments closely reflect the language of the model code. An exit passageway is a fire-resistive rated "tunnel," used only for the purposes of exiting, that runs from the interior of a building to a safe exterior exit discharge area.

With the proposed amendments, the introductory phrase (before the numbered items) is almost identical to the 2018 IBC. The proposed rule adds the word "interior" for clarity; the intent of this rule is to regulate interior exit passageways. The items are numbered for readability. Proposed items 1, 2, 6 and 7 are identical to items 1, 2, 5 and 6 in the model code. Proposed items 3 and 5 are revised versions of items 3 and 4 in the model code. These items have been amended to limit penetrations for security systems and two-way communication systems to those serving the exit passageway. This amendment is reasonable because the enclosures for interior exit passageways are fire barriers that are fire-resistance-rated wall assemblies intended to restrict the spread of fire. This amendment would reduce the number of permitted penetrations, to limit any negative effect to the fire-resistance of the enclosure. The new model code significantly reduced the protection requirements for these critical exit enclosures. This amendment retains the level of protection required by the 2015 Minnesota Building Code. Item 4 in the proposed rule is new: "Wiring that serves the exit passageway." This addition is reasonable because penetrations for wiring that are not properly protected can negatively affect the fire resistance of the exit passageway. The amended language at the end of section 1024.6 is almost identical to the 2018 IBC. The last sentence has been modified for clarity and to change the model code language, "between adjacent exit passageways," to the following: "between adjacent interior exit stairways and ramps or adjacent exit passageways." This amendment is needed to limit penetrations to all adjacent features that could negatively affect the fire-resistance of the enclosure.

Section 1024.6 of the IBC is also modified by deleting the exception to the section. The exception is deleted because it would permit miscellaneous penetrations for items such as electrical pipes, plumbing pipes, outlets, or mechanical ducts. These penetrations may cause oversized holes around the items penetrating the wall and could potentially allow fire or smoke to enter the protective enclosure, thus jeopardizing fire protection for occupants while exiting downward in an exit enclosure during a fire.

1305.1029 SECTION 1029, ASSEMBLY.

Current rule 1305.1028 is being renumbered as 1305.1029 because this section in the 2018 IBC was renumbered. The IBC section references are renumbered in accordance with reformatting in the model code. All other amendments are discussed below.

Subpart 1. IBC section 1029.1.1, Bleachers. In the exception to ICC 300 section 404.5, 1.676 mm is changed to 1,676 mm to correct an error in the metric conversion of 66 inches. Exception 1 to ICC 300 section 408.1, item 1, is rewritten for clarity. There is no substantive change.

Subp. 2. IBC section 1029.6.4, Width of means of egress for bleacher facilities. This subpart is added for consistency with the Minnesota State Fire Code. Except for renumbering the cross-references to correspond with the 2018 IBC, the proposed language is identical to the language in Minnesota Rule part 7511.1028, subpart 2 (2017).

Subp. 3. IBC section 1029.9.5, Dead-end aisles. This subpart is added for consistency with the Minnesota State Fire Code. Except for renumbering the cross reference to correspond with the 2018 IBC, the proposed language is identical to the language in Minnesota Rule part 7511.1028, subpart 3 (2017).

Subp. 4. IBC section 1029.17, Assembly guards. This new exception to section 1029.17 of the 2018 IBC is needed and reasonable to incorporate the requirements of the Minnesota Bleacher Safety Act. The language of the proposed exception is identical to the language in the current fire code, Minnesota Rule 7511.1028, subpart 4 (2017), except that the cross-references have been changed due to renumbering of the 2018 IBC. Also, a sentence is added at the end to clarify that subsections 1029.17.1 through 1029.17.4 remain unchanged.

1305.1030 SECTION 1030, EMERGENCY ESCAPE AND RESCUE.

Current rule 1305.1029 is renumbered as part 1305.1030 to coordinate with numbering changes made to the 2018 IBC. The code sections within the part are renumbered in accordance with reformatting in the model code.

The model code language needs to be amended because it relies on mandatory sprinkling of all Group R occupancies. Because Minnesota does not require sprinkling of all R occupancies, it is important to ensure that all non-sprinklered R occupancies have emergency escapes.

Subpart 1. IBC section 1030.1, General. The first sentence is reworded to make it easier to understand. The last two sentences before the exceptions are amended to be identical to the last two sentences before the exceptions in the 2018 IBC.

In exception 1, the phrase “and not used for purposes other than mechanical equipment or storage” has been added to the language of IBC exception 1. This phrase is needed and reasonable for clarification. Spaces with a ceiling height under 80 inches are technically not able to be occupied; in other words, it would be illegal to use these spaces as a laundry room, family room, or bedroom. However, the model code language is not clear enough for plain language understanding. This plainer language is important so that the code can be correctly enforced in out-state Minnesota where there are no local building officials for interpretation.

Exceptions 2 and 3 are identical to IBC exceptions 2 and 3.

Exception 4 is a rewritten version of exception 1 in the current rule. Exception 1 in the current rule refers to tables 1021.2(1) and table 1021.2(2) of the 2012 IBC. Those tables have been renumbered and moved to section 1006 of the 2018 IBC. Instead of referring to certain occupancies “in accordance” with these tables, the proposed language is easier to understand. It clarifies (in clause B) that the means of occupancy must not rely on section 1006.3.3 for compliance. Proposed section 1006.3.3 refers to the same (renumbered) tables, table 1006.3.3(1) and 1006.3.3(2). Proposed section 1006.3.3 specifies conditions in which only one exit is needed. Proposed exception 4 (in proposed section 1305.1030, subpart 1) limits the circumstances under which certain residential occupancies are not required to provide emergency escape and rescue openings. Proposed exception 4 limits those circumstances to occupancies that: (1) have an approved automatic sprinkler system throughout; and (2) have not used section 1006.3.3 to provide only one exit. This limitation is needed and reasonable because the added life and safety protection provided by the sprinkler system and multiple exits is sufficient; the cost of providing emergency escape and rescue openings in those circumstances is not warranted.

Exceptions 5 through 8 are identical to exceptions 2, 3, 4 and 8 in the current rule.

Current exceptions 5 and 6 are deleted because they are comparable to proposed exceptions 2 and 3. They have been moved so that the proposed exception numbers match the exception numbers in the IBC, to avoid confusion.

Current exception 7 is deleted because the condition it addresses is now covered by proposed exception 4.

Current exception 9 is deleted because this exception concerns existing buildings. Existing buildings are covered in Minnesota Rules Chapter 1311, the Minnesota Conservation Code for Existing Buildings.

Subp. 2. IBC section 1029.4, Operational constraints. Repeal. This subpart is repealed because the 2018 IBC now contains the same language in section 1030.1.1. Therefore, this modification is no longer necessary.

Subp. 3. IBC section 1029.6 Replacement windows. Repeal. This subpart is repealed because the 2018 IEBC now contains the same language in section 505.3. Minnesota adopts the IEBC as part of the Minnesota Conservation Code for Existing Buildings. *See* Minn. R. 1311.0010, subp. 1. The Department is in the process of amending this rule to adopt the 2018 IEBC by reference. Therefore, current rule 1029.6, subp. 3, is no longer necessary.

1305.1202 SECTION 1202, VENTILATION.

IBC section 1202.1, General. Current rule 1305.1203 is being renumbered as 1305.1202 because this section in the 2018 IBC was renumbered and revised. Section 1202.1 and the ross-reference are renumbered accordingly.

Current rule 1305.1209 SECTION 1209, ACCESS TO UNOCCUPIED SPACES. Repeal.

The 2012 IBC section 1209 has been renumbered to section 1208 in the 2018 IBC. The current rule 1304.1209 is being repealed because 2018 IBC section 1208 does not need any amendment. This section is specific to mechanical equipment access, with is addressed in the Minnesota Mechanical Code, chapter 1346. The Minnesota Mechanical Code adopts the International Mechanical Code with amendments. Section 1208 of the 2018 IBC correctly refers the reader to the International Mechanical Code.

New 1305.1209 SECTION 1209, TOILETS AND BATHROOM REQUIREMENTS.

Current rule 1305.1210 is renumbered as 1305.1209 for consistency with the numbering of the 2018 IBC. The IBC section reference is renumbered accordingly. The rule heading is also amended for consistency with the section heading in the 2018 IBC.

1305.1402 SECTION 1402, PERFORMANCE REQUIREMENTS.

Current rule 1305.1403 is renumbered as 1305.1402 for consistency with the numbering of the 2018 IBC. The IBC section reference is renumbered accordingly.

1305.1404 SECTION 1404, INSTALLATION OF WALL COVERINGS.

Current rule 1305.1405 is renumbered as 1305.1404 for consistency with the numbering of the 2018 IBC.

Subpart 1. IBC section 1404.4.2. The IBC section number and the cross reference within the rule are amended because the corresponding sections were renumbered in the 2018 IBC.

1305.1502 SECTION 1502, ROOF DRAINAGE.

Current rule 1305.1503 is being renumbered 1305.1502, and references to sections are renumbered, because of the renumbering of sections in the IBC. The title of the rule is also changed for consistency with the title of section 1502 of the 2018 IBC. All other amendments are discussed below.

Subpart 1. IBC section 1502.1, Roof drainage. IBC section 1502.1.1, Where required. The drainage requirements for one- and two-family dwellings are deleted because Minnesota Rules, chapter 1309, the International Residential Code, regulates the roof drainage requirements for one- and two-family dwellings.

IBC section 1502.1.2, Roof design. The word "structurally" is added for clarity. The purpose of the rule is to ensure that the structure is designed for maximum ponding, not that the rest of the roof is designed to create maximum ponding.

Subp. 1a. IBC section 1502.2. A new subpart 1a is added and subsections are numbered because of the renumbering of the IBC.

IBC section 1502.2.2, Sizing of secondary drains. This section is modified to require secondary drains to have the same capacity as the primary roof drains. This amendment is necessary to ensure that roofs have proper drainage in the event of a heavy storm. Secondary drains are intended to replace the primary drains in the event of a clog, and therefore must be sized the same as the primary drain system capacity.

The title of the plumbing code is corrected to Minnesota Plumbing Code, in accordance with Minn. R. 1300.0050, item S. The chapter number of the Minnesota Plumbing Code is added for ease of cross-reference.

IBC section 1502.2.3, Sizing of scuppers. This section is modified to refer to the new Table, for ease of reference. Also, the phrase "weir length" has been added for clarity.

Table 1502.2.3, Scupper sizing. Table 1502.2.3 is added to provide users with the correct size for the scupper based on the size of the roof for which the scupper provides drainage. The sizing of the scuppers in Table 1502.2.3 is consistent with the sizing requirements for scuppers located in the Minnesota Plumbing Code. *See* 2012 Uniform Plumbing Code Section 1108, as amended by Minn. R. 4714.1108 (2017).

Subp. 2. IBC section 1502.3, Scuppers. The IBC section number in this subpart is renumbered because of the renumbering of the 2018 IBC.

1305.1510 SECTION 1510, ROOFTOP STRUCTURES.

Current rule 1305.1509 is being renumbered 1305.1510, and references to sections are renumbered, because of the renumbering of sections in the IBC.

Current 1305.1511 SECTION 1511, SOLAR PHOTOVOLTAIC PANELS/MODULES. Repeal.

Current rule 1305.1511 is being repealed. Section 1512 of the 2018 IBC completely addresses the issues addressed by the current rule.

New 1305.1511 SECTION 1511, REROOFING.

Current rule 1305.1510 is being renumbered 1305.1511 to correspond with the renumbering of the IBC. The language of the current rule is proposed as subpart 2, with no changes other than renumbering. Proposed subparts 1 and 3 are new language, as discussed below.

Subpart 1. IBC section 1511.1, General. A minimum slope is required for roofs to provide adequate drainage and prevent water from ponding, or collecting on the roof. Ponding due to inadequate drainage can result in damage to the roof, or even collapse of the roof. The first sentence of this proposed section 1511.1 is identical to the first sentence of section 1511.1 of the 2018 IBC. The 2018 IBC contains two exceptions. This proposed rule replaces the first of these two exceptions, which addresses "roof replacement or roof recover," with a proposed exception addressing reroofing. "Reroofing" is defined as follows in the IBC: "The process of recovering or replacing an existing roof covering. See 'Roof recover' and 'Roof replacement.'" 2018 IBC, section 202. "Reroofing" therefore covers both replacing and recovering a roof, and is used for clarity in the proposed exception. The first IBC exception exempts from the minimum design slope (2 percent) roofs that provide positive drainage. The proposed exception adds three additional conditions for that exemption to apply. Specifically, the proposed rule would permit reroofing that does not comply with the minimum design slope where: (a) the minimum slope is technically infeasible; (b) a structural analysis demonstrates that the existing structure is able to support ponding to the point of overflow or level of the secondary drainage system; and (c) a secondary (emergency) drainage system is installed; and. Regarding the infeasibility condition, design conditions must maintain positive drainage from not only the roof, but adjacent wall flashings, curbs, and parapets. Where the increased thickness of the roof insulation to provide code compliant drainage would result in a covering or blocking of existing wall flashing weeps, or exceed existing curb or parapet flashing heights where these conditions are unalterable, the change in roof slope is deemed to be technically infeasible. Many older buildings have not been evaluated to determine if the roof is able to withstand the additional stress of water or have secondary emergency roof drains installed. It is reasonable to require that a structural analysis be completed to determine whether the structure is able to withstand the additional stress caused by ponding and whether the roof is at risk of failure due to overloading.

Most buildings are already designed so that the roofs allow water to spill over the sides, have perimeter scuppers or have secondary roof drains. In the rare event that this is not part of the original design, the solution is often as simple as adding a scupper ($250 installed) to the sidewall of a roof. Very large buildings may require a secondary drain. Adding a second roof drain costs approximately $350 to $400 and then the piping costs depend upon the distance to a discharge location. The cost of damage to the structure or failure of a roof is considerable compared to the cost of a structural analysis and secondary emergency roof drain. As a result, the costs associated with the proposed amendment are reasonable to ensure roofs unable to comply with the minimum slope requirement are able to withstand the stresses caused by ponding.

The second exception in section 1511.1 of the 2018 IBC provides an exception for roofs that provide for positive roof drainage. The proposed rule deletes the second exception because it creates a structurally dangerous condition. Where roofing systems are replaced with more insulation in order to comply with energy code requirements, the heat escaping from the roof is reduced

and snow loading can be significantly increased. During spring months, the primary drains can become clogged with ice dams creating ponding conditions. Where the snow has not melted down because of added insulation, a secondary drainage system is necessary to prevent structural failure. Alternatively, the existing roof can be demonstrated to support the potential ponding under the revised exception 1.

Subp. 3. IBC section 1511.7, Drainage. This new subpart adds requirements for a secondary drainage system for existing roofs where the construction has the capability to entrap and pond water if primary drains become clogged. Roofs are required to slope toward the drains at a quarter inch per foot. As a result, the water collects near drains, and if the drains are clogged and there is no secondary drainage system, the water ponds on the roof. Currently, roofs must be designed to withstand a design snow load of thirty-five pounds per square foot in the southern part of the state and forty-two pounds per square foot in northern Minnesota. Some existing roofs were not designed to withstand that much weight. Ponded water with a depth of six and three-quarter inches can exceed thirty-five pounds per square foot and ponded water nine and a half inches in depth can exceed forty-two pounds per square foot, which is more weight than the roof is designed to withstand under current requirements. The excessive weight can result in damage to the roof or failure. This new subpart is reasonable because the addition of a secondary drainage system will mitigate the risk of structural damage to the roof.

An exception is added so a secondary drainage system is not required for existing roofs that are able to withstand the weight of ponded water where the water will discharge over the edge of the building. This exception is reasonable because a secondary drainage system is unnecessary for a building where another mechanism is in place to remove water from the roof.

1305.1607 SECTION 1607, LIVE LOADS. Repeal.

This rule part is being repealed because the 2018 IBC now contains similar provisions in IBC section 1607. Therefore, this rule part is no longer necessary.

1305.1904 SECTION 1904, DURABILITY REQUIREMENTS.

IBC section 1904.3, Corrosion Protection. This rule part is added because a similar requirement was inadvertently excluded from the proposed rule during the adoption of the 2012 IBC. The proposed amendment requires steel within concrete to be protected when used in structures such as parking ramps. It is necessary to protect steel used in concrete because the de-icing salts used in the winter can have corrosive effects. The specific requirements are from the design code for concrete, ACI 318. It is reasonable to apply this design code because Section 1901.2 of the 2018 IBC requires structural concrete to meet the requirements of ACI 318: "Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as amended …."

1305.2308 SECTION 2308, CONVENTIONAL LIGHT-FRAME CONSTRUCTION.

Subpart 1. IBC Figure 2308.9.3. Repeal. This subpart is repealed. This current subpart amends a table in the 2012 IBC entitled "Basic Components of the Lateral Bracing System." The 2018 IBC includes a Figure 2308.6.1 with this same title, and that figure does not need to be amended. The requirements from Table 2308.9.3 of the 2012 IBC are now included in proposed Table 2308.6.1, which is addressed in subpart 2. It is therefore reasonable to repeal subpart 1.

Subpart 2. IBC Table 2308.6.1, Wall bracing requirements. The title of this table has been changed in the 2018 IBC to "Wall Bracing Requirements" and the table has been renumbered. These changes are reflected in the proposed rule.

Table 2308.6.1 in the 2018 IBC has a column for "Seismic Design Category." Because Minnesota is not subject to earthquakes, proposed Table 2308.6.1 has a column for wind speed rather than seismic design category. This is the same as current rule 1305.2308, subpart 1. The reference to 1609.3 for wind speed is needed because wind speed varies across the state. Section 1609.3 specifies how to calculate basic design wind speed for determination of wind loads. Other than that, the first three rows of proposed Table 2308.6.1 are identical to the first three rows of Table 2308.6.1 in the 2018 IBC. In the 2018 IBC, these three rows address seismic design categories A and B, which correspond to buildings in areas that are the least susceptible to earthquakes. The other rows are for areas more susceptible to earthquakes. Because this does not apply to Minnesota, these rows have been removed.

The footnotes to the table have been amended. For clarity, a definition of NP has been added. This is the same definition in model code Table 2308.6.1. Proposed footnotes a through d are identical to the comparable footnotes in the 2018 IBC. Footnote e in the model code has been removed because it does not apply to the first three rows of the table. Footnotes c and d in the current rule are no longer needed because of changes made to the 2018 IBC.

1305.2510 SECTION 2510, LATHING AND FURRING FOR CEMENT PLASTER (STUCCO)

The section reference number in this rule part is amended from 1404.2 to 1403.2 in the 2018 IBC because the corresponding section was renumbered in the 2018 IBC.

1305.2603 SECTION 2603, FOAM PLASTIC INSULATION. Repeal.

Sill plates, joist headers, and rim joists are building elements between the basement wall and floor, so the application of the foam plastic spray is limited in area. Foam plastic spray is applied to these elements to provide insulation and prevent cold air from entering the structure.

The current rule part amended section 2603.4.1.13 of the 2012 IBC so that the maximum thickness of foam plastic spray applied to sill plates, joist headers, and rim joists in Type V construction is five and one-half inches. The current rule also removed density requirements for the foam plastic spray.

The current rule is repealed so that section 2603.4.1.13 of the 2018 IBC would apply. That section includes density requirements (by requiring a range of 1.5 to 2.0 pcf), and states that the maximum thickness of the foam plastic is three and one-quarter inches.

The current rule was added during the adoption of the 2006 IBC to delete foam density requirements because only a few foam plastic spray manufacturers produced foam plastic spray meeting those specifications. Since the adoption of the 2006 IBC, more foam plastic spray manufacturers are able to meet the density requirements. Therefore, there is no longer a need to delete the model code's density requirements.

The amendment to the 2006 IBC also required the foam to be five and a half inches thick; however, testing that occurred for the 2006 IBC model code determined that foam plastic spray with a maximum thickness of three and a quarter inches did not pose any additional fire hazard provided the other conditions in the section are met. Foam plastic spray that is three and one-quarter inches in thickness provides sufficient insulation without increasing fire risk. Therefore, there is no need to modify the model code's maximum thickness requirement.

The 2012 IRC, as adopted with amendments, requires foam plastic spray that is a maximum three and one-quarter inches in thickness, and this provision is carried forward in the 2018 IRC. The 2018 IRC is being adopted as a part of a contemporaneous rulemaking, amending Minnesota Rules Chapter 1309. The repeal of current rule 1305.2603 will allow provisions for the maximum thickness of foam plastic spray applied to sill plates, joist headers, and rim joist to be the same for both residential and commercial construction, which will result in more uniform application and enforcement of the code.

1305.2702 SECTION 2702, EMERGENCY AND STANDBY POWER SYSTEMS.

This rule part is amended by renumbering the IBC section number because the corresponding section was renumbered in the 2018 IBC.

1305.2902 SECTION 2902, MINIMUM PLUMBING FACILITIES.

Subpart 1a. Repeal. This subpart is being repealed. The 2018 IBC adequately addresses the calculation of the number of fixtures in section 2902.1.1.

Subp. 2. IBC Table 2902.1, Minimum number of required plumbing fixtures. This subpart is amended by re-lettering the footnotes because the corresponding footnotes were re-lettered in the 2018 IBC. Existing footnotes "e," "f" and "h" are re-lettered as "g," "h" and "l" respectively. As a result, in section A of this subpart, item 1, "h" is deleted and replaced with "l". Also, "A-5 Use Group" has been changed to "No. 1, Assembly Classification" to correspond with the designation of the applicable row in the 2018 IBC. In item 2, "f" is replaced with "h" and footnote "g" is added. This footnote was inadvertently omitted during the adoption of the 2012 IBC. It is necessary to add footnote "g" to the "Drinking Fountains" heading to direct the user to accessibility requirements for drinking fountains located in Minnesota Rules, chapter 1341.

Proposed item 4 deletes the requirement in the 2018 IBC that adult day care and child day care facilities have at least 1 bathtub or shower. Operational procedures for adult day services and child day care facilities typically do not permit staff to bathe those in their care. Therefore, the required bathing fixtures typically go unused and are an unnecessary expense. It is reasonable to delete this requirement.

The text of the footnotes is set out in section B of this subpart. Existing footnote "e" is proposed footnote "g," with the added reference to the accessibility requirements in chapter 1341. Existing footnote "g" is re-lettered as "e" and amended to only require service sinks at buildings classified as business or mercantile with an occupant load of more than 50 instead of an occupant load of more than 15. Service sinks are often floor mounted and useful for businesses and stores regularly cleaned by mopping. Businesses and stores that are small are usually carpeted,

and carpet is not cleaned by mopping. As a result, a service sink is not useful for businesses and stores with occupancies of 50 or less.

Proposed footnote "f" is modified from IBC footnote "f" by replacing "International Swimming Pool and Spa Code" with "Minnesota Rules, part 4717.3650." Minnesota does not adopt the International Swimming Pool and Spa Code, and therefore its provisions do not apply. The requirements for number and type of plumbing fixtures for swimming pools are located in Minnesota Rules, part 4717.3650. It is reasonable to provide code users with the correct reference for the number and type of plumbing fixtures required for swimming pools.

Existing footnote "f" has been re-lettered to footnote "h." Existing footnote "h" has been re-lettered to footnote "l."

Subp. 3. IBC section 2902.2, Separate facilities. Exception number 2 is amended by deleting the occupant load of "20" and replacing it with "25." Section 2902.2 in the 2018 IBC has four exceptions. Exception number 4 in the IBC is specific to a business occupancy and allows a unisex restroom to be used for up to 25 occupants. If exception 2 is changed to allow a single toilet facility to serve up to 25 occupants in any occupancy group, then exception 4 which is specific to B occupancies allowing the same is no longer necessary. It is reasonable and necessary to increase the number of occupants serviced by a unisex restroom in exception number 2 from 20 to 25 occupants so that the change of occupancy of a small tenant space, such as from office to light manufacturing will not force the addition of a second restroom for the same number of people. This will result in lower cost to business owners because restrooms are one of the most expensive spaces per square foot in a building due to finishes, equipment and fixtures.

1305.3001 SECTION 3001, GENERAL.

Chapter 30 of the 2012 IBC is currently incorporated by reference into Minnesota Rules Chapter 1307, with amendments. Under the proposed rule, chapter 30 of the 2018 IBC is incorporated with proposed amendments into Minnesota Rules Chapter 1305. Accordingly, amendments to chapter 1307 are being proposed as part of a contemporaneous rulemaking. The proposed amendments to chapter 1307 repeal the existing amendments to chapter 30 of the 2012 IBC (found in the current part 1307.0095). In proposed part 1305.0011, IBC chapter 30 is proposed to be incorporated by reference into chapter 1305 with amendments because chapter 30 addresses the requirements for buildings equipped with an elevator, such as requirements for elevator lobbies and occupant evacuation. The requirements in IBC chapter 30 are useful to building officials inspecting buildings with elevators installed, so it is reasonable to incorporate IBC chapter 30 by reference into chapter 1305.

As indicated below in connection with specific proposed rules, some of the language from part 1307.0095 is being relocated to chapter 1305 because of the incorporation of chapter 30 by reference into chapter 1305.

Subpart. 1. IBC section 3001.2, Emergency elevator communications systems for the deaf, hard of hearing and speech impaired. The proposed amendment deletes section 3001.2 of the 2018 IBC, which requires elevators to be equipped with an emergency elevator communication system for the deaf, hard of hearing and speech impaired. The proposed amendment deletes this section because the requirements for the emergency communication system cannot be readily met with existing elevator or broadband technology. Section 3001.2 requires emergency elevator communication systems to be a "visual and text-based and a video-based 24/7 live interactive system" that allows individuals to communicate with emergency personnel using video conference technology or chat/text software. An emergency elevator communication system with these capabilities is reliant upon broadband technology for the elevator occupant to communicate with emergency personnel or others outside of the elevator. Many communities in greater Minnesota have limited or no access to broadband so the emergency elevator communications system will not function in these communities. [18] Wireless broadband technology is unreliable for sending chat messages or transmitting video from an elevator because the materials used in the construction of the elevator and the shaft weaken or block wireless signals. Wireless broadband signal strength within elevators may be improved in the future by the development of new technologies. At this time, a continuous video system is not feasible; at best, a video system may function periodically to determine if there are occupants in the elevator.

An emergency elevator communication system with text messaging capability is more feasible with current broadband and elevator technology but is still impractical. Elevator passengers inadvertently activate emergency call functions by bumping the panel equipped

[18] The Minnesota Department of Employment and Economic Development publishes maps showing broadband availability. For a map showing the percentage of households served by broadband in the different Minnesota counties, see: https://mn.gov/deed/assets/county-wireline_tcm1045-255857.pdf. County maps providing more detail are available at: https://mn.gov/deed/programs-services/broadband/maps/county-maps.jsp

with a phone or intercom, and it is anticipated passengers will inadvertently text at higher rates. Elevator call centers need to distinguish inadvertently placed calls from calls placed during an emergency, and will need to perform the same function for any text message received. The addition of text messages would overwhelm elevator call centers, and ultimately worsen response time to emergencies because the call center must determine whether the text message was sent due to an emergency.

Subp. 2. IBC section 3001.3, Referenced standards. This section is modified to direct the code user to Minnesota Rules, chapters 1307 and 1335. The technical standards listed in the 2012 IBC table 3001.3 are currently incorporated by reference, with amendments, in Minnesota Rules, chapter 1307, the Minnesota Elevator Code. *See* Minn. R. 1307.0020, subp. 1. The reference to Minnesota Rules, chapter 1335, replaces the 2018 IBC language directing the code user to flood hazard construction requirements located in ASCE 24 and section 1612.3. Current rule 1305.0011, subpart 5, which is not proposed for amendment, replaces all floodproofing provisions with the floodproofing provisions located in Minnesota Rules, chapter 1335. It is reasonable to assist code users by providing references to other applicable codes. The remaining content is unchanged.

Subp. 3. IBC section 3001.4, Accessibility. This section is amended to provide the code user with a reference to Minnesota Rules, chapter 1341, for the accessibility requirements for elevators. It is helpful to provide code users with references to applicable codes. This language is similar to Minnesota Rule 1307.0095, subpart 1(C), which states: "Passenger elevators required to be accessible by the 2012 IBC, Chapter 11, shall conform to Minnesota Rules, chapter 1341." Because the proposed rule is part of the IBC, no reference to the IBC is needed. Also, the proposed rule includes the phrase: "or to serve as part of an accessible means of egress." This is a reasonable addition because Minnesota Rule 1341 contains the technical criteria for accessibility requirements.

Subp. 4. IBC section 3001.5, Change in use. This section is amended to provide the code user with a reference to Minnesota Rules, chapter 1307, for the requirements for elevators undergoing a change in use. It is reasonable to provide code users with references to applicable codes. Except for the change in IBC section number, this language is identical to Minn. R. 1307.0095, subp. 1(D).

1305.3002 SECTION 3002, HOISTWAY ENCLOSURES

Subpart 1. IBC section 3002.3, Emergency signs. With two changes, this is the same language that is currently in part 1307.0095, subp. 2(C). The first change is that the current rule references the 2010 edition of ASME A.17.1. The 2018 IBC now references the 2016 edition of ASME A.17.1. *See* 2018 IBC, chapter 35. It is reasonable to leave out the date so that the rule will refer to whatever edition of ASME A17.1 is the referenced standard for the incorporated edition of the IBC. The second change is that the exceptions are removed from the rule, and a sentence is added stating that the exceptions remain the same as in the 2018 IBC. This is reasonable because the exceptions in the rule are the same as the exceptions in the 2018 IBC other than one different cross-reference number, which is different because of the renumbering of the IBC.

Subp. 2. IBC section 3002.4, Elevator car to accommodate ambulance stretcher. This language is comparable to the language in current part 1307.0095, subp. 2(D). One long sentence has been split in two to make this easier to understand. Also, the words "at each floor level" have been added at the end of the sentence before the exception. This clarifies that the star of life symbol must be placed on both sides of the door frame at each floor level, to assist ambulance personnel. Finally, the word "in" has been added in the first line of the exception for improved readability.

Subp. 3. IBC section 3002.6, Prohibited doors. With one change, this language is identical to current part 1307.0095, subp. 2(F). The only change is that, in item 2, the phrase "from the car" is proposed to be replaced with the phrase "from inside the car." This is a clarification of the current language, and is not intended to change the meaning.

Subp. 4. IBC section 3002.9, Plumbing and mechanical systems. This is new language. Section 3002.9 of the 2018 IBC is modified to add sections 3002.9.1 and 3002.9.2 addressing plumbing and mechanical systems in elevator hoistways. Section 3002.9.1 directs the code user to Minnesota Rules, chapter 1307, for the requirements for plumbing in elevator hoistways. Plumbing in elevator hoistways is addressed in the technical standard ASME A17.1, which is incorporated by reference with amendments in Minnesota Rules, chapter 1307. It is reasonable to assist code users by providing references to other applicable codes. Section 3002.9.2 limits mechanical systems and mechanical components in hoistways to those serving the hoistways. This amendment is reasonable because it corresponds with the 2018 IBC requirement in section 3002.9 that mechanical systems not be located in elevator hoistway enclosures.

The exception to section 3002.9 of the 2018 IBC is deleted because that exception permits certain floor drains, sumps and sump pumps. Under the Minnesota Plumbing Code, sumps and sump pumps are not permitted in an elevator hoistway. The Minnesota Plumbing Code requires an indirect connection from floor drains to outside of the elevator hoistway. *See* Minn. R. 4714.0418, subp. 2, amending Uniform Plumbing Code section 418.6.

1305.3003 SECTION 3003, EMERGENCY OPERATIONS

Subpart 1. IBC Section 3003.1.1, Manual transfer. IBC section 3003.1.1 states: "**3003.1.1 Manual Transfer.** Standby power shall be manually transferrable to all elevators in each bank." The proposed language includes this language in the first sentence, but adds the words: "At elevator locations where standby power is required." The proposed rule also adds a second sentence: "Standby power shall not be transferred from elevator banks where standby power is required to elevator banks where standby power is not required." These changes are needed because not all elevator locations require standby power. The model code language has caused confusion; building officials have interpreted the language as meaning that standby power must be transferrable to ALL elevators in a building, potentially resulting in standby power being transferred away from locations where it is required, or even more costly, mandating standby power at all elevators in order to maintain standby power at the required locations and have it available at all other elevator banks. The proposed amendments clarify the intent of the model code language.

Subpart 2. IBC Section 3003.1.3, Two or more elevators. The language in this subpart is comparable to the current amendment to section 3003.1.3 contained in part 1307.0095, subpart 3(A). The first sentence is modified by adding the words "where standby power is required" and "controlled by that common operating system." These amendments are needed and reasonable because: (1) the intent of the rule is to apply only where the operating system is required to have standby power; and (2) the intent of the rule is to apply only to the elevators controlled by the operating system that are required to have standby power, not to all elevators in the building. The citation at the end of the subpart has also been modified to update it to the most current version.

1305.3030 CHAPTER 30, ELEVATORS AND CONVEYING SYSTEMS. Repeal.

This rule part is being repealed because Chapter 30 of the 2018 IBC is proposed to be incorporated by reference into chapter 1305 instead of chapter 1307, with the proposed amendments to IBC chapter 30 in the proposed amendments to chapter 1305 as described above. As a result, the rule part is no longer necessary.

1305.3111 SECTION 3111, ENERGY SYSTEMS.

Almost all of the language in this part is new. The title of this part has been changed to correspond with the 2018 IBC. The discussion below explains how and why this rule differs from section 3111 of the 2018 IBC.

Subpart 1. IBC section 3111.1, General. The lead-in sentence has been changed to clarify that the rule amends both section 3111.1 and all of its subsections. The first sentence of the proposed section 3111.1 is identical to the first sentence of section 3111.1 of the 2018 IBC. The exception is not in the IBC. The exception is needed and reasonable because buildings regulated by chapter 1309 must comply with the specific requirements of that chapter relating to solar energy systems. *See* section R324 of the 2018 International Residential Code.[19]

IBC section 3111.1.1, Wind resistance. The 2018 IBC language is unchanged, but the section is included in the proposed rule to provide context for the entire amendment. Including this language will clarify to the user that the subsection applies and is not deleted from the code.

IBC section 3111.1.2, Roof live load. The 2018 IBC language is unchanged, but the section is included in the proposed rule to provide context for the entire amendment. Including this language will clarify to the user that the subsection applies and is not deleted from the code.

IBC section 3111.1.3, Roof access points. This is proposed new language that is not in the model code. This language is identical to language being proposed in the Minnesota State Fire Code as part 7511.1204, adding subsection 1204.1.2. This subsection is added to include seven criteria for roof access points to ensure firefighters have unobstructed access to the roof and an area on the roof that is free from hazards or obstacles. The roof access points must be located where the firefighters have access to the roof from the ground. This is necessary to ensure that there is a location to place a ground fire ladder. The roof access points must not require the ladder to be placed over window or door openings and must be at strong points of building construction so that the ladder can be

[19] Chapter 1309 currently adopts the 2012 IRC, and does not amend section R324. The Department is contemporaneously proposing to amend chapter 1309 to adopt the 2018 IRC, and does not anticipate amending section R324 of the 2018 IRC.

secured to the building to allow firefighters safe access to the roof. Also, the proposed amendments do not permit roof access points in locations with overhead obstructions to further ensure the safety of firefighters accessing the roof. Item 5 indicates that the roof access point must lead to a landing on the roof that is six feet in each direction without any obstacles. The landing size at the roof access point is consistent with the minimum width required in the model code for a perimeter clear access pathway. This proposed criteria is reasonable for life safety to allow firefighters to perform vertical ventilation or extinguish a fire on the roof. Roofs with slopes greater than two units vertical in twelve units horizontal must be provided a direct access pathway to the roof ridge so that the ladder reaches the peak of the roof. This is necessary because roofs with slopes of 2:12 and steeper are not required to have perimeter access pathways, so the firefighters must have the roof access point align with the pathway to the ridge in order to be able to utilize the required access pathway to the ridge. Item 6 requires two roof access points so that an alternative path is available if an obstacle such as a fire burn-through blocks one roof access point. The building code means of egress requires a minimum separation of one-half the distance of the diagonal of a space when two exits are required, and has an exception allowing separation of one-third the diagonal distance when the building is fully sprinklered. *See* IBC Section 1007.1.1, exception 2. The one-third diagonal distance standard is applied to the roof to provide firefighters working on the roof another safe means of roof access if the primary access point is compromised by fire.

IBC section 3111.1.4. This section is added to require the notification of fire officials when a roof mounted solar installation is planned. This modification is reasonable because fire inspection officials are often unaware of a roof mounted solar installation until the project is substantially completed and undergoing final inspection. Any changes to the roof mounted solar installation required by the fire inspection official after the project is substantially complete will be more expensive than changes required during the early stages of the project.

Subp. 2. IBC section 3111.3, Photovoltaic solar energy systems. This section of the IBC is modified to delete the references to NFPA 70 and the IFC and add an exception for nonhabitable structures. The reference to NFPA 70 is replaced with a reference to the Minnesota Electrical Code, which is the appropriate reference for electrical requirements in Minnesota. NFPA 70 is the National Electrical Code (NEC). The 2017 edition of the NEC has been adopted in Minnesota Rules, chapter 1315, the Minnesota Electrical Code. *See* Minn. R. 1315.0200. Referencing the Minnesota Electrical Code clarifies which edition of the NEC applies. The reference to the IFC is replaced with a reference to the Minnesota State Fire Code, which incorporates the IFC and is the appropriate reference for fire code requirements in Minnesota. *See* Minnesota Rule 7511.0050, which is being proposed for amendment to incorporate the 2018 IFC.

An exception is added to exempt the installation of solar photovoltaic power systems on detached, nonhabitable Group U structures from compliance with section 3111 of this code. Group U occupancies are buildings and structures of an accessory and miscellaneous structural use not classified in any other specific occupancy group by the IBC. Group U occupancies include structures such as agricultural buildings, barns, carports, and sheds. Group U occupancies are more fully described in section 312 of the IBC. It is reasonable to exempt Group U occupancies from the installation requirements for photovoltaic solar energy systems in section 3111 because Group U occupancies are detached from habitable structures and pose little hazard to life-safety. This exception is consistent with the current exception from IBC photovoltaic solar energy system installation located in existing Minnesota Rules, part 1305.3113.

Subp. 3. IBC section 3111.3.4, Access and Pathways. This subpart modifies section 3111.3.4 of the 2018 IBC and adds additional subsections. The additional subsections incorporate the language of section 1204 of the 2018 IFC. It is reasonable to coordinate IBC and IFC requirements for photovoltaic solar energy systems because photovoltaic solar energy systems must meet the requirements of both codes. It is reasonable to include the IFC requirements for photovoltaic solar energy systems in this chapter because designers may not refer to the IFC when designing buildings to be equipped with photovoltaic solar energy systems. Including the IFC requirements for photovoltaic solar energy systems will lower the costs of installation because designers will be aware of all requirements as they begin the project. Additionally, locating IFC requirements for photovoltaic solar energy systems in this chapter ensures that designers include the required roof access for firefighters, which improves life safety for building occupants.

Except for one change, the first two sentences of section 3111.3.4 are identical to section 1204.2 of the 2018 IFC. The only change in the first sentence is that the proposed rule references the subsections of section 3111.3 rather than comparable references to subsections of 1204 in the fire code. The third sentence has been changed because the 2018 IFC permits “minimal obstructions, such as vent pipes, conduit or mechanical equipment.” The revised sentence prohibits all obstructions. It is reasonable to not permit any such obstructions, for the safety of firefighters and to ensure that firefighters can rapidly access all areas affected by the fire. The exceptions are

identical to the exceptions in section 1204.2 of the 2018 IFC.

IBC section 3111.3.4.1, Solar photovoltaic systems for roof slopes greater than 2 units vertical in 12 units horizontal (2:12). The requirements for roof access and pathways are determined based on occupancy groups in sections 1204.2.1 and 1204.3 of the 2018 IFC. The 2018 IFC presumes that Group R-3 buildings have sloped roofs and buildings belonging to all other occupancy classifications have flat roofs. Because roof slope is not determined by occupancy type, the requirements of sections 1204.2.1 and 1204.3 are modified so that the requirements for roof access and pathways are based on the roof slope. Sections 3111.3.4.1.1 to 3111.3.4.1.3 address the roof pathway requirements for sloped roofs, which are roofs with slopes more than two units vertical in twelve units horizontal.

IBC section 3111.3.4.1.1, Pathways to ridge. This section modifies the language of section 1204.2.1.1 of the 2018 IFC to require: (1) pathways at intervals of 150 feet throughout the length and width of the roof; and (2) at least one pathway on the fire department access side of a roof as an alternative to having at least one pathway on the street or driveway side. Pathways to the ridge are necessary to allow firefighters a route to access the highest point of the roof. Requiring pathways at intervals of 150 feet throughout the length and width of the roof is consistent with the pathway requirements for flat roofs of large-scale commercial buildings, as found in section 1204.3.2, Item 1, of the 2018 IFC. Proposed section 3111.3.4.1.1 requires large scale sloped roofs to have a similar number of pathways for fire department access to the roof.

Section 1204.2.1.1 of the 2018 IFC requires at least one pathway on the street or driveway side of the roof. The proposed amendment would allow the pathway to be on the fire-department-access side of the roof. This allows an alternative method of access to the pathway for buildings without street or driveway access. The requirement allows a pathway to be in any place where there is access for the fire department.

IBC section 3111.3.4.1.2, Setbacks at ridge. This section incorporates the language of section 1204.2.1.2 of the 2018 IFC with one minor change. The IFC erroneously listed 36 inches as 457 mm. The correct equivalency is 914 mm. Setbacks are areas of the roof not covered by photovoltaic solar arrays. Setbacks are measured as the distance from the photovoltaic solar array to the roof ridge. Setbacks are necessary to provide firefighters with unobstructed access to the ridge line.

IBC section 3111.3.4.1.3, Alternative setbacks at ridge. This section incorporates the language of section 1204.2.1.3 of the 2018 IFC, with minor changes. First, the reference in the IFC to section 903.3.1.3 is deleted because the application of this section as amended goes beyond R-3 occupancy groups and goes beyond IBC section 903.3.1.3, the type of sprinkler system associated with smaller dwelling type structures. Also, the proposed rule corrects an error in the IFC, which had erroneously indicated that 36 inches equals 457 mm. The correct equivalency is 914 mm. Finally, the IFC language is changed to replace “dwelling” with “building.” It is reasonable to replace “dwelling” with “building” because the term “dwelling” refers to a building classified as a residential occupancy and the proposed amendments to this section apply the requirements for roofs of Group R-3 occupancies to a building of any occupancy with a sloped roof.

IBC section 3111.3.4.1.4, Emergency escape and rescue openings. This section modifies the requirements of section 1202.2.2 of the 2018 IFC to apply to Group R occupancies. A portion of Group R occupancies may be used for sleeping purposes. As a result, it is necessary for these occupancies to have an access pathway from the emergency escape and rescue opening to the roof edge so firefighters can evacuate occupants. Also, the words “from the roof edge” are added to the last sentence. This is needed for clarification of how to measure the pathway.

IBC section 3111.3.4.2, Solar photovoltaic systems for roofs with slopes of 2 units vertical in 12 units horizontal or less. The model fire code section 1204.3 refers to all buildings other than Group R-3 and presupposes flat roofs for these buildings. The section is rewritten to specifically address low sloped roofs regardless of occupancy. With this new language, the exception is no longer needed. References in this section and subsections are renumbered to correspond to the building code sections.

IBC section 3111.3.4.2.1, Perimeter pathways. This subsection and its exception are identical to section 1204.3.1 of the 2018 IFC.

IBC section 3111.3.4.2.2, Interior pathways. With one change, this subsection is the same as section 1204.3.2 of the 2018 IFC. The proposed rule adds item 4, which is a requirement for a pathway from an emergency escape and rescue opening to a roof edge. This pathway is necessary to ensure that emergency escape and rescue openings do not have solar panels installed directly beneath them and that such openings can provide the means of egress intended by the code without the added hazard of trying to navigate through a solar array under emergency egress conditions.

IBC section 3111.3.4.2.3, Smoke Ventilation. This subsection is identical to section 1204.3.3 of the 2018 IFC.

Subpart 4. IBC section 3111.3.5, Ground-mounted photovoltaic panel systems. This section is copied from 2018 IFC section 1204.4 with only the code cite changed for coordination with the building code.

Subpart 5. IBC section 3111.3.6, Buildings with rapid shut down. This section and its subsections, figures and table are copied from 2018 IFC section 1204.5. Code cites are changed for coordination with the building code. The only other change is that the second sentence of item 2 in section 3111.3.6.1 has been broken into two sentences for clarity.

[**Note: Current rule 1305.3112 has been renumbered 1305.3114.]**

1305.3113 SECTION 3113, RELOCATABLE BUILDINGS.

The language of the current rule, relating to solar photovoltaic power systems, is deleted because this topic is addressed in proposed section 1305.3111.

The proposed rule deletes all the subsections of IBC section 3113 (3113.1 through 3113.4) and replaces them with a new section 3113.1. The proposed new section refers readers to Minnesota Rules, chapter 1361. Chapter 1361 addresses the requirements for industrialized and modular buildings. This change is reasonable to direct code users to the correct Minnesota Rules chapter for the requirements for industrialized and modular buildings.

1305.3114 WINDOW CLEANING ANCHORS

IBC section 3114, Window cleaning anchors. Current rule 1305.3112 has been renumbered as 1305.3114 to coordinate with the numbering of the 2018 IBC. For consistent formatting, the title of the section is added at the top and the new IBC section number has been changed to 3114.1.

1305.3401 CHAPTER 34, EXISTING STRUCTURES. Repeal.

This rule part is being repealed because chapter 34, Existing structures, has been removed from the 2018 IBC. As a result, the amendment is no longer applicable and needs to be repealed to correlate with changes made to the 2018 IBC.

1305.3500 CHAPTER 35, REFERENCED STANDARDS.

Subp. 1a. ANSI MH29.1-2012. This subpart is needed to update this standard from the 2008 version to the 2012 version. The 2012 version is the most current version.

Subp. 1b. ANSI A18.1-2017. This subpart is needed to update this standard from the 2014 version to the 2017 version. The 2017 version is the most current version.

Subp. 2. Supplemental standards. This subpart is amended by deleting the reference to the 2011 version of NFPA 45. This standard is no longer needed because chapter 35 of the 2018 IBC includes the 2015 version of NFPA 45, which is a more current standard and is used in the industry.

This subpart is also amended by adding the 2012 editions of NFPA 99 and NFPA Standard 101. The proposed amendment is reasonable and needed to ensure consistent and standard code application and enforcement across state agencies. MDH and DHS have indicated that they are currently enforcing the 2012 editions of NFPA 99 and NFPA 101 and will continue to do so for at least the next six years. The 2018 IBC criteria differ from and are in direct conflict with those of the 2012 NFPA 99 and 2012 NFPA 101 standards.

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2020

MINNESOTA ELEVATORS AND RELATED DEVICES

Chapter 1307, Elevators and Related Devices, is not a separate code book and adopts several ASME codes and standards.

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing Elevators and Related Devices, Minnesota Rules, Chapter 1307; Revisor's ID Number R-04517

INTRODUCTION

The Commissioner of the Minnesota Department of Labor and Industry ("Commissioner") proposes to amend rules governing elevators and related devices in the Minnesota State Building Code, Minnesota Rules, Chapter 1307.

The Minnesota State Building Code consists of twenty-two separate chapters of Minnesota Rules.[20] Chapter 1307 adopts by reference, with amendments, several standards related to the safe installation, maintenance, and operation of elevators and related devices. The proposed rules incorporate by reference the latest editions of the following American Society of Mechanical Engineers ("ASME") standards: *ASME A17.1/CSA B44-2016, Safety Code for Elevators and Related Equipment ("ASME A17.1")*; *ASME A17.3-2015, Safety Code For Existing Elevators and Escalators ("ASME A17.3"); ASME A17.5-2014, Elevator and Escalator Electrical Equipment ("ASME A17.5"); ASME A17.7/CSA B44.7-2007 Performance-Based Safety Codes for Elevators and Escalators* ("*ASME A17.7"); ASME A18.1-2017, Safety Standard for Platform Lifts and Stairway Chairlifts ("ASME A18.1"); ASME A90.1–2015, Safety Standard for Belt Manlifts ("ASME A90.1"); and ASME B20.1-2015, Safety Standard for Conveyors and Related Equipment ("ASME B20.1")*.

The latest edition of the ASME A17.3 standard, Safety Code for Existing Elevators and Escalators, includes a provision requiring existing elevator owners to update or replace their elevator controller units to monitor and prevent the operation of an elevator in the event of faulty door contact circuits if manufactured prior to July 01, 1997, and which have not yet had their controller units updated or replaced since that date.[21] The Department is proposing to include that provision without amendment. The update or replacement of controller units are necessary to equip those older elevators with a system to monitor and prevent the operation of an elevator with faulty, failed, or manually by-passed door contact circuits. Door contact circuits are intended to prevent the continued automatic ascent or descent of an elevator while the car doors, landing doors, or both are open or ajar. Without a controller system to monitor the actual open or closed position of car doors and landing doors, the circuits can be overridden or fail, falsely indicating to the controller that the elevator doors are closed when they are actually open, and vice versa. The continued operation of the elevator in this circumstance can be hazardous. A person can be caught between one of the sets of doors as the elevator begins to move, becoming partially trapped between the landing and passenger compartments. Such an occurrence is rare but can result in serious bodily injury or death to the person trapped between compartments. As will be more fully described in both the Department's Regulatory Analysis section and its Rule-By-Rule Analysis section of this Statement of Need and Reasonableness below, the adoption of this provision is reasonable and needed so that all passenger elevators in Minnesota have the same safety features to protect against serious bodily harm or death to passengers, regardless of when they or their controllers were manufactured.

In consultation with the Construction Codes Advisory Council ("CCAC"), the Department of Labor and Industry ("Department") utilized a Technical Advisory Group ("TAG") committee to review existing rule Chapter 1307 and the ASME and ANSI standards to propose reasonable and needed changes to the elevators and related devices provisions of the State Building Code, contained in that rule chapter. The TAG committee members were appointed by the CCAC to review and comment upon the 2018 ICC model codes and relevant standards and proposed changes to the Minnesota State Building Code. The proposed amendments in this rulemaking incorporate changes proposed by Chapter 1307 TAG members and the most recent editions of the ASME standards.

[20] A complete list of the Chapters making up the Minnesota State Building Code can be found at Minnesota Rules, part 1300.0050 (2015).

[21] Pursuant to ASME A17.1-1996, Safety Code for Elevators and Related Equipment, all *new* elevator controllers constructed after July 01, 1997, were and continue to be required to have a system in place to monitor and prevent the operation of an elevator with faulty door contact circuits. That safety requirement was not extended to *existing* elevators until 2015 when ASME determined that the preventative safety measure must apply to existing elevators and controllers as well. *See* ASME A17.3, section 3.10.12 (2015).

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1307
ELEVATORS AND RELATED DEVICES

GENERAL.

In numerous locations throughout the proposed rule chapter, references to the editions of the various incorporated codes or standards are modified to reflect the most current editions of the code or standard that is proposed for incorporation. These changes are necessary to ensure the proper edition of the code is being referenced and incorporated into the rule. The following are the current editions of the codes or standards proposed for incorporation:

Safety Code for Elevators and Escalators, ASME A17.1/CSA B44-2010 is being replaced with ASME A17.1/CSA B44-2016;

Safety Code for Existing Elevators and Escalators, ASME A17.3-2011 is being replaced with ASME A17.3-2015;

Elevator and Escalator Electrical Equipment, ASME A17.5-2011 is being replaced with ASME A17.5-2014;

Safety Standard for Platform Lifts and Stairway Chairlifts, ASME A18.1-2011 is being replaced with ASME A18.1-2018;

Safety Standard for Belt Manlifts, ASME A90.1-2009 is being replaced with ASME A90.1-2015; and

Safety Standard for Conveyors and Related Equipment, ASME B20.1-2009 is being replaced with ASME B20.1-2015.

The ASME Codes and Standards are published by the American Society of Mechanical Engineers, 2 Park Avenue, New York, New York, 10016.

Modifications are made throughout the rule chapter to reflect the most current editions of the codes and standards referenced in the rule.

1307.0020 CODES AND STANDARDS ADOPTED BY REFERENCE.

Subpart 1. This subpart is amended to reflect the latest edition of the incorporated codes and standards for elevators and related devices and the name and address of the publisher of the codes or standards that are referenced throughout the rule chapter. These changes are necessary to ensure that updated Codes and Standards are properly incorporated into and referenced throughout the proposed rule. The rule has been reformatted to list the codes or standards as subitems. This formatting modification is reasonable and necessary to assist in the overall ease of use, reading, and citation to the rule.

The incorporation by reference of chapter 30 of the International Building Code ("IBC") is deleted from this subpart and a reference to chapter 1305 of the Minnesota State Building Code and its amendments to IBC chapter 30 is being added to a new subpart 4, "Building Code Elevator and Conveying Systems Provisions." The incorporation of chapter 30 by reference is deleted because the IBC, including chapter 30 and corresponding Minnesota amendments, is currently being proposed for incorporation by reference in Minnesota Rules, chapter 1305, Adoption of the International Building Code. The incorporation by reference of IBC chapter 30, including Minnesota amendments, in existing chapter 1307 has caused confusion for some designers, elevator constructors, building officials, and municipal elevator inspectors because chapter 30 is a part of the IBC, yet the amendments to it were found in Minnesota Rules, chapter 1307. Chapter 30 addresses general system requirements for buildings equipped with elevators, such as provisions for egress requirements, fire and smoke protection, and emergency occupant evacuation. The ASME standards incorporated by reference in Minnesota Rules, chapter 1307, address specific technical requirements for the machinery and operation of elevators and related devices. To alleviate confusion, promote ease of use, and avoid duplicity, it is reasonable to adopt IBC chapter 30 as amended by Minnesota Rules chapter 1305, as opposed to adopting IBC chapter 30 herein and reproducing amendments to that chapter's general system requirements within the technical requirements of chapter 1307.

The proposed rule also incorporates by reference the Performance-Based Safety Codes for Elevators and Escalators, ASME A17.7/CSA B44.7-2007, because it is a performance-based and reasonable alternative to the more prescriptive requirements of the Safety Code for Elevators and Escalators, ASME A17.1/CSA B44, which remains incorporated by reference in the proposed rules. The performance standard, ASME A17.7/CSA B44.7, has been and continues to be acceptable for use in Minnesota because it a standard referenced and supported by ASME A17.1/CSA B44. The incorporation of that performance

standard into the proposed rule is reasonable and needed to encourage regulatory safety innovation and to clarify that ASME A17.7/CSA B44.7 is acceptable for use in Minnesota.

Finally, the proposed rule incorporates by reference ASME A17.3-2015, the Safety Code for Existing Elevators and Escalators. Like the existing ASME A17.1 safety code standard for newly built elevators, the 2015 version of the ASME A17.3 safety standard for existing elevators now contains a section that addresses the safety hazards associated with the automatic operation of elevators with faulty or bypassed door contact circuits and extends that protection to existing elevators.

The American Society of Mechanical Engineers published ASME A17.1 in 1996 in part to prevent newly built elevators from being operated between floors if their elevator doors and contact circuits are not fully closed and engaged.[22] The operation of an elevator with faulty door contact circuits can obviously be hazardous to life and limb. Door contact circuits are intended to prevent the continued automatic ascent or descent of an elevator while the car doors, landing doors, or both are open. Without a controller system to monitor and prevent the automatic operation of an elevator with faulty door contact circuits, a person can be partially trapped between the landing and passenger compartment as the elevator car begins to move between floors, resulting in serious bodily injury or death.

While new elevators manufactured on or after July 01, 1997, are required by the ASME A17.1 safety standard to have a built-in controller system to monitor and prevent automatic operation of an elevator with faulty door contact circuits, existing elevators manufactured prior to the effective date of that standard were not included. Following a series of elevator accidents resulting in serious injuries and deaths to passengers caught between elevator doors during operation of existing elevators not equipped with the preventative system, the American Society of Mechanical Engineers updated the Safety Code for Existing Elevators and Escalators, ASME A17.3, in 2015 to include the requirement that all existing elevators be equipped with a system to monitor and prevent automatic operation of an elevator with faulty door contact circuits. [23] *See* ASME A17.3-2015, section 3.10.12.

The failure of existing elevator door contact circuits is rare; nevertheless, a system to prevent the automatic operation of an elevator with faulty door contact circuits is available and significantly reduces or eliminates the risk of accidents resulting in serious bodily injury or death. Door contact circuits can fail for a number of reasons, including mechanical problems, electrical issues, or even human error in the maintenance or repair of the same. Older elevators lacking a system to prevent operation if the door contact circuits are faulty or not fully engaged are particularly at risk of an accident occurring due to aging equipment that requires more maintenance and repair. Additionally, elevator maintenance workers sometimes disable and bypass the door contact circuits manually to complete maintenance and repairs, thus increasing the risk to both themselves and passengers if the circuits are not correctly enabled immediately following those repairs. Compliance with A17.3-2015, section 3.10.12, is intended to prevent incidents occurring due to faulty or bypassed door contact circuits and may be had by updating or replacing the existing elevator's controller unit, an electromechanical system that acts as the elevator's "brain" by using relay-logic circuits or microprocessor-based controls to control the speed, position and door operation of an elevator. The new or updated controller unit is designed to prevent any operation of an existing elevator while the doors are open or ajar, even if other safety circuits designed to prevent operation are burnt out, damaged, bypassed, or otherwise rendered non-operational.

[22] While ASME A17.1-1996 was issued and published on December 31, 1996, its effective date was July 01, 1997. Elevator manufacturers build elevators and their mechanical components to the latest applicable ASME standards. Accordingly, elevators and their safety controller systems manufactured on or after July 01, 1997, are already equipped to prevent automatic operation of the same with faulty door contact circuits.

[23] For example, on December 14, 2011, in New York City, advertising executive Suzanne Hart was killed when she was trapped between elevator doors as an elevator continued its ascent despite her body preventing the door contact circuits from being fully engaged. Also, in New York City, Debra Jordan sustained serious bodily injury in 2010 when she was dragged seven floors with her arm and leg hanging outside of an elevator car with faulty door contact circuits and no system to prevent the automatic operation of the same under those conditions. Another high-profile death due to the absence of an elevator door lock monitoring device on an existing elevator occurred on August 16, 2003, at the Christus St. Joseph Hospital in in Houston, Texas, where Dr. Hitoshi Nikaidoh was decapitated as he was trapped between doors of an ascending elevator that lacked a controller system that could have prevented the accident. Other examples of bodily harm and death due to the lack of a system to monitor and prevent automatic operation of an existing elevator with faulty door contact circuits exist throughout the country, but the three examples noted above are the most commonly cited to when discussing the need for ASME A17.3-2015's requirements for existing elevators.

In light of the potentially serious consequences of operating an existing elevator without a system to monitor and prevent its automatic operation with faulty or bypassed door contact circuits, the proposed incorporation of ASME A17.3-2015, section 3.10.12, is reasonable and needed to protect the health and safety of the public who reasonably expect that all passenger elevators, regardless of their age or condition, are equipped with up-to-date technology and system mechanisms designed to prevent serious bodily injury or death due to worn, faulty, or bypassed door contact circuits.

Subp. 4. This new subpart refers the code user to Minnesota Rules, chapter 1305, which incorporates chapter 30 of the IBC by reference, with Minnesota amendments. As noted in subpart 1 above, chapter 30 of the IBC contains general provisions for elevator and conveying systems, addressing requirements for construction of a building containing an elevator or related device, including requirements for life-safety such as the evacuation of building occupants and fire safety features. Chapter 1307 and its incorporated ASME and ANSI standards address specific technical requirements for the machinery and operation of elevators and related devices. A reference to IBC chapter 30, as amended by Minnesota Rules, chapter 1305, within this chapter is reasonable and needed to provide the code user with direction to the correct location of those provisions within the State Building Code.

1307.0027 DEFINITIONS.

Subparts 2 through 4. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 4a. This new subpart adds the definition for a new referenced standard ASME A17.7/CSA B44.7-2007. *See* part 1307.0020, subpart 1, above, for a full explanation of this standard and statement of need and reasonableness.

Subparts 5 through 7. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subparts 8 through 11 remain unchanged.

Subparts 12 and 13. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 14. This subpart is being amended to reflect the current, proposed effective date for Chapter 1307, March 31, 2020, so that buildings in existence at the time of the proposed effective date can accurately be considered "existing installations" for purposes of this code.

Subparts 15 through 17 remain unchanged.

Subpart 18. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

1307.0030 PERMITS.

Subpart 1. Permits required. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR. This subpart is also amended by replacing "rope fastenings and hitch plates" with "suspension means fastenings and hitch plates" to reflect the change in the title of section 8.6.3.3 in the 2016 edition of the ASME A17.1/CSA B44 standard.

Subparts 2 and 3 remain unchanged.

Subparts 4 and 5. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

1307.0035 INSPECTION, TESTS, AND APPROVALS.

Subparts 1 and 2 remain unchanged.

Subpart 3. Approval. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 4 remains unchanged.

1307.0047 SPECIAL PROVISIONS.

Subparts 1 and 2. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 3 remains unchanged.

Subpart 4. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subparts 5 through 7 remain unchanged.

Subpart 8. All work required for compliance with ASME A17.1/CSA B44-2010 8.6.5.8 Safety Bulkhead [REPEAL]. This subpart is being repealed because the date set as a deadline for compliance with ASME A17.1/CSA B44-2010, section 8.6.5.8, has passed. Subpart 8 was added during the 2006 update of Chapter

1307 to allow elevator owners five years from the effective date of the rule for compliance with the requirements of section 8.6.5.8 of the 2004 edition of ASME A17.1, Safety Code for Elevators and Related Equipment ("ASME A17.1-2004"). During the 2012 update of Chapter 1307, this subpart was amended to require compliance with ASME A17.1/CSA B44-2010, section 8.6.5.8. Section 8.6 is the maintenance section of the 2004, 2010, and 2016 editions of ASME A17.1 and its provisions apply to both new and existing elevators. *See* ASME A17.1/CSA B44-2016, section 8.6.1.1.2. Section 8.6.5.8 requires any new or existing elevator without a safety bulkhead to have one installed or be equipped with either rail safeties or a plunger gripper.

Hydraulic elevators operate by forcing pressurized oil through a valve into a steel cylinder. Safety bulkheads prevent the rapid release oil if the cylinder fails. The rapid release of oil could cause the uncontrolled descent of the elevator car, posing a life safety risk to passengers. A plunger gripper or rail safeties are safety mechanisms that prevent an elevator car from descending rapidly in the event of cylinder failure. Due to the expense of installing a safety bulkhead or equipping an elevator with rail safeties or a plunger gripper, subpart 8 allowed five years from the effective date of the rule, January 29, 2007, for compliance.

Subpart 8 also required an annual submission of a notarized statement that the oil usage log was utilized and the elevator had successfully passed the annual tests required by ASME A17.1-2004, and later ASME A17.1/CSA B44-2010. Oil usage can indicate problems with the cylinder so it was necessary to monitor oil usage and perform annual tests to verify the cylinder continued to function correctly and did not pose an immediate life safety risk that would require an immediate repair.

The work necessary for compliance with ASME A17.1/CSA B44-2010, section 8.6.5.8, was to be completed by January 29, 2012. This was superseded by Minnesota Statutes, section 326B.188, requiring compliance with this requirement by January 29, 2012 or within 3 years of submitting a plan for compliance with code requirements. These dates have passed and all hydraulic elevators affected have now undergone the required repairs so owners are no longer required to submit notarized statements regarding the oil usage log and testing. There are no changes to the requirements that hydraulic elevators be equipped with a safety bulkhead or equipped either rail safeties or a plunger gripper. ASME A17.1/CSA B44-2016, as well as ASME A17.1/CSA B44-2010, carry forward those requirements without change. Therefore, this subpart is no longer necessary and is being repealed.

Subpart 9. All work required for compliance with ASME A17.1/CSA B44-2010 8.6.5.8 Bulkhead Material Transfer Device. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 10. All work required for compliance with ASME A17.3-2011 2.7.5 Restricted Opening of Hoistway Doors and Car Doors on Passenger Elevators [REPEAL]. This subpart is being repealed because the date set as a deadline for compliance with ASME A17.3-2011, section 2.7.5, has passed. During the 2006 update of Chapter 1307, the 2002 ASME A17.3-2002 was incorporated by reference. ASME A17.3-2002, section 2.7.5, required existing passenger elevators without door restrictors to be equipped with door restrictors. Door restrictors prevent those inside the elevator from opening the car doors more than four inches when the elevator is not eighteen inches below or above the landing floor level. This is a necessary life safety feature because passengers in elevators stalled between floors could attempt to evacuate the car by forcing the doors open, which can be especially hazardous if the elevator resumes operation with a passenger outside the car. This can result in the passenger falling backwards down the shaft through the opening under the elevator when the car is between floors. Due to the expense of adding door restrictors to an existing elevator, subpart 10 was added to permit owners of elevators five years for compliance with section 2.7.5.

The work necessary for compliance with ASME A17.3-2011, section 2.7.5, was to be completed by January 29, 2012. This was superseded by Minnesota Statutes, section 326B.188, requiring compliance with this requirement by January 29, 2012, or within 3 years of submitting a plan for compliance with code requirements. These dates have passed and all passenger elevators are equipped with door restrictors. There are no changes to the requirement that existing elevators be equipped with door restrictors. The requirement is carried forward in ASME A17.3-2015 2.7.5. Therefore, this subpart is no longer necessary and is being repealed.

Subpart 11. All work required for compliance with ASME A17.3-2011 3.11.3 Firefighter's service [REPEAL]. This subpart is being repealed because the date set as a deadline for compliance with ASME A17.3-2011, section 3.11.3, has passed. During the 2006 update of Chapter 1307, ASME A17.3-2002 was incorporated by reference. ASME A17.3-2002, section 3.11.3, required existing elevators not equipped with firefighter's service to be equipped with that safety feature.

Firefighter's service is a life safety feature that prevents the use of the elevator by building occupants in the event of an emergency and assists firefighters in

reaching upper levels of buildings. Phase I of firefighter's service recalls all elevators to the first floor in the event of a fire, which assists in the evacuation of those in the elevators. Phase II of firefighter's service restricts the use of the elevator to emergency personnel. Because of the expense of adding firefighter's service to an existing elevator, subpart 11 was added to permit elevator owners five years for compliance with section 3.11.3. Subpart 11 also includes an exception from Phase II requirements for elevators that travel only 35 feet from the lobby and are already equipped with Phase I functionality. This was reasonable because Phase II is primarily used in taller buildings so emergency responders can quickly access higher levels of the building. Elevators equipped with Phase I functionality were also not required to be equipped with Phase II if the Phase I activated when smoke was detected. This means Phase I would activate before emergency personnel arrived so building occupants could not use an elevator located near a fire.

The work necessary for compliance with ASME A17.3-2011, section 3.11.3, was to be completed by January 29, 2012. This was superseded by Minnesota Statutes, section 326B.188, requiring compliance with this requirement by January 29, 2012, or within 3 years of submitting a plan for compliance with code requirements. Furthermore, that statute exempts condominiums with five or fewer floors from compliance with Phase I and Phase II requirements with the approval of a building official. Both deadlines for compliance have passed and all elevators are equipped with firefighter's service unless exempt by rule or by statute. The requirements for compliance with firefighter's service are carried forward in A17.3-2015, section 3.11.3, without change. Therefore, this subpart is no longer necessary and is being repealed.

Subpart 12. All work required for compliance with ASME A17.3-2011 4.3.3 Hydraulic elevators [REPEAL]. This subpart is being repealed because the date set as the deadline for compliance with ASME A17.3-2011, section 4.3.3, has passed. During the 2006 update of Chapter 1307, ASME A17.3-2002 was incorporated by reference. ASME A17.3-2002, section 4.3.3, requires existing hydraulic elevators that do not have a double cylinder or cylinder with a safety bulkhead to be equipped with one.

Hydraulic elevators operate by forcing pressurized oil through a valve into a steel cylinder. Safety bulkheads and double cylinders are necessary to prevent the rapid release oil if the cylinder fails. The rapid release of oil could cause the uncontrolled descent of the elevator car, posing a life safety risk to passengers; therefore, it was necessary for noncompliant cylinders to be replaced. Subpart 12 also required an annual submission of a notarized statement that the oil usage log was utilized and the elevator had successfully passed the annual tests required by ASME A17.3-2002. Oil usage can indicate problems with the cylinder, so it was necessary to monitor oil usage and perform annual tests to verify the cylinder continued to function correctly and did not pose an immediate life safety risk.

The work necessary for compliance with ASME A17.3-2010, section 4.3.3, was to be completed by January 29, 2012. This was superseded by Minnesota Statutes, section 326B.188, requiring compliance with this requirement by January 29, 2012, or within 3 years of submitting a plan for compliance with code requirements. These dates have passed and all hydraulic elevators affected have undergone the required repairs so owners are no longer required to submit notarized statements regarding the oil usage log and testing. There are no changes to the requirement that hydraulic elevators be equipped with safety bulkheads or double cylinders because ASME A17.3-2015 carries forward that requirement with no change. Therefore, this subpart is no longer necessary and is being repealed.

Subpart 13. ASME A17.1/CSA B44-2010 8.10.4.1.1(p)(5) Clearance between step and skirt (load gap) and ASME A17.1/CSA B44-2010 8.10.4.1.1(t) step/skirt index [REPEAL]. This subpart is being repealed because the deadline for compliance with ASME 17.1/CSA B44-2010, sections 8.10.4.1.1(p)(5) and 8.10.4.1.1(t), have passed. Subpart 13 was added during the 2006 update of Chapter 1307 to require new escalators and moving walks, including those undergoing alteration, to be tested as required by ASME A17.1-2004 to determine the loaded gap and coefficient of friction in order to calculate the skirt/step performance index. This test shows the likelihood of a passenger's foot being trapped between the escalator step and the skirt. An escalator or moving walk that shows significant risk of injuring a passenger's foot must be equipped with a skirt brush to guide the passenger's foot away from the skirt. Because of the expense of the testing and additional expense if the tests showed the skirt must be modified, subpart 13 allowed escalator and moving walk owners three years for compliance with this requirement.

The work necessary for compliance with ASME 17.1/CSA B44-2010, sections 8.10.4.1.1(p)(5) and 8.10.4.1.1(t), was to be completed within 3 years of January 29, 2007. The escalators and moving walks affected by this subpart have been tested and modified as necessary for life safety. The requirements for these tests are carried forward in ASME A17.1/CSA B44-2016 without change. Therefore, this subpart is no longer necessary and is being repealed.

Subpart 14. ASME A17.3-2011 5.1.11

Step/skirt performance index [REPEAL]. This subpart is being repealed because the deadline for compliance with ASME 17.3-2011, section 5.1.11, has passed. Subpart 14 was added during the 2006 update of Chapter 1307 to require the step/skirt performance index be determined for existing escalators and moving walks. The step/skirt performance index shows the likelihood of a passenger's foot being trapped between the escalator step and the skirt. An escalator or moving walk that shows significant risk of injuring a passenger's foot must be equipped with a skirt brush to guide the passenger's foot away from the skirt. Because of the expense of testing and any necessary modifications to the skirt, subpart 14 allowed escalator and moving walk owners three years for compliance with this requirement.

The work necessary for compliance with ASME A17.3-2011, section 5.1.11, was to be completed within 3 years of January 29, 2007. The escalators and moving walks affected by this subpart have been tested and modified as necessary for life safety. The requirements for these tests are carried forward in ASME A17.1/CSA B44-2016 without change. Therefore, this subpart is no longer necessary and is being repealed.

Subpart 15. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 16 remains unchanged.

1307.0067 AMENDMENTS TO ASME A17.1/CSA B44-2016.

Subparts 1 through 13. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR. Additionally, the section reference number contained in subpart 3 is being updated to reflect the proper section number being referenced in ASME A17.1/CSA B44-2016.

Subpart 14. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR. This subpart is also amended by deleting references to electrical licenses, specifically Class A Master and Class A Journeyworker electrical licenses, from the elevator inspector qualifications due to statutory changes that now base elevator licenses on elevator technology rather than on electrical technology.[24] The proposed amendments only allow individuals with a Master Elevator Constructor license or an Elevator Journeyworker license to qualify to become elevator inspectors. This amendment is necessary for consistency with statutory requirements for the qualifications of elevator inspectors.

Subpart 15. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

1307.0090 EXISTING INSTALLATIONS.

Subpart 2. Conditions for continued operation. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subparts 3 and 4 remain unchanged.

Subpart 6. Other requirements. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

Subpart 7. Compliance schedule. The proposed changes to subpart 7 require the authority having jurisdiction over elevators to notify owners of existing elevators of code changes when either new code requirements are adopted or upon inspection by the authority having jurisdiction. The proposed rule part is amended to require the owner to submit a compliance plan within sixty days of notice of the effective date of the new code requirements or within sixty-days after a notification following inspection. The notification of owners at the time of adoption of new code requirements will allow owners sufficient time prior to the effective date to determine if the existing elevator is compliant with new requirements and to develop a compliance schedule if the elevator does not comply. Because buildings change ownership, the authority having jurisdiction may not have updated contact information for the owner of an existing elevator. Because not all owners may be notified prior to the effective date of new code requirements for existing elevators, the proposed rule also permits notification following inspection and allows the owners of noncompliant elevators sixty days to develop and submit a compliance schedule to the authority having jurisdiction.

Due to the potential for complexity of upgrades or repairs and the associated costs generally involved in repairing or upgrading existing elevators, the proposed rule also permits an existing elevator owner up to five-years from submission of the compliance schedule to bring the elevator into compliance with the code. The current rule permitted owners of existing elevators five-years from the update of chapter 1307 in 2006 to comply with specific, new requirements for existing elevators.[25]

[24] *See* 2013 Minn. Laws, Ch. 85, Art. 2, §§ 22 and 28.

[25] *See* Minnesota Rules, part 1307.0047, subparts 8, 10, 11, and 12, *being proposed for repeal*, above.

Similarly, the proposed amendments to subpart 7 will allow any required repairs or upgrades to existing elevators to be completed within five-years. This is further reasonable as it clarifies code requirements since existing subpart 7 allows for the submission of a compliance schedule but does not specify *when* the existing elevator must become compliant with those requirements. Allowing up to five-years for compliance with existing elevator code requirements is reasonable and needed as it will allow existing elevator owners time to effectively plan for required elevator repairs or upgrades that will necessarily result in the expenditure of costs to those owners.

Subpart 8. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR.

1307.0092 REFERENCED CODES, STANDARDS, AND SPECIFICATIONS.

This rule part is amended by deleting the existing reference to NFPA 13-2010 and replacing it with a reference to NFPA 13-2016. NFPA 13 is the standard for installation of sprinkler systems. The 2016 edition of the NFPA 13 standard is referenced in the proposed amendments to several other chapters of the Minnesota State Building Code. For purposes of uniformity between chapters and ease of use, it is necessary and reasonable to update the reference to the same edition of the NFPA 13 standard proposed to be used throughout the entire State Building Code to avoid conflicts between one chapter to another.

Additionally, the reference to "ASME A17.1a" in the subpart's title is being deleted because that standard no longer exists independently of ASME A17.1/CSA B44-2016 and has been superseded by current applicable standards.

1307.0095 CHAPTER 30 OF THE INTERNATIONAL BUILDING CODE; ELEVATORS AND CONVEYING SYSTEMS.

This rule part is being repealed in its entirety because the proposed amendments to this chapter no longer incorporate chapter 30 of the IBC by reference (*See* part 1307.0020, subpart 1, above for a full explanation of this change and statement of reasonableness). As a result, amendments in this rule part modifying chapter 30 of the IBC are no longer applicable to this chapter. As a part of a contemporaneous rulemaking, chapter 30, and the other chapters comprising the 2018 IBC, are incorporated by reference, with amendments, in Minnesota Rules, chapter 1305. As a result, this amendment is no longer necessary and is being repealed.

1307.0110 MINNESOTA AMENDMENTS TO ASME A18.1-2017.

The title of this subpart has been amended to reflect the current edition of the ASME A18.1 standard.

Subparts 1 through 10. See the "GENERAL" statement at the beginning of the Rule-by-Rule Analysis section of this SONAR. Additionally, the section reference numbers contained in subpart 1, subitems E, F, and G are being updated to reflect the proper section number being referenced in the ASME A18.1-2017 standard.

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2020

MINNESOTA RESIDENTIAL CODE

• Administration • Construction • Radon • Energy

ICC INTERNATIONAL CODE COUNCIL

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing Adoption of the 2018 International Residential Code, Minnesota Rules, Chapter 1309; Revisor's ID Number R-04510.

INTRODUCTION

The Commissioner ("Commissioner") of the Department of Labor and Industry ("Department) and certain local authorities enforce the Minnesota State Building Code, which consists of 22 chapters of the Minnesota Rules. One of those 22 chapters is chapter 1309, the Minnesota Residential Code. *See* Minnesota Rules, part 1300.0050. The Commissioner proposes to adopt amendments to the Minnesota Residential Code, Minnesota Rules, Chapter 1309. The proposed rules will incorporate by reference the 2018 International Residential Code ("IRC"), with amendments.

The International Code Council ("ICC") publishes the IRC. The ICC reviews and modifies the ICC Model Codes every three years to incorporate the most current construction code criteria to provide the construction industry with the most current code provisions for use throughout the nation. The IRC establishes the minimum standards of construction for one-family dwellings, two-family dwellings, and townhouses that are no more than three stories above ground level.[26]

The IRC is founded on broad-based principles that make possible use of new materials, methods, and building designs. The IRC principles are intended to establish provisions that are consistent with the scope of a residential code that adequately protects the public health, safety, and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

The current chapter 1309 adopts and amends the 2012 edition of the IRC. *See* Minnesota Rules, part 1309.0011, subp. 1. Accordingly, the Department currently administers and enforces the 2012 edition of the IRC with amendments as contained in Minnesota Rules, chapter 1309. Although the ICC published a 2015 edition of the IRC, the Department did not adopt the 2015 edition of the IRC due to legislation that requires the Department to review and adopt the model codes with amendments every six years, beginning with the 2018 edition of the model codes.[27]

Minnesota Statutes, section 326B.106, subdivision 1, requires the Department to consult with the Construction Codes Advisory Council ("CCAC") in adopting amendments to the Minnesota State Building Code. The Department has consulted with the CCAC in connection with this rulemaking. In consultation with the CCAC, the Department utilized a Technical Advisory Group ("TAG") committee to review the 2018 edition of the IRC and existing rule Chapter 1309 to propose reasonable and necessary amendments to the model code and existing chapter. TAG committee members were appointed by the CCAC to review and comment upon the 2018 ICC model codes and proposed changes to the Minnesota State Building Code. The Chapter 1309 TAG consisted of representatives from the Association of Minnesota Building Officials, Builders Association of Minnesota, Builders Association of the Twin Cities-Housing First, Greater Metropolitan Housing Corporation, and Department personnel. The proposed amendments in this rulemaking incorporate changes to the 2018 IRC proposed by the Chapter 1309 TAG.

To review requirements for foundations and exterior decks attached to dwellings, the Department used a Structural Technical Advisory Group ("Structural TAG"). The Structural TAG was also appointed by the CCAC, and consisted of representatives from the Association of Minnesota Building Officials, Builders Association of the Twin Cities-Housing First, Builders Association of Minnesota, the Minnesota Structural Engineering Association, and Department personnel. The Structural TAG evaluated the structural provisions of the 2018 I-Codes, including the IRC. The proposed amendments in this rulemaking incorporate changes reviewed by the Structural TAG.

[26] One-family dwellings, two-family dwellings, and townhouses that are four stories or more above ground level must be constructed to the requirements of the International Building Code ("IBC"). *See* Minnesota Rules, part 1300.0040, subpart 2. Other residential buildings that contain multiple units, such as apartment buildings and boarding houses, must be constructed to the requirements of the IBC. A complete list of buildings used for residential purposes that are required to comply with the IBC can be found in Minnesota Rules, part 1305.0310 (2018).

[27] *See* Minn. Stat. § 326B.106, subd. 1(c) (2018).

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1309
MINNESOTA RESIDENTIAL CODE

GENERAL

Throughout this rule, references to the 2012 edition of the IRC are changed to 2018 because the Department is incorporating by reference the 2018 edition of the IRC.

1309.0010 ADOPTION OF THE INTERNATIONAL RESIDENTIAL CODE (IRC) BY REFERENCE.

Subpart 1. Generally. This rule subpart is amended by updating and replacing copyright information and permission that was provided by the International Code Council to the Department for incorporation of the 2018 IRC into this rule.

Subp. 1a. Deleted appendices. This subpart is added for clarification. This clarifies that the only IRC appendices being adopted are Appendix K and Appendix Q. Current subpart 2 specifies how Appendix K should be administered; the intent of the current code was that Appendix K was the only appendix adopted. The proposed rule also adopts Appendix Q for the reasons discussed in connection with proposed subpart 2 below.

Subp. 2. Mandatory chapters. The phrase "of chapter 29" is added for ease of reference. In both the current code and in the 2018 IRC, section P2904 is located in chapter 29.

IRC Appendix Q, Tiny Houses, is entirely new in the 2018 IRC. Appendix Q is added as a required mandatory appendix in Minnesota Rules, Chapter 1309, because it will ensure that tiny houses are properly constructed and contain necessary life-safety features. Appendix Q defines tiny houses as dwelling units having a floor area of 400 square feet or less. Tiny houses are an increasingly popular alternative to traditional housing options because of their perceived affordability and environmental benefits. Appendix Q requires tiny houses to be constructed to the provisions of the IRC while allowing for the creative utilization of space within the dwelling. Specifically, the requirements for ceiling heights, stairs, ladders, and loft spaces, are reduced for tiny houses in Appendix Q. Additionally, tiny houses are required to have an emergency escape and rescue opening in lofts used as sleeping rooms, which provides improved life safety for occupants.

Before the publication of the 2018 IRC, there were no uniform standards for tiny houses nationally or within Minnesota. As a result, building officials have inconsistently applied existing code provisions to tiny houses. The adoption of Appendix Q as a mandatory chapter will clarify requirements for tiny houses, which will result in more uniform application and enforcement of the code for dwellings that are less than 400 square feet in area.

Subp. 3. Replacement chapters. The first sentence is amended for clarity.

Clause A is amended for consistency with the language in Minnesota Rule 1309.0100, subp. 1, which is not proposed for amendment. Subpart 1 of part 1309.0100 states:

"Subpart 1. **IRC chapter 1.** IRC chapter 1 is deleted and replaced with the following:

CHAPTER 1
ADMINISTRATION

This code shall be administered according to Minnesota Rules, chapter 1300."

Because this replaces IRC chapter 1, it is reasonable to refer to this section in Clause A of part 1309.0010, subp. 3.

Clause D is amended to clarify that section P2904 in chapter 29 of the IRC is not deleted. This is consistent with subpart 2 of the current rule, which refers to section P2904.

Clause E is amended to clarify that section R315 regarding carbon monoxide alarms is not deleted. This is implicit in the current code, because current rule 1309.0315 amends section R315 in the 2012 IRC regarding carbon monoxide alarms. Clause E is amended for consistency with rule 1309.0315.

1309.0020 REFERENCES TO OTHER ICC CODES.

Subpart 1. Generally. The only amendment is the date of the IRC.

Subp. 7. Plumbing Code. This subpart is amended to provide the correct reference to the statutory authority for adoption of the Minnesota Plumbing Code.

1309.0100 CHAPTER 1, ADMINISTRATION

Subpart 3. Transient Use. This new subpart is added to specify that single-family dwellings, two-family dwellings, and townhouses constructed for transient use that are required to be licensed by the Minnesota Department of Health ("MDH") must be constructed to the specifications of Minnesota Rules, Chapter 1305, the Minnesota Building Code. The life-safety provisions for dwellings constructed for transient use are different from the life-safety provisions for dwellings intended for permanent or long-term use. For a dwelling to be licensed for transient use by MDH, it must comply with the Minnesota State Fire Code. Dwellings intended for transient use that are constructed in accordance with Minnesota Rules, Chapter 1305, comply with the Minnesota State Fire Code. This amendment clarifies that single-family dwellings, two-family dwellings, and townhouses intended for transient use must be built as specified by the Minnesota Building Code to be licensed by MDH. The proposed subpart is necessary so that dwellings constructed for transient use are built to the requirements of the correct code and will not require renovations following construction in order to be licensed by MDH.

1309.0202 SECTION R202, DEFINITIONS.

Subpart 2. Additional definitions. This subpart is modified by adding a definition for the term "approved." This definition is needed in chapter 1309 to coordinate the definition of "approved" with the other chapters of the Minnesota State Building Code. Building officials are authorized to allow some construction methods or materials that have been determined to be in compliance with the Minnesota State Building Code. It is reasonable to provide coordinated definitions of frequently used terms throughout the building code to avoid conflicts between terms from one chapter to another.

The proposed definition of "approved" is the same as the current definition of "approved" in part 1300.0070, subp. 4a. This is reasonable because all chapters of the Minnesota State Building Code, including the Minnesota Residential Code, are administered using the provisions of chapter 1300. *See* current part 1309.0100, subp. 1, which is not proposed for amendment.

The definition of "transient" is added to subpart 2 to define the period of time that a dwelling can be occupied for its use to be considered transient. Transient use of dwellings is more fully described above in connection with part 1309.0100, subpart 3. The proposed definition of "transient" is identical to the definition in chapter 2 of the 2018 International Building Code ("IBC"). Current chapter 1305 adopts the 2012 edition of the IBC. This chapter is being proposed for amendment to adopt the 2018 IBC. The proposed amendments to chapter 1305 incorporate the definition of "transient" without amendment.

1309.0301 SECTION R301, DESIGN CRITERIA.

Subpart 2. IRC Table R301.2(1). This subpart is modified to ensure consistency with the 2018 IRC and to correct errors. The wind design methodology used in the 2012 IRC is basic speed wind design. The 2018 IRC has been revised to use ultimate wind speed. *See* section R301.2.1 of the 2018 IRC, which is not proposed for amendment. The table is modified to change the wind speed from the basic speed wind design of 90 mph to an ultimate wind speed of 115 mph. Basic wind design speed is calculated differently than ultimate wind speed so a basic wind design speed of 90 mph is similar to an ultimate wind speed of 115 mph. Therefore, dwellings will be built to withstand similar wind gusts and the change in wind design methodology does not affect the methods and means of construction.

Additional modifications are necessary to direct code users to the correct sources for temperature information. The current amendment erroneously directs the user to Minnesota Rules, Chapter 1323, the Minnesota Commercial Energy Code, for winter design temperature. The incorrect reference to energy requirements for commercial buildings is replaced with "1322" to direct the code user to Minnesota Rules, Chapter 1322, the Minnesota Residential Energy Code. Footnote "j" is deleted from the "Mean Annual Temp" heading and "41.16" is replaced with "See Footnote 'j.'" Footnote "j" directs the code user to a National Climatic Data Center data table containing the average mean temperature for a municipality or jurisdiction. This change is reasonable because 41.16 is not an accurate average mean temperature for all municipalities and jurisdictions in Minnesota.

In footnote "a," the reference to Figure R301.2(3) has been changed to Figure R301.2(4) because the weather probability map has been renumbered in the 2018 IRC.

Footnote "d" is amended to delete unnecessary language that directs the jurisdiction to complete the table with basic wind speed. The footnote is modified to direct the user to refer to the wind speed map. The wind speed map has been renumbered from Figure R301.2(4)A to R301.2(5)A in the 2018 IRC.

Footnote "e" is amended to delete the reference number to a specific table for climate data design conditions due to frequent changes to reference numbers in other I-codes adopted by Minnesota. An inaccurate reference number can confuse code users as to the location of the information. The proposed change directs the code

user to Minnesota Rules, Chapter 1322, the Minnesota Residential Energy Code, for climate data design conditions.

Footnote "h" is amended to update the references to sections addressing ice dams due to numbering and formatting changes in the 2018 IRC.

Footnote "i" is revised to direct code users to the correct website for the air freezing index. The website currently provided is no longer in use.

Footnote "j" is revised to direct code users to the correct website for mean annual temperature. The website currently provided is no longer in use.

Subp. 3. IRC Figure R301.2(6). Figure R301.2(5) of the 2012 IRC was renumbered and relocated in the 2018 IRC to Figure R301.2(6). It is reasonable to amend the figure number to ensure consistency with the 2018 IRC.

1309.0302 SECTION R302, FIRE-RESISTANT CONSTRUCTION.

This rule part is reorganized to locate the sections in the correct numerical order. The current rule lists the section references numerically as R302.2, R302.2.1, R302.2.2, Table R302.1(1), Table R302.1(2), R302.2.3, R302.2.4, and R302.2.5. As written, Section 302.2 and its subsections should follow Table R302.1(1) and Table R302.1(2). To correct the numerical ordering, Section R302.2.1, Continuity, and Section 302.2.5, Sound transmissions, are relocated from subpart 1 to subparts 2 and 2a, respectively, and renumbered for consistency with the 2018 IRC. It is reasonable for the requirements for exterior walls for all dwellings, including one-family dwellings, in Table R302.1(1) and Table R302.1(2) to be located in a separate subpart from the requirements specific to townhouses, which the proposed rule relocates to subparts 2 and 2a. As a result of the reorganization of this rule part and reformatting of the 2018 IRC, the section amendments in subsequent subparts are relocated accordingly.

Subpart 1. IRC Tables R302.1(1) and R302.1(2). Sections R302.2, Townhouses; R302.2.2, Parapets; R302.2.3, Parapet construction; and R302.2.4, Structural independence are deleted because the 2018 IRC was revised to contain similar provisions. Therefore, the modifications to these sections are no longer needed. Section R302.2.1, Continuity, and Section 302.2.5, Sound transmission, are deleted from subpart 1 and renumbered and relocated to subpart 2.

Tables R302.1(1) and R302.1(2) in the current rule are deleted and replaced with modified versions of Tables R302.1(1) and R302.1(2) in the 2018 IRC. These tables identify specific construction requirements for exterior walls of all dwellings and their accessory structures as the location of the exterior wall of the dwelling or accessory structure relates to the lot line. Exterior walls that are closer to the lot line must have additional fire-resistant construction materials to impede the spread of fire from one structure to another across the lot line.

Table 302.1(1) Exterior Walls. Table R302.1(1) of the 2018 IRC is modified by adding footnote "c," which states: "One hour on the underside equates to one layer of 5/8-inch type X gypsum sheathing. Openings are not allowed." Proposed footnote "c" is identical to footnote "a" in the current Table 302.1(1). The footnote is needed to coordinate the requirement for one-hour fire-resistance on the underside of projections with the same requirement in other parts of the Minnesota State Building Code. The footnote provides a reasonable and acceptable alternative method of compliance without having to obtain a listed one-hour assembly. Because the 2018 IRC added footnotes "a" and "b," the current footnote "a" needs to be re-lettered as "c." Footnote "a," footnote "b," and the entire Table 302.1(1) are included in the proposed rule to provide context.

Table 302.1(2) Exterior Walls--Dwellings with Fire Sprinklers. Table R302.1(2) of the 2018 IRC is modified by adding footnote "d," which states: "One hour on the underside equates to one layer of 5/8-inch type X gypsum sheathing. Openings are not allowed." Proposed footnote "d" is identical to footnote "a" in the current Table 302.1(2). The footnote is needed to coordinate the requirement for one-hour fire-resistance on the underside of projections with the same requirement in other parts of the Minnesota State Building Code. The footnote provides a reasonable and acceptable alternative method of compliance without having to obtain a listed one-hour assembly. Because the 2018 IRC added footnotes "a," "b" and "c," the current footnote "a" needs to be re-lettered as "d." Footnotes "a," "b," and "c," and the entire Table 302.1(2), are included in the proposed rule to provide context.

Subp. 2. IRC Section R302.2.3, Continuity. The language in current subpart 2 is being relocated to subpart 3 because of renumbering and reformatting of Section R302 in the 2018 IRC. Proposed subpart 2 amends section R302.2.3 of the 2018 IRC. Except for the numbering of a cross-referenced section, the language in proposed subpart 2 is comparable to the language in current subpart 1 that amends section R302.2.1. This language has been moved and renumbered, for consistency with the 2018 IRC and to

keep the sections in numerical order. The first sentence of the current language has also been modified by adding the word "or," so that the first sentence reads: "The fire resistance wall **or** assembly separating townhouses …." The lack of the word "or" is an error in the current rule. This is clear from the second sentence of the current rule, which refers to "wall or assembly." The rest of this proposed section is identical to the current rule.

Subp. 2a. IRC Section R302.2.7, Sound Transmission. With two differences, proposed subpart 2a is identical to the current rule language in subpart 1 amending current section R302.2.5. One difference is renumbering, which is required because of the renumbering of the 2018 IRC. The only other difference is the addition of the word "IRC," which is needed and reasonable for clarity.

Subp. 3. IRC Section R302.3.2, Two-family dwellings. The requirements of current subpart 3 regarding "Opening protection" have been moved to subpart 4, which will be discussed below. With two exceptions, the language of proposed subpart 3 is identical to the language of current subpart 2. One difference is renumbering, which is required because of the renumbering of the 2018 IRC. The only other difference is the addition of the word "IRC," which is needed and reasonable for clarity.

Subp. 4. IRC Section R302.5.1, Opening protection. The requirements of current subpart 4 regarding "Dwelling/garage fire separation" have been moved to subpart 5, which will be discussed below. The language of proposed subpart 4 is identical to current subpart 3.

Subp. 5. IRC Section 302.6, Dwelling/garage fire separation. With the following three differences, proposed subpart 5 is identical to current subpart 4:

- Footnote "a" is added to the table to provide the code user with a reference to the section describing the requirements for the attachment of gypsum board.
- The title of the table is changed from "Dwelling/Garage Separation" to "Dwelling/Garage Separation Material." This is for clarity because the table describes separation material.
- At the end of the table, a line is added to provide a method of conversion from United States Customary Units to the International System Units. It is reasonable to provide a method for ease of use when converting table values to International System Units. This line regarding conversion is identical to the line at the end of Table R302.6 in the 2018 IRC.

1309.0303 SECTION R303, LIGHT, VENTILATION, AND HEATING.

Section R303.4, Mechanical ventilation. This new rule part is added to modify Section R303.4 of the 2018 IRC to delete the reference to Section M1505.4 of the 2018 IRC and replace it with references to: Minnesota Rules, Chapter 1322, the Minnesota Residential Energy Code; and Minnesota Rules, Chapter 1346, the Minnesota Mechanical Code. The proposed change is necessary because, under current part 1309.0020, subpart 6 (which is not proposed for amendment), the mechanical references in the IRC are defined as referring to the Minnesota Mechanical Code; however, the requirements for mechanical ventilation in residential dwellings are located in both the Minnesota Mechanical Code and the Minnesota Residential Energy Code.

1309.0310 SECTION R310, EMERGENCY ESCAPE AND RESCUE OPENINGS.

Subpart 1. Section R310.1, Emergency escape and rescue opening required. The title of this subpart has been changed to correspond with the title in the 2018 IRC. The first two sentences of the current rule are amended for clarity only.

Four sentences are deleted before the exceptions. The deleted language specifies window sill height for emergency escape and rescue openings and the requirements for emergency escape and rescue openings below the adjacent ground elevation. This language is no longer needed because these requirements are now included in the 2018 IRC. Section R310.2.2 of the 2018 IRC addresses the requirements for window sills. The exception to Section 310.2.1 of the 2018 IRC addresses the requirements for window openings that are below grade. Section R310.3 of the 2018 IRC addresses the requirements for emergency escape and rescue doors where the opening is below the adjacent grade. Because the 2018 IRC addresses these requirements, the four deleted sentences are no longer needed.

Exception #1 as amended is identical to Exception #1 to Section R310.1 of the 2018 IRC. Exception #2 of section R310.1 remains the same as in the current rule.

Exception #3 of section R310.1 is amended to remove the first two conditions to permit the installation of a fire sprinkler system instead of an emergency escape and rescue opening in the basement of new dwellings. The proposed amendment deletes the first two conditions

because they apply to existing construction only. The emergency escape and rescue opening requirements for existing basements are relocated to subpart 3.

Exception #3 is reasonable because it offers an alternate method of life safety by permitting the installation of fire sprinkler coverage instead of the construction and installation of emergency escape and rescue openings. Fire sprinklers are effective and permit building occupants sufficient time to escape a potential fire hazard. The proposed amendment will potentially decrease the costs for some new construction where it is cost prohibitive to install an emergency escape and rescue opening in a basement. The installation of an emergency escape and rescue opening in a basement can be expensive and complex depending upon the foundation and soils at the site where the dwelling is being constructed. Also, some new dwellings have deeper basements that make emergency escape and rescue openings impractical to use for evacuation in the event of an emergency. For dwellings with deeper basements, an automatic sprinkler system can be a more effective and practical life safety option that will allow dwelling occupants sufficient time to evacuate.

R310.1.1, R310.1.2, R310.1.3, R310.1.4, and R310.1.5. The requirements relating to minimum opening area, minimum opening height, minimum opening width, operational constraints and replacement windows are all addressed in subsection R310.1.1 and in some of the subsections of section R310.2 of the 2018 IRC. The 1309 Technical Advisory Group recommended that these subsections of the 2018 IRC did not need to be amended. Therefore, the language in the current rule addressing these requirements is deleted. Instead, a sentence is added clarifying that subsection R310.1.1 in the 2018 IRC remains unchanged.

Subp. 2. IRC Section R310.2.5.1, Licensed facilities. The substantive language in this subpart is the same as in the current rule. The section number has been changed for consistency with the 2018 IRC. The language has been placed in a separate subpart, with clarifying language at the beginning, for improved readability.

Subp. 3. IRC section R310.6, Alterations or repairs of existing basements. The first sentence is identical to Section R310.6 of the 2018 IRC. The proposed rule deletes the model code exception addressing sleeping rooms created in existing basements. The requirements for sleeping rooms created in existing basements are addressed in new Section 310.6.1. The language in proposed Section 310.6.1 is identical to the language in the exception to Section R310.6 of the 2018 IRC. This language is moved to a new Section 310.6.1 for clarification, and to make the new exception to Section 310.6.1 easier to understand.

An exception is added to Section 310.6.1 to exempt sleeping rooms in existing basements from the emergency escape and rescue opening requirement where an automatic sprinkler system is installed throughout: (1) the entire basement area; (2) all portions of the means of egress to the level of exit discharge; and (3) all the areas on the level of exit discharge that are open to the means of egress. The automatic sprinkler system must meet the requirements of section P2904 of the IRC or NFPA 13D, a nationally recognized standard for automatic sprinkler systems. This exception is comparable to exception 3 to Section R310.1, in subpart 1.

Currently, only basements constructed before August 1, 2008 can be equipped with an automatic sprinkler system instead of an emergency escape and rescue opening in newly created sleeping rooms. The Minnesota State Building Code was recognized as the standard of construction for the entire state on August 1, 2008. Some dwellings constructed prior to that date in areas where the Minnesota State Building Code is not enforced may not have an emergency escape and rescue opening in the basement. Basements constructed after August 1, 2008 are required to have an emergency escape and rescue opening whether or not the dwelling is constructed in an area that enforces the Minnesota State Building Code. However, the space in existing basements constructed after that date can be remodeled to create a new sleeping room that will require an emergency escape and rescue opening. The proposed exception will permit any existing basement in Minnesota to be equipped with an automatic sprinkler system instead of an emergency escape and rescue opening in the sleeping room.

The exception is reasonable because it offers an alternate method of life safety by permitting the installation of fire sprinkler coverage instead of the construction and installation of emergency escape and rescue openings. Fire sprinklers are effective and permit building occupants sufficient time to escape a potential fire hazard. The proposed amendment will potentially decrease the costs for some basement renovations where it is cost prohibitive to install an emergency escape and rescue opening in the existing basement. The installation of an emergency escape and rescue opening in an existing basement can be expensive and complex depending upon the foundation and soils at the site where the dwelling is located. Additionally, some new dwellings have deeper basements that make emergency escape and rescue openings impractical to use for evacuation in the event of an emergency. For dwellings with deeper basements, an automatic sprinkler system can be a more effective and practical life safety option that will allow dwelling occupants sufficient time to evacuate.

1309.0311 SECTION R311, MEANS OF EGRESS.

Subpart 3. IRC section R311.7.2, Headroom. This section is modified to add an exception to direct the code user to section R311.7.10.1 for the headroom requirements for spiral stairways. This is identical to exception #2 to section R311.7.2 in the 2018 IRC. It is reasonable to direct the user to the correct section for headroom for spiral staircases because the headroom requirements for spiral staircases are different from the headroom requirements in this section.

1309.0312 SECTION 312, GUARDS AND WINDOW FALL PROTECTION.

Subpart 2. IRC section R312.2, Window fall protection. The language in the current rule, section R312.2.2, Window opening control devices, is deleted from subpart 2 because the 2018 IRC includes requirements for window control opening devices. The language in the 2018 IRC is similar to the language in the existing amendment; therefore, the amendment is no longer necessary. A sentence is added to clarify that Subsection R312.2.2 of the 2018 IRC is not amended.

1309.0314 SECTION 314, SMOKE ALARMS.

The proposed changes to this rule part modify Section 314 of the 2018 IRC to carry forward the current requirement that battery-powered, non-interconnected smoke alarms be placed in existing dwellings undergoing alteration or repair in the same locations as they are required to be placed in new dwellings. Interconnected smoke alarms that draw power from the building wiring are only required when the alteration or repair requires the removal of interior finishes of the dwelling to provide access to the wiring. The proposed amendments clarify existing code requirements by specifying that additional smoke alarms are only required in existing dwellings when the alteration or repair requires a building permit. The proposed amendment also eliminates the requirement that smoke alarms be interconnected and wired to an existing dwelling where the attic, crawl space, or basement provides access to dwelling wiring.

The proposed rule does not modify code requirements for smoke alarms in new dwellings. The 2012 IRC and 2018 IRC both require smoke alarms in new dwellings to be interconnected and wired to the dwelling. This is reasonable because the smoke alarms can be easily wired to the dwelling while it is being built. Smoke alarms are required to be located in each sleeping room, outside of each separate sleeping area in the immediate vicinity of the sleeping rooms, and on each additional story of the dwelling in both new dwellings and existing dwellings undergoing repair or alteration.

Subpart 1. IRC section R314.2.2, Alterations, repairs, and additions. Section R314.3.1 of the 2012 IRC was renumbered and relocated in the 2018 IRC to section R314.2.2. It is reasonable to amend the section reference number to ensure consistency with the 2018 IRC. The subpart is amended by adding the word “building” before “permit” to clarify that existing dwellings are required to have smoke alarms located in the same areas as required for new dwellings when the alterations, repairs, and additions require a building permit. This change is reasonable because it clarifies the permit type as a building permit as opposed to a plumbing, electrical, or mechanical permit. Other types of permits may be required when exception 2 applies. Exception 2 exempts existing dwellings from the requirement that smoke alarms be located as required for new dwellings where the installation, alteration, or repairs are to the plumbing, electrical or mechanical systems.

Subp. 2. IRC section R314.4, Interconnection. The 2018 IRC requires the installation of smoke alarms that are interconnected, physically or wirelessly, in new dwellings and existing dwellings undergoing repair or alteration. Smoke alarms that are interconnected are connected with each other so when one smoke alarm is activated, all the alarms in the dwelling will sound. The proposed rule modifies IRC section 314.4 by adding an exception so that interconnected smoke alarms are not required in existing dwellings unless alterations or repairs to the existing area result in the removal of the interior wall or ceiling finishes exposing the structure. This exception for existing dwellings was included in the 2012 IRC, but not the 2018 IRC. This is a reasonable exception because the cost of interconnecting smoke alarms is much lower if interior wall or ceiling finishes are being removed and the structure is exposed. As discussed below, battery-powered smoke alarms serve the life safety function at a much lower cost when the interior wall or ceiling finishes are not being removed.

The 1309 TAG members did not recommend carrying forward the 2012 IRC language requiring interconnected smoke alarms where an attic, crawl space, or basement provides access to the building wiring without the removal of interior finishes. The cost to have an electrician wire smoke alarms to a dwelling can be several hundred dollars. Elimination of this requirement will reduce expenses for homeowners while preserving the life safety function of battery-powered smoke alarms.

The 1309 TAG members recognized that smoke alarms serve an important life safety function and smoke alarm requirements have reduced civilian fire deaths. However, the TAG members were concerned that the expense of physically or wirelessly interconnected smoke alarms may decrease compliance with code requirements. DLI staff reviewed the cost to purchase smoke alarms at big-box

retailers, such as Home Depot, Lowe's, and Menards. The cost to purchase an individual battery-operated smoke alarm without interconnection capabilities is $5 to $15. A single battery-powered smoke alarm that interconnects via radio frequency costs $30 to $50. A single battery-powered smoke alarm that interconnects via Wi-Fi costs $40 to $80. A single battery-powered combination smoke and carbon monoxide alarm that interconnects via radio frequency costs $50 to $70.[28] A single battery-powered combination smoke and carbon monoxide alarm that interconnects via Wi-Fi costs $80 to $120.

Smoke alarms, including those not interconnected to each other, are effective in alerting occupants to exit a dwelling in the event of smoke. The current requirements permitting non-interconnected smoke alarms have increased the number of smoke alarms in dwellings undergoing alteration or repair and improved life safety for dwelling occupants. It is reasonable to permit the continued use of non-interconnected smoke alarms when interior finishes are not removed because the lower cost will encourage continued compliance with smoke alarm requirements as well as building permit requirements for alterations and repairs made to existing dwellings.

Subp. 3. Section R314.6, Power source. The second exception to IRC section 314.6 is modified to carry forward an exception from the 2012 IRC requiring the installation of smoke alarms that receive their power from the existing dwelling wiring when alterations or repairs to an existing area result in the removal of the interior wall or ceiling finishes exposing the structure. It is reasonable to require that smoke alarms receive their power from the dwelling wiring when alteration or repair work exposes areas the smoke alarms can be wired to. Under the proposed second exception, if the alteration or repair to an existing dwelling does not require removal of the interior wall or ceiling finishes, then the smoke alarms can be battery-powered instead of hard-wired. This is a reasonable exception because the cost of hard-wired smoke alarms is much lower if interior wall or ceiling finishes are being removed and the structure is exposed. As discussed below, battery-powered smoke alarms serve the life safety function at a much lower cost when the interior wall or ceiling finishes are not being removed.

The 1309 TAG members did not recommend carrying forward the 2012 IRC language requiring smoke alarms to receive their power from the dwelling wiring where there is an attic, crawl space, or basement available that provides access to the wiring without the removal of interior finishes. The cost to have an electrician hard-wire smoke alarms can be several hundred dollars. Elimination of this requirement will reduce expenses for homeowners while preserving the life safety function of battery-powered smoke alarms.

The 1309 TAG members recognized that smoke alarms serve an important life safety function and that smoke alarm requirements have reduced civilian fire deaths. However, TAG members were concerned that the cost of hard-wired smoke alarms may decrease compliance with smoke alarm requirements. Hard-wired smoke alarms are more expensive than those that receive their power solely from batteries, in addition to the expense of having an electrician install the alarms. If interior wall or ceiling finishing needs to be removed and replaced solely for the purpose of hard-wiring smoke alarms, that would add considerable expense.

Smoke alarms that are wired to the dwelling are also required to have battery back-up. Battery back-up is necessary when the smoke alarm is unable to receive power from the dwelling wiring, such as during a power outage. Dwelling occupants often use candles and space heaters during a power outage, increasing the risk of fire and the need to alert occupants. Batteries in hard-wired smoke alarms must be the replaced just like batteries in battery-powered smoke alarms.

It is reasonable to permit the use of battery-operated smoke alarms in dwellings undergoing alteration or repair where interior wall or ceiling finishes are not being removed. In these circumstances, battery-operated smoke alarms improve life safety at a lower cost to homeowners than other alternatives that have similar drawbacks like the periodic replacement of batteries. The lower cost of battery-operated smoke alarms will encourage continued compliance with building permit requirements for alterations and repairs. This will result in more dwellings being equipped with smoke alarms and will help ensure that alterations and repairs are inspected.

1309.0315 SECTION R315, CARBON MONOXIDE ALARMS.

The requirements for carbon monoxide alarms in the 2018 IRC are more detailed than the requirements in the 2012 IRC and include requirements for interconnectivity and power source. Proposed rule 1309.0315 modifies Section 315 of the 2018 IRC so that the requirements for carbon monoxide alarms are consistent with the requirements for smoke alarms in proposed part 1309.0314. The proposed amendments to Section 315 require new dwellings to be equipped with interconnected carbon monoxide alarms that draw their

[28] Carbon monoxide alarms are required within ten feet of each sleeping room. Therefore, a combination alarm may be a cost effective option for some areas of a dwelling. *See* Minn. Stat. § 299F.51.

power from the dwelling wiring. Existing dwellings undergoing alteration or repair that require a building permit can be equipped with battery-powered carbon monoxide alarms without interconnectivity capabilities. Both new dwellings and dwellings undergoing alteration or repair must have carbon monoxide alarms installed outside of and not more than ten feet from each separate sleeping area or bedroom. As a result, dwellings where a new sleeping room is added must be equipped with a carbon monoxide alarm.

Subpart 1. IRC section R315.2, Where Required. Section R315.1 of the 2012 IRC has been renumbered to section R315.2 and revised in the 2018 IRC. The first sentence of proposed Section R315.2 is identical to the 2018 IRC. Proposed Section R315.2.1 modifies the first sentence of IRC Section R315.2.1 to incorporate language from Minnesota Statutes, section 299F.51, Requirements for Carbon Monoxide Alarms. The modified text specifically requires one-family dwellings, each unit in a two-family dwelling unit, and each townhouse dwelling unit to be equipped with carbon monoxide alarms. The proposed language also requires the carbon monoxide alarms be "approved and operational." These requirements are contained in Minnesota Statutes, section 299F.51.[29] These proposed changes are reasonable and necessary because they combine the 2018 IRC requirements with statutory requirements to provide for uniform enforcement. The conditions listed in proposed Section R315.2.1 are identical to the conditions listed in Section R315.2.1 of the 2018 IRC.

Section R315.2.2 of the 2018 IRC requires carbon monoxide detectors to be installed as for new construction where an alteration, repair or addition would require a permit (with two exceptions), regardless of whether any sleeping rooms are added. One exception is for work involving the exterior surfaces, such as the addition or replacement of windows or doors. The second exception is for installation, alteration or repairs of plumbing or mechanical systems.

Proposed Section 315.2.2 would require carbon monoxide detectors to be installed as for new construction (with two exceptions) where one of two conditions exists. The first condition requires carbon monoxide alarms to be located as required for new dwellings where alterations, repairs, or additions to an existing dwelling require a building permit, including the installation and replacement of windows or doors. It is reasonable to specify a building permit because alterations or repairs of plumbing, electrical, or mechanical systems might also require a permit but not a building permit. In the proposed rule, the replacement of windows and doors is not exempt from carbon monoxide alarm requirements because this work requires a building permit in Minnesota. *See* Minnesota Rules, part 1300.0120, subpart 4. The current code and proposed rule 1309.0314 require smoke alarms in a dwelling to be updated when an alteration or repair requires a building permit, including the installation and replacement of windows or doors. Smoke alarms and carbon monoxide alarms both serve important life safety functions so it is reasonable to require both types of alarms to be updated when doors or windows are installed or replaced.

The second condition requires the updating of carbon monoxide alarms when a new sleeping room is added to an existing dwelling. Minnesota Statutes, section 299F.51, requires a carbon monoxide alarm to be installed within ten feet of each room used for sleeping purposes. It is reasonable to require carbon monoxide alarms be added to an existing dwelling when a sleeping room is added to ensure compliance with the statutory requirement.

The first exception is modified to remove the exception for doors and windows, for the reasons discussed above. The proposed first exception also includes chimney repairs as an additional example of work covered by the exception. This is reasonable because chimney repairs are limited to the exterior of the dwelling. Finally, the first exception adds the word "open" before "porch or deck" for clarification. The addition of an enclosed porch or deck would not be work limited to the exterior of the dwelling, because it would create a new room.

The second exception is the same as the second exception in the model code except for the addition of the word "electrical." This will prevent the mandatory updating of carbon monoxide alarms when the work being completed is the replacement of a light fixture or similar work. This exemption from carbon monoxide alarm requirements for installation, alteration, or repairs to the electrical system is consistent with the exception in part 1309.0314 regarding smoke alarms when work is performed to the electrical system. Consistent standards for smoke alarms and carbon monoxide alarms will provide more uniform application and enforcement of the code.

Subp. 2. IRC section R315.3, Location. The first sentence of IRC section R315.3 requires carbon monoxide alarms to be placed outside of and "in the immediate vicinity of the bedrooms." The first sentence of the proposed section modifies the model code to specify

[29] The statute includes requirements for all one- and two-family dwellings and all multiple unit dwellings. The only multiple unit dwellings that are within the scope of chapter 1309 are townhouses.

that carbon monoxide alarms must be installed outside of and not more than ten feet from each separate sleeping area or sleeping room. This is consistent with Minnesota Statutes, section 299F.51, which requires carbon monoxide alarms be installed "within ten feet of each room lawfully used for sleeping purpose." It is reasonable to modify Section R315.3 to convey the specific requirements of Minnesota Statutes, section 299F.51. The proposed change is reasonable and necessary because it combines the 2018 IRC requirements with statutory requirements to provide for uniform enforcement.

The second sentence of proposed Section R315.3 is new. This clarifies that carbon monoxide alarms must be on each level containing sleeping areas or bedrooms. This is to prevent an interpretation of the code that would allow an alarm on a different level, immediately above or below the sleeping area or bedroom. That would be contrary to the intent of the code, because the carbon monoxide alarm would not be effective on a different level.

The last sentence of proposed Section R315.3 is identical to the last sentence of model code Section R315.3.

Subp. 3. IRC section R315.5, Interconnectivity. The exception to this section is modified to delete the language requiring existing dwellings undergoing alteration or repair to be equipped with interconnected carbon monoxide alarms where there is an attic, crawl space, or basement that provides access to the dwelling wiring. The proposed exception would not require interconnected carbon monoxide alarms unless alterations or repairs result in the removal of interior wall or ceiling finishes exposing the structure. This is a reasonable exception because the cost of interconnecting carbon monoxide alarms is much lower if interior wall or ceiling finishes are being removed and the structure is exposed. As discussed below, battery-powered carbon monoxide alarms serve the life safety function at a much lower cost when the interior wall or ceiling finishes are not being removed.

The 1309 TAG members recommended not requiring interconnected carbon monoxide alarms where an attic, crawl space, or basement is available for the same reasons that proposed part 1309.0314, subpart 2, does not require interconnected smoke alarms in this situation. The deletion of this requirement will reduce expenses for homeowners while preserving the life safety function of battery-powered carbon monoxide alarms.

The 1309 TAG members recognized that carbon monoxide alarms serve an important life safety function and carbon monoxide requirements have reduced civilian deaths. However, the TAG members were concerned that the expense of physically or wirelessly interconnected carbon monoxide alarms may decrease compliance with code requirements. Section R315.5 of the 2018 IRC permits the installation of wirelessly interconnected carbon monoxide alarms instead of alarms connected by the dwelling wiring. DLI staff reviewed the cost to purchase carbon monoxide alarms at big-box retailers such as Home Depot, Lowe's, and Menards, and found that those capable of wireless interconnectivity were more expensive. One interconnected carbon monoxide alarm that connects wirelessly via radio frequency costs approximately $40. One interconnected carbon monoxide alarm that connects via Wi-Fi costs $77. A single battery-powered combination smoke and carbon monoxide alarm that interconnects via radio frequency costs $50 to $70. A single battery-powered combination smoke and carbon monoxide alarm that interconnects via Wi-Fi costs $80 to $120. A single non-interconnected, battery powered carbon monoxide alarm costs $20 to $40. A single carbon monoxide alarm that is connected to and receives its power from the dwelling wiring costs $30 to $50. An interconnected combination carbon monoxide and smoke alarm that receives its power from the dwelling wiring costs $35 to $90. However, the cost to wire the carbon monoxide alarms to the dwelling may be several hundred dollars.

Carbon monoxide alarms, including those not interconnected to each other, are effective in alerting occupants to exit a dwelling in the event of dangerous levels of carbon monoxide. The current requirements permitting non-interconnected smoke alarms have increased the number of smoke alarms in dwellings undergoing alteration or repair and improved life safety for dwelling occupants. It is reasonable to permit the continued use of non-interconnected carbon monoxide alarms when interior finishes are not removed because the lower cost will encourage continued compliance with carbon monoxide alarm requirements as well as building permit requirements for alterations and repairs made to existing dwellings.

Subp. 4. IRC section R315.6, Power Source. The second exception to IRC Section 315.6 is modified to require the installation of hard-wired carbon monoxide alarms when alterations or repairs to an existing area result in the removal of the interior wall or ceiling finishes, which exposes the structure. It is reasonable to require hard-wired carbon monoxide alarms when alteration or repair work exposes areas to which the carbon monoxide alarms can be wired. Under the proposed second exception, if the alteration or repair to an existing dwelling does not require removal of the interior wall or ceiling finishes, then the carbon monoxide alarms can be battery powered instead of hard-wired. This is a reasonable exception because the cost of hard-wired carbon monoxide alarms is

much lower if interior wall or ceiling finishes are being removed and the structure is exposed.

Furthermore, this is consistent with the proposed rule that smoke alarms only need to be hard-wired when an alteration or repair requires the removal of interior wall or ceiling finishes. *See* discussion above of proposed part 1309.0314, subpart 3.

1309.0320 SECTION R320, ACCESSIBILITY.

This new subpart is added to delete Sections R320.1 and 320.1.1 of the 2018 IRC and replace those sections with a new Section R320.1. Section R320.1 of the 2018 IRC states: "Where there are four or more dwelling units or sleeping units in a single structure, the provisions of Chapter 11 of the International Building Code for Group R-3 shall apply." The proposed rule makes two changes. First, it adds the term "IRC-3" before "dwelling units." This is reasonable because the only types of dwellings regulated by the IRC that contain four or more dwelling units or sleeping units are IRC-3 occupancies. Other occupancies with four or more dwelling or sleeping units are regulated by chapter 1305, the Minnesota Building Code. The proposed rule part does not change the types of dwellings to which accessibility provisions apply, but clarifies to the Minnesota Residential Code user that the accessibility provisions apply only to IRC-3 dwelling units and sleeping units and do not apply to one- and two-family dwellings.

The proposed rule part refers the code user to Minnesota Rules, Chapter 1341, the Minnesota Accessibility Code, instead of chapter 11 of the IBC. The Minnesota amendments to the IBC refer the code users to the Minnesota Accessibility Code for accessibility requirements. *See* Minnesota Rules, part 1305.0011, subp. 2. It is reasonable to provide IRC users with the correct location for accessibility requirements.

Section R320.1.1 of the 2018 IRC is deleted. Section R320.1.1 requires guestrooms to comply with the accessibility requirements of the IBC. This section is being deleted because guestrooms are contained in buildings constructed for transient use. Under the proposed rule, buildings constructed for transient use cannot be constructed in accordance with the Minnesota Residential Code. Proposed part 1309.0100, subpart 3, states that dwellings constructed for transient use are to be constructed to the requirements of Minnesota Rules, Chapter 1305, the Minnesota Building Code. Because buildings with guestrooms could not be built in accordance with the Minnesota Residential Code, it is reasonable to delete provisions for guestrooms.

1309.0321 SECTION R321, ELEVATORS AND PLATFORM LIFTS.

In the 2018 IRC, Section R321.1 concerns elevators, Section R321.2 concerns platform lifts, and Section R321.3 concerns accessibility. The proposed rule deletes these sections and creates a new Section R321.1 of the 2018 IRC to refer code users to Minnesota Rules, chapter 1307, Elevators and Related Devices, for the requirements for elevators and platform lifts. Minnesota Rules, chapter 1307, is the code for elevators and platform lifts in Minnesota and adopts by reference several codes and standards addressing the requirements for elevators and platform lifts. It is reasonable to modify this section to provide code users with the correct location of requirements for elevators and platform lifts. Section R321.3 of the 2018 IRC is not needed because chapter 1307 deals with accessibility by referring the code user to chapter 1341. *See* Minn. R. 1307.0095, subp. 1(C).

1309.0326 SECTION R326, SWIMMING POOLS, SPAS AND HOT TUBS.

Section R326 is a new section added to the 2018 IRC and is being deleted in its entirety. Section R326 of the 2018 IRC references the International Swimming Pool and Spa Code. The substance of new Section R326 was addressed in an appendix in previous editions of the IRC. That appendix has not been previously adopted in part 1309.0010, subpart 2, as a mandatory chapter of the Minnesota State Building Code. Section R326 is being deleted in its entirety from the 2018 IRC because regulation of swimming pools, spas, and hot tubs is considered a local zoning issue in Minnesota, not a code compliance issue. This deletion is reasonable and necessary to prevent conflicts between the proposed rule and local zoning regulations in Minnesota.

1309.0402 SECTION 402, MATERIALS.

The column heading (Minimum Specified Compressive Strength) and footnote "g" are modified to correct an error in the symbol for compressive strength.

Footnote "h" is added to Table R402.2 of the IRC to specify that concrete able to withstand 5,000 pounds of force per square inch ("5000 psi") is not required for post footings of decks and porches, wood foundations, slab-on-grade foundation walls, and footings for floating slabs. During the adoption of the 2012 IRC, Table 402.2 was modified to require that footings for dwellings be constructed with 5000 psi concrete. The purpose of this requirement was to prevent moisture from passing through the porous concrete material of the footing and then into the concrete or masonry foundation walls that enclose the basement or the crawl space.

The moisture protection provided by 5000 psi concrete is unnecessary for post footings of decks and porches, wood foundations, slab-on-grade foundation walls, and footings for floating slabs. The footings for decks and porches are not a part of the foundation of the dwelling and therefore 5000 psi concrete is unnecessary. Slab-on-grade and floating slab foundations are at the level of the soil and do not require footings. Moisture protection is necessary for foundations that are deeper in the ground to accommodate a basement or crawlspace. Wood foundations do not have concrete components and therefore do not require concrete footings. This change is reasonable to clarify the types of footings where 5000 psi concrete is not required, which will ensure uniform application and enforcement of the code.

1309.0403 SECTION R403, FOOTINGS.

Subpart 1. IRC section R403.1.4.1, Frost protection. The existing exception is deleted because the 2018 IRC has been revised to include similar requirements for the frost protection of deck footings in Section R507.3.2.

Subp. 2. IRC section 403.1.6, Foundation anchorage. This subpart is amended to clarify that anchor bolts are required to be within eight inches of the vertical foundation reinforcement. Vertical reinforcement consists of steel rebar dowels placed in the masonry or concrete foundation to provide structural support. Anchor bolts are used to attach the foundation to the wall of the dwelling. The current amendment requires the vertical reinforcement to align with the anchor bolts. The exact alignment of the vertical foundation reinforcement with the anchor bolts can be difficult. The proposed amendment clarifies that anchor bolts can be placed within eight inches of the vertical foundation reinforcement, which provides sufficient structural support. Eight inches was selected because that is the normal construction tolerance for concrete masonry construction. The final sentence of the section (before the exceptions) is modified to clarify the placement of the grout used to secure an anchor bolt in a masonry foundation. The proposed final sentence is more specific and will help eliminate current confusion in the industry. The proposed modifications to this section are reasonable to clarify existing code provisions and ensure uniform application and enforcement of the code.

1309.0404 SECTION R404, FOUNDATION AND RETAINING WALLS.

Subpart 1. IRC section R404.1, Concrete and masonry foundation walls. Item number 4 is amended to direct the code user to footnote "e" of Table R404.1(1) for blocking requirements. The proposed rule amends subpart 2 to relocate blocking requirements to footnote "e" of Table R404.1(1). It is reasonable to relocate blocking requirements to footnote "e" of Table R404.1(1) in subpart 2 because the table provides requirements for spacing of blocking. Item number 5 is deleted because it was causing confusion; some users were applying item 5 to the wrong walls. It is reasonable to delete item 5 because these requirements are sufficiently covered in Table R404.1(1) in subpart 2.

The exception is revised to limit its application to cantilevered concrete and masonry foundation walls that support unbalanced backfill (meaning there is backfill on the outside of the foundation wall but not on the inside of the foundation wall) and that lack lateral support at the top of the foundation. These edits were requested by the Structural TAG for clarification; they are consistent with the intent of the current rule.

Two sentences have been added at the end of this subpart for clarification and ease of reference. The first sentence refers the reader to subpart 9 for the amended Subsection R404.1.1. The second sentence clarifies that Subsections R404.1.2 through R404.1.9 remain unchanged.

Subp. 2. IRC Table R404.1(1), Maximum anchor bolt and blocking spacing for supported foundation wall. The current Table R404.1(1) is deleted and replaced with a revised table. The revised table adds a row for foundations with a maximum wall height of ten feet. Foundations with wall heights of ten feet are increasingly common but the current rule does not include prescriptive requirements for foundations of this height. The 2018 IRC recognizes that taller foundation walls are increasingly common and includes prescriptive requirements for foundation walls up to ten feet in height. Currently in Minnesota, a builder must hire an engineer to design a foundation wall nine to ten feet in height. The proposed rule corresponds to a recognized need for prescriptive requirements for foundation walls nine to ten feet in height and eliminates the need for the residential contractor to hire an engineer to design the foundation. Other model code tables include foundation walls up to ten feet in height, such as Tables R404.1.1(2), R404.1.1(3), and R404.1.1(4). The entries for proposed Table R404.1(1) for foundation walls between nine and ten feet in height were developed by a local engineer based on accepted engineering principles. These entries are consistent with the model code and with construction practice in Minnesota. By eliminating the need to hire an engineer, the proposed rule decreases the cost of construction by $500 to $1000.

In the rows for all wall heights, the soil class "SM" has been added to the middle row (with soil load of 45 pcf/ft). A unified soil classification system symbol of SM

is assigned to silty sand, sand-silt mixtures. *See* Table R405.1 of the 2018 IRC. Failure to include SM soil class in the current Table R404.1(1) was an oversight, as can be seen from the inclusion of SM soil class in current Tables R404.1.1(5), R404.1.1(6), and R404.1.1(7) (in current rule 1309.0404, subparts 6-8). Soil classified as SM is grouped with soil classified as GM, GC, SM-SC, & ML for consistency with Tables R404.1.1(5), R404.1.1(6), and R404.1.1(7).

In the row for maximum wall height of 8 feet, the revised table changes the maximum unbalanced backfill height from 7 feet four inches to 7 feet six inches. Similarly, in the row for maximum wall height of 9 feet, the revised table changes maximum unbalanced backfill height from 8 feet four inches to 8 feet six inches. The 2018 IRC requires the height of the unbalanced backfill to be six inches from the top of the foundation wall, so the table is revised for consistency with the model code. The additional two inches of unbalanced backfill height provides the foundation wall with extra support. Because of the additional backfill, this extra support is needed. In the column labeled "1/2" diameter Anchor Bolt Spacing (inches)," the last value for maximum wall height of nine feet has been reduced from 40 to 32 because 32 inches is the maximum spacing that engineering calculations will allow. The values in the column labeled "Spacing of Blocking Perpendicular to Floor Joists (inches)" are increased for consistency with the required spacing of anchor bolts. The spacing of the blocking is equal to the spacing of the anchor bolts to simplify the construction of the foundation. This will result in more uniform application and enforcement of the code.

The footnotes to the table have been expanded and revised. Footnote "a" has been added for readability and consistency with the 2018 IRC. The abbreviations for soil classes as used in the table are the abbreviations used in the Unified Soil Classification System, as specified in Table R405.1 of the 2018 IRC. It is reasonable to refer readers to Table R405.1 for a description of what the abbreviations mean.

Footnote "b" concerns anchor bolts. Anchor bolts attach the dwelling to the concrete or masonry foundation. The proposed revisions to the requirements for the placement and use of anchor bolts are necessary to ensure the foundation and dwelling are securely fastened. The first sentence of proposed footnote "b" is a requirement found in the second sentence of current footnote "b." The second and third sentences are added to specify the construction tolerances based on accepted engineering principles.

The first sentence of proposed footnote "c" is the same as the first sentence of current footnote "a." The second sentence of proposed footnote "c" is based on accepted engineering principles. The specific requirement can be found in the following referenced standard: ANSI/WC NDS—2018: National Design Specification for Wood Construction, referenced in chapter 44 of the 2018 IRC.

The requirements in the first sentence of proposed footnote "d" are contained in the last sentence of current footnote "a." The proposed footnote adds the words "round or square" to clarify that either type of washer is acceptable. The second sentence of proposed footnote "d" is added to increase the usability of the table. It is sometimes difficult to obtain the larger washers specified in the first sentence of footnote "d." The second sentence provides the option of using easily available washers (standard and non-countersunk washers) if the anchor bolt spacing is reduced by half. This is consistent with accepted engineering principles.

Existing footnote "b" is relocated to new footnote "e" and the language is unchanged. New footnote "f" is added with more specific requirements for blocking. Blocking is a part of the structure of the floor that is added between the joists for added stability; blocking helps prevent the foundation walls from pushing in. The floor assembly attached to the foundation walls provides the top of the foundation with lateral support. Footnote "f" provides information for the correct installation of blocking to improve the lateral support of the foundation. Current rule 1309.0404, subp. 1, item 4, addresses blocking based on a higher load than the proposed rule. The proposed rule allows more spacing in the blocking, consistent with accepted engineering principles, because this is less costly. The level of blocking required under the current rule is not necessary based on an engineering analysis.

Subparts 6, 7, and 8. IRC Tables R404.1.1(5), R404.1.1(6), and R404.1.1(7). The only amendments to these subparts are the formatting of the footnotes. The format is being changed for consistency with the Revisor's style for footnotes.

Subp. 9. IRC section R404.1.1. The numbering of the IRC section has been changed to correspond with the renumbering of the 2018 IRC. No other changes have been made.

1309.0507 SECTION R507, EXTERIOR DECKS.

Subpart 1. IRC Table R507.3.1, Minimum footing size for decks. Table R507.3.1 is modified to delete references to snow loads and to require the minimum footing size for decks to be determined based on a live load of 40 pounds per square foot ("psf"). The first

column in the table is modified so that the heading reads as "Live Load" and the load values are deleted and replaced with a uniform live load of "40." Footnote "b" is modified to require load to be calculated based on the dead load and live load, and to delete the option permitting the determination of load based on snow load and dead load.

The 2018 IRC requires the minimum footing size for decks to be determined based on live load (temporary weight that changes over time including persons and furniture) or snow load in addition to the dead load (weight of the deck itself). Currently, decks in Minnesota are designed and constructed based on a live load of 40 psf. The floors within a dwelling are also designed to support a live load of 40 psf. The proposed modifications to Table R507.3.1 are necessary to maintain the current requirements and simplify the determination of footing size for decks.

The elimination of the option to design the deck based on snow load simplifies the determination of the footing size and lowers the cost of construction. Snow load varies in Minnesota based on geographic location. The design snow load is 35 psf in southern Minnesota and 42 psf in the northern part of the state. If the design load is variable then a structural engineer must design the deck, which is an additional expense for the residential contractor and ultimately the homebuyer or homeowner. A uniform design load of 40 psf eliminates the need for an engineer to design the deck, which lowers the cost of construction. A uniform design load of 40 psf based on live load also ensures the structural integrity of the deck, as in the current code. The proposed modifications are reasonable because they provide a uniform design standard which in turn will lead to continued uniform application and enforcement of the code for decks.

Subp. 2. IRC Table R507.5, Deck beam span lengths. Footnote "a" of table R507.5 is modified by replacing "Ground snow load, live load" with "Live load." This change is necessary for consistency with the proposed modifications to Table R507.3.1 in subpart 1; proposed Table R507.3.1 deletes the references to snow load and requires decks to be designed based on a uniform live load of 40 psf.

Subp. 3. IRC Table R507.6, Deck joist spans for common lumber species. Footnotes "b" and "c" are modified to replace "Ground snow load, live load" with "live load." This change is necessary for consistency with the proposed modifications to Table R507.3.1 in subpart 1; proposed Table R507.3.1 deletes the references to snow load and requires decks to be designed based on a uniform live load of 40 psf.

Subp. 4. IRC Table R507.9.1.3(1), Deck ledger connection to band joist. Table R507.9.1.3(1) is modified to delete the references to snow load. The reference to snow load in the heading is being deleted and footnote "b" is being deleted. The subsequent footnotes are re-lettered accordingly. This change is necessary for consistency with the proposed modifications to Table R507.3.1 in subpart 1; proposed Table R507.3 deletes the references to snow load and requires decks to be designed based on a uniform live load of 40 psf.

1309.0602 SECTION R602, WOOD WALL FRAMING.

Subpart 1. IRC Table R602.3.1, Maximum allowable length of wood wall studs exposed to wind speeds of 115 MPH or less. Table R602.3.1 provides requirements for tall wall construction specific to the climatic conditions in Minnesota. This enables tall walls used for framing dwellings to withstand the pressures of wind loads and snow loads. The table provides a cost effective method for the construction of tall walls. The table heading is revised by replacing "90 MPH" with "115 MPH" and adding a notation for new footnote "j". The wind speed is revised to 115 miles per hour because the wind design methodology in the IRC was revised from the basic wind design to ultimate wind speed. Due to differences in the calculation of basic wind speed design and ultimate wind speed, a basic wind design speed of 90 mph is similar to an ultimate wind speed of 115 mph so no changes are required for wall height and on-center spacing.

Notations for footnotes "h" and "i" are deleted from the "Exposure Category" column. Notations for these footnotes were erroneously carried forward from a previous rulemaking. This proposed rulemaking adds footnotes "h" and "i" with new content that does not apply to "Exposure Category." New footnotes "h" and "i" describe additional requirements for the attachment of wood wall studs to the foundation and floor. Therefore, the notations for footnotes "h" and "i" are deleted from the "Exposure Category" column.

The format of the footnotes is amended for consistency with the Revisor's style for footnotes.

The content of footnote "c" is revised to replace "32" with "30" and "38" with "36." This change is necessary to coordinate with numbering changes made to items in Table R602.3(1) of the 2018 IRC.

Footnotes "h," "i," and "j" are added with conditions for the attachment of wood wall studs to the foundation and floor of a dwelling to ensure the tall wall has sufficient strength and stability to withstand environmental pressures. All of the specific requirements

in footnotes "h," "i," and "j" are from the following referenced standard: ANSI/WC NDS—2018: National Design Specification for Wood Construction, referenced in chapter 44 of the 2018 IRC.

Footnote "h" is added to include anchor bolt spacing requirements for walls between twelve feet and twenty-four feet in height. The requirements contained in footnote "h" are reasonable to ensure the wood wall studs used for framing a dwelling are securely attached to the foundation.

Footnote "i" is added with conditions for the attachment of the wood wall studs to components that attach the foundation and floor of a dwelling. These requirements are reasonable to ensure the floor framing and wall framing are correctly connected to ensure the dwelling has sufficient strength and stability to withstand environmental pressures.

Footnote "j" is added with conditions for the attachment of frame walls to components at the top and bottom of the wall when the frame wall is more than 20 feet in height. Due to the weight of the tall frame walls and the environmental pressures the frame wall must withstand, it is reasonable to require the fastening or fastener to support at least 450 pounds.

Subp. 2. IRC section R602.10.11, Cripple wall bracing. Repealed. This subpart is repealed because section R602.10.11 was renumbered to section R602.10.10 in the 2018 IRC and contains similar language as the existing amendment. Therefore, this subpart is no longer necessary and is being repealed.

1309.0612 SECTION R612, EXTERIOR WINDOWS AND DOORS. Repealed.

This rule part is repealed because section R612 was renumbered to section R609 in the 2018 IRC and now contains similar requirements for exterior windows and doors. Therefore, this rule part is no longer necessary and is being repealed.

1309.0702 SECTION R702, INTERIOR COVERING.

Subpart 1. IRC Table R702.1(3). Repealed. This subpart is repealed because Table R702.1(3) was revised in the 2018 IRC and is identical to the table located in the existing subpart. Therefore, the modification is no longer necessary and the subpart is being repealed.

1309.0703 SECTION R703, EXTERIOR COVERING.

Subpart 2a. IRC section R703.2, Water–resistive barrier. Section R703.2 is revised to be almost identical to the model code. The only difference between proposed Section R703.2 and model code section 703.2 is the last sentence of the proposed rule. The last sentence of the model code states: "The No. 15 asphalt felt or other approved water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1." In the proposed rule, the phrase "to the top of walls" is changed to "up to the underside of the rafter or truss top chord." This is also language in the current rule, and is needed and reasonable to clarify precisely to what point the felt or other material must be continuous.

Subp. 2b. IRC section R703.4, Flashing. This rule part contains language that is relocated from existing subpart 9 because the section pertaining to flashing was renumbered in the 2018 IRC. Proposed Section R703.4 is identical to current Section R703.8 (in subpart 9) except that one sentence has been added to the first paragraph of the rule. That sentence requires fluid-applied membranes used as flashing in exterior walls to comply with AAMA 714, Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Wall Openings in Buildings. This sentence is added for consistency with the 2018 IRC, which contains the same sentence in the first paragraph of model code Section R703.4. Flashing is installed around doors and windows to direct water away from the dwelling. Flashing can include fluid applied membranes. The proposed change is reasonable because it refers code users to the recognized industry standard for the use of fluid-applied membranes as flashing, which will lead to more uniform enforcement and application of the code.

Proposed Section R703.4.1 is identical to current Section R703.8.1 in subpart 9.

Subp. 3. IRC section R703.7, Exterior plaster. Section R703.6 of the 2012 IRC was renumbered and relocated in the 2018 IRC to section R703.7. The subsequent section reference numbers are renumbered and a cross-reference changed because the corresponding sections were renumbered in the 2018 IRC. The only other amendment is to subsection R703.7.2.

Proposed subsection R703.7.2 is amended for consistency with the 2018 IRC to include the approved types of cement materials. The new language proposed in subsection R703.7.2 is identical to language in model code section R703.7.2. It is reasonable to include the approved types of cement materials for consistency with recognized cement industry standards and practice.

Subp. 8a. IRC section R703.7.4.2, Air space. Repeal. This subpart is repealed because it is no longer needed. Air space is required between the veneer and sheathing to allow water to drain away from the wall and the interior of the dwelling. The air space requirements in Table 703.8.4(1) of the 2018 IRC are consistent with the existing requirements for air space. Therefore, the existing subpart is no longer needed and it is reasonable to repeal the subpart.

Subp. 8b. IRC section R703.7.4.3, Mortar or grout fill; and IRC section R703.7.4.4, Masonry veneer on sheathed substrates. Repeal. The 2018 IRC includes requirements regarding grout fill and masonry veneer in sections R703.8.4, R703.8.4.1, R703.8.4.1.1, and R703.8.4.2. These requirements are a reasonable substitute for the requirements in current subpart 8b because the model code requirements serve the same purpose as the current rule: to ensure that the studs or sheathing are protected from weather corrosion, and to ensure that the weather-resistant material is adequately attached.

Subp. 9. IRC section R703.8, Flashing; and IRC section R703.8.1, Pan flashing of windows and doors. Repeal. This rule language has been moved to subpart 2b and amended as discussed above in connection with proposed subpart 2b. It is therefore reasonable to repeal current subpart 9.

1309.0807 SECTION R807, ATTIC ACCESS.

This rule part is added to modify section R807.1 of the 2018 IRC and carry forward the 2012 IRC code language for this section. There is no difference between the substantive requirements for attic access in the 2012 and 2018 IRC editions. However, the language in the 2012 IRC more clearly conveys the dimensions of attics required to have an access opening. The final sentence of this section is modified to direct the code user to Minnesota Rules, chapter 1346, the Minnesota Mechanical Code for the requirements for mechanical equipment located in attics. These modifications are reasonable so code requirements are more understandable and to provide the correct reference for mechanical equipment requirements.

1309.0903 SECTION R903, WEATHER PROTECTION.

IRC section R903.2.1.1 Existing buildings and structures. This section is modified to require kick-out flashings to be installed when an existing dwelling undergoes re-siding. Part 1309.0202 defines kick-out flashing as "flashing used to divert water where the lower portion of a sloped roof stops within the plane of an intersecting wall cladding." Kick-out flashing is installed where the roof and the wall intersect to protect the wall and divert rainwater into the gutter and away from the dwelling to prevent rotting caused by water damage. The current amendment requires the installation of kick-out flashings when an existing dwelling is undergoing re-roofing and re-siding and does not require the installation of kick-out flashings for a dwelling that is undergoing re-siding. The current amendment does not state whether the installation of kick-out flashing is required when an existing dwelling undergoes re-siding. The proposed amendment clarifies that kick-out flashing is to be installed when the dwelling undergoes re-siding. It is reasonable to require the installation of kick-out flashing when a dwelling undergoes re-siding because it is easily installed at that time and will protect the newly installed siding from water damage. The proposed amendment clarifies an existing provision, which will result in more uniform enforcement and application of the code.

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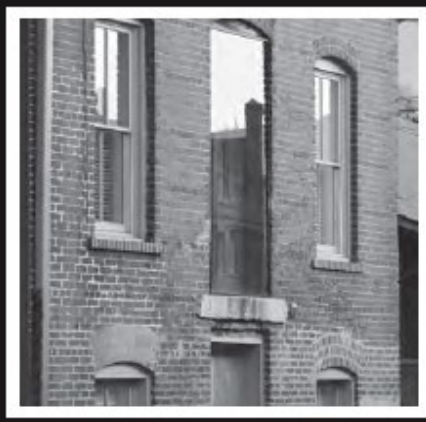
MINNESOTA CONSERVATION CODE for EXISTING BUILDINGS



ICC INTERNATIONAL CODE COUNCIL

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Adoption of the International Existing Building Code, Minnesota Rules, Chapter 1311; Revisor's ID Number R-04511.

INTRODUCTION

The Commissioner ("Commissioner") of the Department of Labor and Industry ("Department") and certain local authorities enforce the Minnesota State Building Code, which consists of 22 chapters of the Minnesota Rules. One of those 22 chapters is chapter 1311, the Minnesota Conservation Code for Existing Buildings. *See* Minnesota Rules, part 1300.0050.

The Commissioner proposes to adopt amendments to the Minnesota Conservation Code for Existing Buildings, Minnesota Rules, chapter 1311. The proposed rules will incorporate by reference the 2018 International Existing Building Code ("IEBC"), with amendments.

The International Code Council ("ICC") publishes the IEBC. The ICC reviews and modifies the ICC Model Codes every three years to incorporate the most current construction code criteria to provide the construction industry with the most current code provisions for use throughout the nation. The IEBC allows for the cost-effective rehabilitation of existing commercial buildings where compliance with all requirements with the current code for new construction would be cost prohibitive. The IEBC also provides the requirements for the addition, alteration, repair, and change of occupancy, or use, of existing buildings. The IEBC allows for the continued use or reuse of existing buildings while maintaining or improving the basic safety levels.

The current chapter 1311 adopts and amends the 2012 edition of the IEBC. *See* Minnesota Rules, part 1311.0010, subd. 1. Accordingly, the Department currently administers and enforces the 2012 edition of the IEBC with amendments as contained in Minnesota Rules, chapter 1311. Although the ICC published a 2015 edition of the IEBC, the Department did not adopt the 2015 edition of the IEBC due to legislation that requires the Department to review and adopt the model codes with amendments every six years, beginning with the 2018 edition of the model codes.[30]

Minnesota Statutes, section 326B.106, subdivision 1, requires the Department to consult with the Construction Codes Advisory Council ("CCAC") in adopting amendments to the Minnesota State Building Code. The Department has consulted with the CCAC in connection with this rulemaking.

In consultation with the CCAC, the Department utilized a Chapter 1311 Technical Advisory Group ("Chapter 1311 TAG") to review the existing rule Chapter 1311 and the 2018 IEBC to propose reasonable and necessary amendments to the existing rule and the model code. The Chapter 1311 TAG members were appointed by the CCAC to review and comment upon the 2018 IEBC and proposed changes to the Minnesota State Building Code. The Chapter 1311 TAG consisted of representatives from the Association of Minnesota Building Officials, Fire Marshals Association of Minnesota, American Institute of Architects Minnesota, Building Owners and Managers Association, and Department personnel. The proposed amendments in this rulemaking incorporate changes to the 2018 IEBC proposed by the Chapter 1311 TAG members.

Because many of the requirements in Chapter 1311 focus on evaluating the strength and stability of structural elements of a building, such as roofs and load-bearing walls, the Department also used a Structural Technical Advisory Group ("Structural TAG"). The Structural TAG was also appointed by the CCAC, and consisted of representatives from the Association of Minnesota Building Officials, Builders Association of the Twin Cities-Housing First, Builders Association of Minnesota, the Minnesota Structural Engineering Association, and Department personnel. The Structural TAG evaluated the structural provisions of the 2018 I-Codes, including the IEBC. The proposed amendments in this rulemaking incorporate changes reviewed by the Structural TAG.

[30] *See* Minn. Stat. § 326B.106, subd. 1(c) (2018).

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1311
MINNESOTA CONSERVATION CODE FOR EXISTING BUILDINGS

GENERAL.

Throughout the Rule-by-Rule Analysis section of this SONAR, specific terms are used to explain the type and extent of work that will allow for the rehabilitation and reuse of an existing building.

Addition. "Addition" is defined in section 202 of the IEBC as an extension or increase in floor area, number of stories, or height of any building or structure. The provisions of the International Building Code ("IBC") that apply to new construction apply to the addition itself; however, the IEBC contains provisions that require the designer to evaluate the impact of the addition on the existing building.

Alteration. "Alteration" is defined in section 202 of the IEBC as any construction or renovation to an existing structure other than a repair or addition. Alterations are more extensive than repairs. Section 503 of the IEBC describes the prescriptive requirements for alterations. The IEBC also includes requirements based on the extent of the alterations being performed. The IEBC identifies three levels of alterations.

Level 1 alteration. A "Level 1 alteration" is described in section 602 of the IEBC as the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose. There are no changes to the configuration of spaces or rooms within the existing building. The replacement or covering materials, elements, equipment, or fixtures serve the same purpose as the existing ones.

Level 2 alteration. A "Level 2 alteration" is described in section 603 of the IEBC as the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment. The work area that is undergoing alteration constitutes fifty percent or less of the building. The reconfiguration of space can include the addition or removal of a wall, which can change how occupants exit the building. An extension of a system can include the extension of the plumbing system to a space reconfigured for an additional toilet room. A Level 2 alteration must comply with IEBC requirements for Level 1 alterations as well as Level 2 alterations.

Level 3 alteration. A "Level 3 alteration" is described in section 604 of the IEBC as an alteration where the work area undergoing alteration exceeds fifty percent of the building. A Level 3 alteration must comply with IEBC requirements for Level 1 alterations and Level 2 alterations as well as Level 3 alterations.

Occupancy classification. "Occupancy classification" is defined in section 302 of the IBC as the formal designation of the primary purpose of the building, structure for portion thereof. Structures are classified into occupancy groups based on the nature of the hazards and risks to the building occupants associated with the intended purpose of the structure. Occupancy groups are described in detail in chapter 3 of the IBC. The IEBC has requirements for existing buildings that change from one occupancy to another.

Change of occupancy. A "change of occupancy" is defined section 202 of the IEBC as:

A change in the use of a building or a portion of a building that results in any of the following:

1. A change of occupancy classification.
2. A change from one group to another group within an occupancy classification.
3. Any change in use within a group for which there is a change in application of the requirements of this code.

An existing building currently used as an office that is converted to a retail store undergoes a change of occupancy from Group B to Group M. An example of a change from one group to another group within an occupancy classification is an assisted living center (Group I-1) converted to a nursing home (Group I-2). A change of occupancy may result in a change in the application of the code that requires additional features for the life safety of building occupants.

1311.0010 ADOPTION BY REFERENCE OF THE INTERNATIONAL EXISTING BUILDING CODE.

Subpart 1. General. This subpart is modified to incorporate by reference the 2018 IEBC edition instead of the 2012 edition. The latest edition is the 2018 edition, which includes the most current construction criteria. This modification is necessary to properly incorporate by reference the 2018 edition of the IEBC. This modification is reasonable because it incorporates the most current, nationally recognized minimum requirements to safeguard the public health, safety, and general welfare of occupants of existing buildings undergoing rehabilitation, alternation, addition, or repair. This modification is also consistent with the following requirement in Minnesota Statutes, section 326B.106, subd. 1(a): "The code must conform insofar as practicable to model building codes generally accepted and in use throughout the United States …."

Subp. 1a. Deleted appendices. This proposed subpart deletes the IEBC appendices. This is needed for clarity and consistency with current practice. Chapter 1311 does not refer to any of the appendices to the IEBC, and the Department does not enforce anything in the appendices to the IEBC. It is therefore appropriate to delete the appendices.

Subp. 2. Mandatory Chapters. The first sentence of this subpart is amended to correct an error. The Minnesota State Building Code consists of many rule chapters, including chapter 1311. The term "Minnesota Building Code" refers only to chapter 1305, the adoption of the International Building Code. *See* Minn. R. 1300.0050. The second sentence of subpart 2 is added to explain that the amendments to IEBC section 305 are located in Minnesota Rules, chapter 1341, the Minnesota Accessibility Code. IEBC section 305 addresses accessibility requirements for existing buildings undergoing addition, alteration, or change of occupancy. The proposed amendments to IEBC section 305 are included with the proposed changes to Minnesota Rules, chapter 1341. It is reasonable to locate the amendments to the accessibility section of the IEBC in Minnesota Rules, chapter 1341 because the accessibility code is a stand-alone code that amends other documents within chapter 1341 to comprise the entire Minnesota Accessibility Code. The explanation that the amendments to IEBC section 305 are located in Minnesota Rules, chapter 1341, also directs code users to the correct location for Minnesota's accessibility requirements for existing buildings undergoing addition, alteration, or change of occupancy.

Subp. 3. Replacement chapters and provisions. Existing subitem A is being deleted because the sections listed no longer address accessibility for existing buildings. The 2018 edition of the IEBC revised and reformatted accessibility provisions into a single section, 305, that is being incorporated by reference in this rules chapter with amendments to be located in Minnesota Rules, chapter 1341. It is reasonable to delete existing subitem A because of revisions to the IEBC. Because subitem A is being deleted, the subsequent subitems are re-lettered accordingly. Other than re-lettering, there are three changes to existing subitems B through F. Existing subitem B refers to the 2012 IEBC. The date needs to be deleted because part 1311.0010, subp. 1, identifies the version of the IEBC incorporated by reference (which is proposed to be the 2018 version). In existing subitem D, the words "Minnesota Rules" are added to clarify that the reference to chapter 1305 is not a reference to IEBC chapter 1305. Existing subitem F is made a separate subpart 4, because the text of subitem F does not fit with the introductory sentence of subpart 3: existing subitem F is not something replacing a chapter or section in the 2018 IEBC.

1311.0020 REFERENCES TO OTHER INTERNATIONAL CODE COUNCIL CODES.

Subp. 2. Building code. This definition is being amended to add "Minnesota Building Code." This is consistent with the definition of chapter 1305 in Minnesota Rule 1300.0050. This is distinguished from the Minnesota State Building Code, defined in proposed subpart 12.

Subp. 12. Minnesota State Building Code. This proposed subpart is needed to clarify the meaning of the Minnesota State Building Code, which is different from the Minnesota Building Code. While Minnesota Building Code means only chapter 1305, Minnesota State Building Code means all the chapters that comprise the state building code. *See* Minn. R. 1300.0050.

1311.0202 SECTION 202, GENERAL DEFINITIONS.

Subp. 2. Section 202, General definitions; amended. These definitions are in the IEBC but amended in part 1311.0202. In some definitions, the only change is to add the phrase "[term being defined] means" at the beginning of the definition, for clarity and consistency. Other amendments to the definitions are discussed below.

Code official. The definition of "code official" is modified to clarify that both "code official" and "building code official" have the same meaning as "building official" in chapter 1300, which is the administrative chapter adopted in the various chapters of the building code. *See, e.g.,* current part 1311.0010, subp. 3(B). The IEBC uses "code official" and "building code official" to describe an individual who administers and enforces building codes. Other I-Codes, including the IBC, use the term "building official" to describe the individual who has the responsibility to enforce and administer the building code. It is reasonable to clarify that "code official" and "building

code official" have the same meaning as "building official" because the IEBC frequently refers users to the IBC for additional requirements.

Historic Building. The definition of historic building located in the 2018 IEBC is modified to refer to the definition of "historical building" located in Minnesota Rules, part 1300.0070. Minnesota Rules, chapter 1300, contains the administrative provisions of the Minnesota State Building Code. This definition allows for broader interpretation of "historic building" than the definition located in the 2018 IBC. The definition of historical building located in rule 1300.0070 includes buildings that are listed on the National or State Register of Historic Places or are eligible to be listed in the opinion of the State Historic Preservation Officer or Keeper of the National Register of Historic Places. Furthermore, the proposed amendments to the Minnesota Building Code include this same proposed definition of "historic building."[31] It is needed and reasonable for the definitions of "historic building" and "historical building" to be consistent in all rules chapters that comprise the Minnesota State Building Code.

Repair. The proposed definition substitutes the phrase "individual component replacement" for the word "replacement" in the IEBC. This is reasonable and needed to distinguish repairs from alterations. Alterations are more extensive, and are subject to additional requirements in IEBC section 503.

Substantial damage. The definition of substantial damage in the IEBC is modified to delete the phrase "[f]or the purpose of determining compliance with the flood provisions of this code" because part 1311.0010, subpart 3, subitem D, replaces flood hazard and floodproofing provisions in the IEBC with Minnesota Rules, chapter 1335, Floodproofing Regulations. It is reasonable to delete the reference to flood provisions because the IEBC flood provisions for structures that have sustained substantial damage do not apply.

Substantial improvement. The definition of substantial improvement in the IEBC is modified to delete the phrase "[f]or the purpose of determining compliance with the flood provisions of this code" because part 1311.0010, subpart 3, subitem D, replaces flood hazard and floodproofing provisions in the IEBC with Minnesota Rules, chapter 1335, Floodproofing Regulations. It is reasonable to delete the reference to flood provisions because the IEBC flood provisions for structures that are undergoing substantial improvement do not apply. The definition is also modified to use the term "historic building" instead of "historic structure" because the rule defines the term "historic building."

1311.0301 SECTION 301, ADMINISTRATION.

The title of this rule part is changed from "Compliance Methods" to "Administration" for consistency with the headings in the 2018 IEBC. In addition, this subpart is amended by renumbering the IBC section references because the corresponding sections were renumbered in the 2018 IBC.

Subpart 1. Section 301.3.1, Prescriptive compliance methods. This subpart is amended for consistency with revisions made to the 2018 IEBC. Chapter 5 of the 2018 IEBC addresses prescriptive compliance methods, which were addressed in chapter 4 of the 2012 IEBC. The reference to chapter 4 is therefore deleted and replaced with chapter 5. The language is modified to delete "repairs" for consistency with section 301.3.1 of the 2018 IEBC. Due to revisions to the 2018 IEBC, repairs are no longer addressed in the chapter on prescriptive compliance methods and are discussed in a separate chapter.

Subp. 2. Section 301.5, Compliance with accessibility. The existing language in this subpart is deleted because the 2018 IEBC has been reformatted. The existing language on window cleaning anchors is relocated to new rule part 1311.0302. The existing language on replacement windows is no longer needed because replacement windows are addressed in sections 702.4 and 702.5 of the IEBC (with proposed amendments to section 702.5 as discussed below). The proposed changes to this subpart modify section 301.5 of the 2018 IEBC to require compliance with Minnesota Rules, chapter 1341, the Minnesota Accessibility Code. Chapter 1341 adopts the ICC A117.1 with amendments. It is reasonable to modify section 301.5 to provide code users with the correct reference to Minnesota accessibility requirements.

1311.0302 SECTION 302, GENERAL PROVISIONS.

Section 302.3.1 Window cleaning anchors. This section is renumbered from 301.2.1 to 302.3.1 for consistency with the renumbering of the 2018 IEBC. Therefore, this section is relocated from subpart 1311.0301 to this new subpart. There are no changes made to the requirement that window cleaning anchors comply with the Minnesota Building Code.

1311.0305 SECTION 305, ACCESSIBILITY FOR EXISTING BUILDINGS.

[31] *See* proposed rule 1305.0202, subpart 1.

This subpart is added to coordinate between this rule chapter and Minnesota Rules, chapter 1341, the Minnesota Accessibility Code. Contemporaneously with this rulemaking, the Department is proposing amendments to chapter 1341. The proposed amendments include incorporation by reference of section 305 of the 2018 IEBC. All proposed amendments to section 305 of the 2018 IEBC will be contained in Chapter 1341.

Proposed part 1311.0305 refers the code user to Chapter 1341 because the Minnesota Accessibility Code is enforced throughout the state. The Minnesota State Building Code is the minimum standard for construction in Minnesota. It must be enforced in the seven metropolitan counties and any municipality that has adopted the code by ordinance. To ensure that the accessibility provisions for existing buildings are properly applied and all state accessibility requirements are located in the same rules chapter, it is reasonable to incorporate section 305 with amendments in Minnesota Rules, chapter 1341, and to direct the code user to Chapter 1341.

1311.0401 SECTION 401, GENERAL: REPEALED

Section 401 in the 2012 IEBC has been amended and renumbered as section 501 in the 2018 IEBC. Section 501.1 in the 2018 IEBC is comparable to current rule 1311.0401, except that the exception in the rule refers readers to the requirements for bleachers in Minnesota Statutes, section 326B.112 instead of the ICC 300. A reference to section 326B.112 is not needed here because current rule 1305.1028[32] amends ICC 300 to be consistent with the requirements of section 326B.112. Therefore, there is no need to amend section 501 of the 2018 IEBC; the repeal of current rule 1311.0401 is reasonable.

1311.0404 SECTION 404, REPAIRS: REPEALED

In the 2012 IEBC as amended by the current chapter 1311, repairs were addressed in several sections, including chapter 6 and section 404.[33] In the 2018 IEBC, the provisions regarding repairs are consolidated in the new chapter 4. Current rule 1311.0404 is being repealed because it is no longer needed; the new IEBC chapter 4 (as amended by proposed rule 1311.0405 below) contains all the necessary provisions.

1311.0405 SECTION 405, STRUCTURAL

Current rule 1311.0606 is being renumbered to 1311.0405, and references to sections are renumbered because of the renumbering of sections in the IEBC. The language of the amendment is revised for consistency with 2018 IEBC section 405.2.4 with modifications. The modifications require the repair of structural components that have sustained substantial structural damage to comply with the IBC requirements for snow loads, including the effects of snow drifts. The IEBC only requires the rehabilitation of components to comply with the snow load requirements of the IBC if snow loads caused the damage to the component. It is necessary to require any rehabilitation of components to comply with the IBC requirements for snow loads due to Minnesota's climatic conditions, which include heavy snowfall. Determining if the rehabilitated building components can withstand snow loads is necessary to ensure that the component will not be required to carry too much load, or weight, following a snowfall event. The modification that the damaged component comply with IBC requirements for snow drift effects is necessary for roofs that are damaged and undergoing rehabilitation. The rehabilitation of the roof may alter the snow drift effects, meaning snow may collect on the roof at a different location than it did prior to the rehabilitation. If the changes to snow drift effect are not calculated and anticipated as a part of the rehabilitation of components, then the weight of snow may result in damage to the roof.

The language is also modified to require building components that are not damaged to be rehabilitated or the designer must verify the undamaged components are able to carry whatever loads, or forces, that will be placed on them because of design changes for the rehabilitated damaged components.

A design professional must calculate the loads on damaged rehabilitated components and undamaged components. The modifications to this section merely clarify the calculations that must be performed for snow drift effects in order to verify that the undamaged components do not require rehabilitation to sustain the loads of the rehabilitation design.

1311.0502 SECTION 502, ADDITIONS.

Current rule 1311.0402 is being renumbered to 1311.0502, and references to sections are renumbered because of the renumbering of sections in the IEBC. All other amendments are discussed below.

Subpart 1. Section 502.4, Existing structural elements carrying gravity load. The language is revised for consistency with section 502.4 of the 2018 IEBC, with modifications. The proposed amendment clarifies that,

[32] Proposed amendments to part 1305.1028 would renumber the rule 1305.1029 for consistency with the 2018 IBC, and would place all the amendments to ICC 300 in subpart 1, but would not make any substantive changes to the amendments to ICC 300.

[33] *See* https://codes.iccsafe.org/content/MCCEB2015

when an addition is added to an existing structure, the demand-capacity ratio for a structural element is permitted to increase to a total of 105 percent. The IEBC language and the current rule would allow the demand-capacity to increase by five percent. This means the structural element may carry five percent more load than the structural element carried before the addition. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the addition, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of the demand-capacity ratio before the addition, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence is new. This sentence would require the calculation of the demand-capacity ratio to include all loads on the structural element as a result of all additions and alterations that have occurred since the original construction of the building. The total load the structural element carries from all cumulative changes can only be five percent more than the load the structural element is permitted to carry by the IBC. If prior additions and alterations are not considered, then allowing 105 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a five percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned addition rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The last two sentences of proposed section 502.4 are amended to be identical to the last two sentences of section 502.4 of the IEBC.

Because the exception does not need to be amended, a sentence is added to clarify that the exception remains unchanged.

Subp. 1a. Section 502.5, Existing structural elements carrying lateral load. The language of the first exception is revised for consistency with section 502.5 of the 2018 IEBC, with modifications. The first sentence of the proposed exception clarifies that, when an addition is added to an existing lateral load-carrying structural element, the demand-capacity ratio for the structural element is only permitted to reach a total of 110 percent. The IEBC language and the current rule would allow the demand-capacity ratio to increase by up to 10 percent. This means the structural element may carry up to ten percent more load than the structural element carried before the addition. The purpose of the language was to prevent the structural element from carrying more than ten percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the addition, it would not make sense to limit the increase to ten percent. Similarly, if the structural element carried 106 percent of the demand-capacity ratio before the addition, allowing an additional ten percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 110 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence of the exception is new. This sentence would require the calculation of the demand-capacity ratio to include all loads on the structural element as result of all additions and alterations that have occurred since the original construction of the building. The total load the structural element carries from all cumulative changes can only be ten percent more than the load the structural element is permitted to carry by the IBC. If prior additions and alterations are not considered, then allowing 110 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a ten percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned addition rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The second sentence of the exception is also modified to delete the reference to section 1613 of the IBC. That section contains design requirements for earthquake loads, and chapter 1311 deletes all references to earthquake provisions of the IEBC. *See* Minnesota Rules, part 1311.0010, subpart 3, item F.

1311.0503 SECTION 503, ALTERATIONS.

Current rule 1311.0403 is being renumbered to 1311.0503, and references to sections are renumbered

because of the renumbering of sections in the IEBC. All other amendments are discussed below.

Subpart 1. Section 503.1, General. This subpart is amended to delete unnecessary words in exception 3.

Subp. 2. Section 503.3, Existing structural elements carrying gravity load. The language is revised for consistency with section 503.3 of the 2018 IEBC, with modifications. The proposed amendment clarifies that, when an alteration is made to an existing structure, the demand-capacity ratio for a structural element is only permitted to increase to a total of 105 percent. The IEBC language and the current rule would allow the demand-capacity to increase by five percent. This means the structural element may carry up to five percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of the demand-capacity ratio before the alteration, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence is new. This sentence would require calculation of the demand-capacity ratio to include all loads on the structural element as result of all additions and alterations that have occurred since the original construction of the building. The total load the structural element carries from all cumulative changes can only be five percent more than the load the structural element is permitted to carry by the IBC. If prior additions and alterations are not considered, then allowing 105 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a five percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned addition rather than taking into account the cumulative effects of all additions and alterations on the structural element.

Subp. 2a. Section 503.4, Existing structural elements carrying lateral load. The language of the exception is revised for consistency with section 503.4 of the 2018 IEBC, with modifications. The first sentence of the proposed amendment clarifies that, when an alteration is made to an existing lateral load-carrying structural element, the demand-capacity ratio for the structural element is only permitted to reach a total of 110 percent. The IEBC language would allow the demand-capacity ratio to increase by up to 10 percent. This means the structural element may carry up to ten percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than ten percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to ten percent. Similarly, if the structural element carried 106 percent of the demand-capacity ratio before the alteration, allowing an additional ten percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 110 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a ten percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned addition rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The exception is also modified to delete the reference to section 1613 of the IBC and to seismic forces. Section 1613 of the IBC contains design requirements for earthquake loads, and chapter 1311 deletes all references to earthquake and seismic provisions of the IEBC. *See* Minnesota Rules, part 1311.0010, subpart 3, item F.

Subp. 9. Section 503.15, Carbon monoxide alarms. A new subpart is added to modify section 503.15 to direct code users to section 915 of the IBC for the requirements for carbon monoxide alarms for existing buildings undergoing alteration using the prescriptive compliance method. This modification is necessary because section 503.15 of the IEBC directs readers to the International Fire Code. In Minnesota, all references to the International Fire Code do not apply and have been deleted, pursuant to current rule 1311.0020, subpart 3, which is not being amended.

1311.0504 SECTION 504, FIRE ESCAPES.

Current rule 1311.0405 is being renumbered to 1311.0504, and references to sections are renumbered because of the renumbering of sections in the IEBC.

1311.0505 SECTION 505, WINDOWS AND EMERGENCY ESCAPE OPENINGS.

Subpart 1. Section 505.3 Replacement window and emergency escape and rescue openings. This new subpart adds subsection 505.3.1 to the IEBC with the minimum size requirements for replacement windows in state licensed facilities where the prescriptive compliance method is used for the rehabilitation of a building. During the adoption of the 2012 I-Codes, the Minnesota Fire Code was amended to include sizing requirements for replacement windows for state licensed facilities. The amendment was necessary so individuals who own facilities (such as foster care and day care) and code users are informed of requirements for replacement windows. The proposed modification to section 505.3.1 is reasonable because it clarifies code requirements for replacement windows in state licensed facilities and will provide uniform enforcement of the code for building officials and between state agencies. The specific requirements in the proposed rule are the same as in current part 7511.1029, subpart 3.

Subp. 2. Section 505.4, Emergency escape and rescue openings. This subpart is added to delete the final sentence of section 505.4 of the 2018 IEBC that addresses the location of smoke alarm requirements. Other than the final sentence, proposed section 505.4 is identical to section 505.4 of the 2018 IEBC. The final sentence of section 505.4 of the 2018 IEBC contains requirements for smoke alarms. The inclusion of fire alarm requirements in this section is inconsistent with how smoke alarm requirements are addressed in other sections of the 2018 IEBC. The inclusion of smoke alarm requirements in this section may cause confusion which can result in misapplication of code requirements for smoke alarms so smoke alarms are not properly installed and placed in existing buildings as required by the IEBC. Smoke alarms are required to be placed in existing buildings by sections 502.6 and 503.14.

1311.0506 SECTION 506, CHANGE OF OCCUPANCY.

Current rule 1311.0407 is being renumbered to 1311.0506, and references to sections and the table are renumbered because of the renumbering of the IEBC. All other amendments are discussed below.

Subpart 1. Section 506.1, Compliance. The title has been changed and the exception added for consistency with section 506.1 of the 2018 IEBC. The exception is identical to the exception in section 506.1 of the 2018 IEBC. The last sentence of the subsection has been added to clarify that IEBC subsection 506.1.1 is not amended.

Subp. 2. Table 506.1, Life safety and fire risk. Table 407.1 in the 2012 IEBC has been renumbered Table 506.1 in the 2018 IEBC, so the table number in the rule needs to be changed accordingly.

This table was added by amendment to chapter 1311 during the adoption of the 2012 I-Codes to clarify how hazardous the various occupancies are in relation to one another and to be used as a tool to support building officials in determining relative hazards when interpreting Section 407.1 (now 506.1). When a designer presents a change of occupancy, the table provides classification and hazard ratings for the building official when the design is of an equal or lesser hazard to the existing occupancy of the building. The hazard rating indicates to the building official whether additional features are needed to mitigate fire risk and otherwise protect the life safety of building occupants.

The Technical Advisory Group reviewed the existing Relative Hazard Levels and distribution of Occupancy Classifications and found that the number of relative hazard categories was not enough to adequately reflect differences in hazard levels indicated by several provisions of the IBC. In addition, the distribution of occupancy groups among the levels was inconsistent with the relative hazard levels indicated by: (1) the building code height and area tables found in IBC Chapter 5; (2) fire alarm requirements and fire sprinkler requirements found in IBC Chapter 9; and (3) means of egress requirements found in Chapter 10 of the 2018 IBC. Furthermore, Table 407.1 did not adequately address the conversion of a residential building constructed in accordance with Minnesota Rules, chapter 1309, when there is a change in use inconsistent with scoping to Minnesota Rules, chapter 1309. Therefore occupancy classifications for IRC-1, IRC-2, IRC-3, and IRC-4 as defined by Minnesota Rule 1300.0070, subpart 12b, are added to the table to provide guidance.

Level 1: The highest hazard level, Level 1, remains unchanged and includes all Group H (Hazardous) occupancies, I-2 (hospitals & nursing homes), and I-3 (prisons, jails, and detention facilities).

Level 2: Assembly Occupancies A-1, A-2, A-3 and A-4 form the new Level 2. New to this level are occupancies A-2, A-3, and A-4. These assembly occupancies have dense concentrations of people and require panic hardware on doors when the occupant loads exceed 50 persons. These assembly occupancies also have low thresholds for requiring sprinkler systems and fire

alarm systems based upon occupant load as well as area. The I-4 category previously located at this level is moved down one level because the occupancy group has consistently higher allowable areas and does not require panic hardware on doors.

Level 3: New to Hazard Level 3 are the A-5 and I-4 occupancies. Group A-5 (bleachers, grandstands, and stadiums) is increased from Level 4 because of the large concentration of people, the requirement for panic hardware, as well as the requirement for sprinklers and alarm systems. Sprinkler requirements are limited to accessory use areas larger than 1,000 square feet which keeps Group A-5 from the same level as the other A occupancy groups. Group I-4 is very similar to Group E in allowable height and area. Other occupancy groups remaining at this hazard level are E (K-12 education), I-1 (senior housing and assisted living), R-1 (hotels), and R-2 (apartments).

Level 4: Remaining at Level 4 are Group R-3 (one to two dwelling units within a mixed occupancy building or residential with 16 or fewer occupants), Group R-4 (supportive living environments such as alcohol and drug centers, halfway houses, etc.), and Group M (retail sales/mercantile) occupancies. Upgraded from this level is occupancy A-5 as previously discussed. Downgraded from this level are Groups B (offices), F-1 (moderate hazard manufacturing), and S-1 (moderate hazard storage) occupancies. Groups B, F-1, and S-1 do not require panic hardware and have significantly higher allowable areas and heights. Level 5 was created to accommodate this group.

Level 5: Introduced between the previous Level 5 and Level 4, this new level is included to reflect that Groups B, F-1, and S-1 are lower in hazard than Groups R-3, R-4 and M. This lower hazard level is indicated by these occupancies' significantly larger allowable areas and heights, lack of a requirement for panic hardware, and opportunity for an unlimited area building option if fully sprinklered and provided with 60 foot yards around the building perimeter per Section 507. Also introduced at this level are Groups IRC-1 (single family detached dwellings) and IRC-3 (single family attached/townhomes), which are stand-alone buildings of Type V construction having greater protections either by separation from other buildings or by complete separation through fire-resistance rated construction and sprinkler systems.

Level 6: This new level is included to reposition Groups F-2 (low hazard manufacturing) and S-2 (low hazard storage) from the previous Level 5 position. These two groups have larger allowable areas and heights, and higher thresholds for requiring sprinkler systems than F-1 and S-1. Group U is demoted to hazard level 7. Group IRC-2 is added to level 6 because the separation requirements between dwelling units in a two-family dwelling are less restrictive than they are between IRC-1 single-family detached and IRC-3 townhomes.

Level 7: This new hazard level is introduced to reflect the lowest hazard represented by Group U and IRC-4 occupancies. These two groups are comprised of private detached garages, utility sheds, agricultural buildings, tanks and towers.

The IEBC does not address requirements for the remodeling of residential dwellings. These residential occupancy classifications are added to the table for reference in the event that a residential dwelling is being converted to non-residential use such as mercantile or business. The addition of residential occupancies to the table will assist building officials in determining the hazard posed by the change of occupancy. Footnote (a) to this effect is added for clarification.

Subp. 4. Section 506.4.1, Live loads. A new subpart is added to modify the exception to section 506.4.1 of the 2018 IEBC. The IEBC language would allow the demand-capacity to increase by five percent. This means the structural element may carry up to five percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of the demand-capacity ratio before the alteration, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

A sentence is added to the end of the exception to clarify that the designer should account for the effects of all additions and alterations upon the structural element and the effects of all loads and forces upon the building when determining the demand-capacity ratio. Without this sentence, the designer may only account for the most recent alteration or addition the element is undergoing. It is necessary to take into account all additions, alterations, loads and forces in order to ensure that the structural element is capable of carrying the demands of forces that are placed upon it, such as gravity, the weight of snow, and the force of wind.

1311.0702 SECTION 702, BUILDING ELEMENTS AND MATERIALS.

Section 702.5, Replacement window emergency escape and rescue openings. The language in the first sentence of section 702.5 of the 2018 IEBC is amended to remove the references to the International Residential Code and to one- and two-family dwellings and townhomes, which are regulated by the International Residential Code. This is needed and reasonable because chapter 1311 does not apply to residential construction in Minnesota. *See* Minnesota Rules, part 1311.0020, subpart 9.

Item number 1 of section 702.5 of the 2018 IEBC is modified to add a second sentence. The new sentence would allow a replacement window in an existing building undergoing Level 1 alterations to have either: (1) the same operating style, such as double hung or casement, as the existing window; or (2) a style that allows for an equal or greater window opening than the existing window. This change offers more flexibility with replacement windows, but still maintains life safety by ensuring that the replacement window serving as an emergency escape and rescue opening has at least the same opening size as the current window.

Item number 2 and the last sentence of the proposed section are identical to the 2018 IEBC.

Section 702.5.1, Licensed facilities. This is a new subsection with the minimum size requirements for replacement windows in state licensed facilities in buildings undergoing Level 1 alterations. During the adoption of the 2012 I-Codes, the Minnesota Fire Code was amended to include sizing requirements for replacement windows for state licensed facilities. The amendment was necessary so individuals who own facilities such as foster care and day care and code users are informed of requirements for replacement windows. Proposed subsection 702.5.1 is reasonable because it clarifies code requirements for replacement windows in state licensed facilities and will provide uniform enforcement of the code for both building officials and between state agencies. The requirements in proposed section 702.5.1 are identical to the requirements in the current Minnesota Fire Code, part 7511.1029, subpart 3.

1311.0706 SECTION 706, STRUCTURAL.

Section 706.2, Addition or replacement of roofing or replacement of equipment. This rule part is amended for consistency with the 2018 IEBC, with modifications. The proposed amendment clarifies how designers are to determine a structure's ability to support the addition or replacement of roofing or replacement of equipment when a building is undergoing Level 1 alterations. Specifically, the proposed language would only permit the demand-capacity ratio to increase to a total of 105 percent. The IEBC language and the current rule would allow the demand-capacity to increase by five percent. This means the structural element may carry up to five percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of the demand-capacity ratio before the alteration, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence of the proposed rule is new. This sentence would require the calculation of the demand-capacity ratio to include all loads on the structural element as result of all additions and alterations that have occurred since the original construction of the building. Under the proposed rule, the total load the structural element carries from all cumulative changes could only be five percent more than the load the structural element is permitted to carry by the IBC. If prior additions and alterations are not considered, then allowing 105 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a five percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned addition or replacement of roofing or replacement of equipment rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The exceptions to this section are revised for consistency with the 2018 IEBC. The proposed first exception is the same as the first exception in the 2018 IEBC except that the reference to the International Residential Code ("IRC") would be eliminated. This is needed and reasonable because chapter 1311 does not apply to residential construction. *See* Minnesota Rules, part 1311.0020, subpart 9. The second exception is identical to the second exception in the 2018 IEBC.

1311.0801 SECTION 801, GENERAL.

This subpart is amended by renumbering the section reference from "504" to "603" to coordinate with numbering changes made to the 2012 IEBC.

1311.0802 SECTION 802, SPECIAL USE AND OCCUPANCY [REPEALED].

This rule part is being repealed because requirements for special use and occupancy buildings have been relocated to sections 902 and 1002. Therefore, this subpart is no longer necessary and is being repealed.

1311.0803 SECTION 803, BUILDING ELEMENTS AND MATERIALS [REPEALED].

This rule part is being repealed because it addresses fire resistance ratings for smoke barriers. The 2018 IEBC now requires smoke barriers to comply with the International Building Code, which contains the same requirement as current rule 1311.0803. For example, section 802.3 of the IEBC requires certain smoke barrier walls to comply with section 407.5 of the IBC, which in turn refers to section 709 of the IBC. Section 709.3 of the IBC requires a one-hour fire-resistance rating for smoke barriers.

1311.0805 SECTION 805, MEANS OF EGRESS.

Subpart 2. Section 805.3.1.1 Single exit buildings [repeal]. The existing subpart deletes subitem 4 pertaining to community residences. The subpart is now being repealed because the subitem has been removed from the 2018 IEBC so the current amendment is no longer needed.

1311.0806 SECTION 806, STRUCTURAL.

Section 807 of the 2012 IEBC was renumbered section 806 in the 2018 IEBC. Because the proposed language completely re-writes current rule 1311.0807, current rule 1311.0807 is proposed for repeal and is replaced with proposed rule 1311.0806.

Subpart 1. Section 806.2, Existing structural elements carrying gravity loads. The language of this subpart is a revised version of 2018 IEBC section 806.2. The proposed amendment clarifies when a structural element must be altered or replaced if a building is undergoing Level 2 alterations. The first sentence of the proposed amendment clarifies that, when an alteration is made to an existing structure, the demand-capacity ratio for a structural element is only permitted to increase to a total of 105 percent. The IEBC language and the current rule (1311.0807) would allow the demand-capacity to increase by five percent. This means the structural element may carry up to five percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of the demand-capacity ratio before the alteration, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence of proposed section 806.2 is new. This sentence would require the calculation of the demand-capacity ratio to include all loads on the structural element as result of all additions and alterations that have occurred since the original construction of the building. The total load the structural element carries from all cumulative changes can only be five percent more than the load the structural element is permitted to carry by the IBC. If prior additions and alterations are not considered, then allowing 105 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure.

Current rule 1311.0807 has caused confusion because some designers have interpreted this section as: (1) permitting a five percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned alteration rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The third sentence of proposed section 806.2 is identical to the second sentence of IEBC section 806.2. A sentence is added at the end of the subpart to clarify that the IEBC exceptions are not amended.

Subpart 2. Section 806.3, Existing structural elements resisting lateral loads. The language of the exception is a revised version of the exception to section 806.3 of the 2018 IEBC. The first sentence of the proposed exception clarifies that, when an alteration is made to an existing lateral load-carrying structural element, the demand-capacity ratio for the structural element is only permitted to reach a total of 110 percent. The IEBC language and the current rule would allow the demand-

capacity ratio to increase by up to 10 percent. This means the structural element may carry up to ten percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than ten percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to ten percent. Similarly, if the structural element carried 106 percent of the demand-capacity ratio before the alteration, allowing an additional ten percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 110 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence of the proposed exception is the same as the second sentence as the exception in the IEBC. The only difference from the IEBC is that the reference to section 1613 of the IBC is deleted. Section 1613 of the IBC contains design requirements for earthquake loads, and chapter 1311 deletes all references to earthquake and seismic provisions of the IEBC. *See* Minnesota Rules, part 1311.0010, subpart 3, item F. For the same reason, the third sentence of the IEBC exception, regarding seismic forces, is deleted.

The last sentence of the proposed exception is identical to the last sentence of the IEBC exception.

Current 1311.0807 SECTION 807, STRUCTURAL. This rule is being repealed because it has been renumbered section 806 in the 2018 IEBC, and has been rewritten as explained above.

1311.0807 SECTION 807, ELECTRICAL.

Current rule 1311.0808 is being renumbered to 1311.0807, and references to sections are renumbered because of the renumbering of sections in the IEBC.

1311.0809 SECTION 809, PLUMBING.

Current rule 1311.0810 is being renumbered to 1311.0809, and references to sections are renumbered because of the renumbering of sections in the IEBC.

1311.0810 SECTION 810, ENERGY CONSERVATION.

Current rule 1311.0811 is being renumbered to 1311.0810, and references to sections are renumbered because of the renumbering of sections in the IEBC. The title of the section is also changed to correspond with the IEBC. Extraneous words are deleted in the first sentence of the proposed rule.

1311.0901 SECTION 901, GENERAL.

Section 901.2, Compliance. Section 901.2 of the 2018 IEBC is modified to delete the exception. The exception to section 901.2 is also deleted in current chapter 7511. Specifically, current rule 7511.0010, subpart 3, deletes the exception to 901.2. Because that language in part 7511.0010 is proposed to be deleted, the language deleting the exception to 901.2 needs to be moved to a new location. It is reasonable to continue deleting this exception because it deals with accessibility. Under proposed part 7511.0010, subpart 2, the reader is directed to chapter 1341 for all accessibility requirements.

1311.0907 SECTION 907, ENERGY CONSERVATION.

Current rule 1311.0908 is being renumbered to 1311.0907, and references to sections are renumbered because of the renumbering of sections in the IEBC. The title of the section is also changed to correspond with the IEBC. Extraneous words are deleted in the first sentence of the proposed rule.

1311.1006 SECTION 1006, STRUCTURAL.

Section 1007 of the 2012 IEBC was renumbered section 1006 in the 2018 IEBC. Because the proposed language completely re-writes current rule 1311.1007, current rule 1311.1007 is proposed for repeal and is replaced with proposed rule 1311.1006.

Section 1006.1 addresses structural requirements for buildings undergoing a change of occupancy. The first part of section 2006.1 of the 2018 IEBC no longer needs any amendment because it addresses the requirements addressed in the current rule. Only the exception to the IEBC section needs to be modified. The first sentence of the proposed exception clarifies that a change of occupancy is not permitted to increase the demand-capacity ratio to more than 105 percent. The IEBC language would allow the demand-capacity to increase by five percent. This means the structural element may carry up to five percent more load than the structural element carried based on previously approved live loads. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio based on previously approved live loads, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of

the demand-capacity ratio based on previously approved live loads, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The proposed second sentence of the exception clarifies that the calculation of the demand-capacity ratio must include all loads on the structural element as result of all additions and alterations that have occurred since the original construction of the building. If prior additions and alterations are not considered, then allowing 105 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure. The current language has caused confusion because some designers have interpreted this section as permitting the calculation of demand-capacity ratio based on only the planned changes rather than taking into account the cumulative effects of all additions and alterations on the structural element.

1311.1007 SECTION 1007, STRUCTURAL [REPEALED].

As discussed above, current rule 1311.1007 is proposed for repeal because it is being replaced by proposed rule 1311.1006.

1311.1009 SECTION 1009, PLUMBING.

Current rule 1311.1010 is being renumbered to 1311.1009, and references to sections are renumbered because of the renumbering of sections in the IEBC.

1311.1011 SECTION 1011, CHANGE OF OCCUPANCY CLASSIFICATION.

Current rule 1311.1012 is being renumbered to 1311.1011, and references to sections are renumbered because of the renumbering of sections in the IEBC. Other amendments are discussed below.

Subpart 1. Section 1011.1.1, Compliance with Chapter 9. This new subpart is added to modify section 1011.1.1 of the 2018 IEBC. The only modification is the addition of the words "International Existing Building Code." This is needed to clarify that the chapter 9 being referenced is located in the International Existing Building code. This clarification is necessary because sections 1011.1.1.1 and 1011.1.1.2 direct code users to chapter 9 of the International Building Code for fire protection requirements when an existing building undergoes a change of occupancy. This change is reasonable because it clarifies which I-Code is referred to and will lead to more uniform enforcement of the code. For additional clarity, a sentence is added at the end stating that subsections 1011.1.1.1 and 1011.1.1.2 remain unchanged.

1311.1103 SECTION 1103, STRUCTURAL.

Subpart 1. Section 1103.1 Additional gravity loads. The references to sections are renumbered because of the renumbering of sections in the IEBC. The subpart is amended so the language is consistent with section 1103.1 of the 2018 IEBC, with modifications. Rather than merely referring the reader to the IBC, the proposed amendment provides substantive guidance to the reader, for ease of reference. The first sentence of IEBC section 1103.1 has been modified to clarify that, when an addition is added to an existing structure, the demand-capacity ratio for a structural element is permitted to increase to a total of 105 percent. The IEBC language and the current rule (in exception 1) would allow the demand-capacity to increase by five percent. This means the structural element may carry five percent more load than the structural element carried before the addition. The purpose of the language was to prevent the structural element from carrying more than five percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the addition, it would not make sense to limit the increase to five percent. Similarly, if the structural element carried 102 percent of the demand-capacity ratio before the addition, allowing an additional five percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

The second sentence of proposed section 1103.1 is new. This sentence would require the calculation of the demand-capacity ratio to include all loads on the structural element as result of all additions and alternations that have occurred since the original construction of the building. Under the proposed rule, the total load the structural element carries from all cumulative changes could only be five percent more than the load the structural element is permitted to carry by the IBC. If prior additions and alterations are not considered, then allowing 105 percent of the demand-capacity ratio of the original building might result in too much load on the element, causing a risk of failure. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a five percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2)

permitting the calculation of demand-capacity ratio based on only the planned addition or replacement of roofing or replacement of equipment rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The last two sentences before the exception are identical to the model code.

In the current rule and in the 2012 IEBC, there are two exceptions to this section. The first exception is not included in 2018 IEBC and is therefore no longer needed in rule. The second exception in the current rule is comparable to the remaining exception in the IEBC. Therefore, a sentence is added stating that the IEBC exception is not amended.

Subp. 2. Section 1103.3, Lateral force resisting systems. The first sentence of the current subpart has been deleted because section 1103.3 of the 2018 IEBC no longer has subsections; instead, the substantive requirements have been moved into section 1103.3.

The only amendment needed is to the second exception. The first sentence of the proposed second exception clarifies that, when an alteration is made to an existing lateral load-carrying structural element, the demand-capacity ratio for the structural element is only permitted to reach a total of 110 percent. The IEBC language and the current exception 2 would allow the demand-capacity ratio to increase by up to 10 percent. This means the structural element may carry up to ten percent more load than the structural element carried before the alteration. The purpose of the language was to prevent the structural element from carrying more than ten percent greater load than the structural element is permitted to carry by the IBC. The proposed language does just that. In other words, if the structural element only carried half of the demand-capacity ratio before the alteration, it would not make sense to limit the increase to ten percent. Similarly, if the structural element carried 106 percent of the demand-capacity ratio before the alteration, allowing an additional ten percent would permit too much load on the element, causing a risk that the structural element will fail. Under the proposed rule, the load could be increased to up to 110 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases. The current language has caused confusion because some designers have interpreted this section as: (1) permitting a ten percent increase in loads carried by all structural elements in excess of the maximum load the structural element is permitted to carry by the IBC; or (2) permitting the calculation of demand-capacity ratio based on only the planned addition rather than taking into account the cumulative effects of all additions and alterations on the structural element.

The second exception is also modified to delete the reference to section 1613 of the IBC. Section 1613 of the IBC contains design requirements for earthquake loads, and chapter 1311 deletes all references to earthquake provisions of the IEBC. *See* Minnesota Rules, part 1311.0010, subpart 3, item F.

Subp. 3. Section 1103.4, Snow drift loads. This subpart is repealed because section 1103.4 has been removed from the 2018 IEBC. Snow drift loads are now covered elsewhere in the proposed rules: 1311.0405; 1311.0502, subp. 1; 1311.0503, subp. 2; 1311.0706; 1311.0806; and 1311.1103, subp. 1.

1311.1105 SECTION 1105, CARBON MONOXIDE ALARMS IN GROUPS I-1, I-2, I-4, AND R.

Section 1105.1, Carbon monoxide alarms in existing portions of a building. A new rule part is added to modify section 1105.1. Section 1105.1 of the 2018 IEBC directs code users to the International Fire Code and the IRC for the requirements for carbon monoxide alarms when an addition is made to an existing building. The proposed rule modifies this section to direct users to section 915 of the IBC. This modification is needed and reasonable for two reasons. First, chapter 1311 does not cover residential structures that are within the scope of chapter 1309, so the reference to the IRC is not appropriate. Also, all references to the International Fire Code do not apply and have been deleted, pursuant to current rule 1311.0020, subpart 3, which is not being amended.

1311.1106 SECTION 1106, STORM SHELTERS.

Section 1106.1, Addition to a Group E occupancy. This proposed rule modifies section 1106.1 of the IEBC by replacing the model code language referencing Figure 304.2(1) of the ICC 500 (Standard on the Design and Construction of Storm Shelters) with a list of counties in Minnesota where the speed for tornadoes is 250 miles per hour. Figure 304.2(1) of the ICC 500 is a map of United States illustrating wind speed for tornadoes in different areas of the country. The map is difficult to interpret because wind speed for tornadoes varies within the state and the map does not show distinct geographic boundaries for where tornado wind speed changes. As a result, it is difficult for code users to interpret where in the state tornado wind speeds are 250 miles per hour. Replacing the reference to Figure 304.2(1) of the ICC 500 with a list of counties provides clarity as to what counties are affected by tornadoes with speeds of 250 miles per hour. The language is reformatted for clarity.

The language in proposed rule 1311.1106 is comparable to language being proposed in chapter 1305, the Minnesota Building Code. Proposed rule 1305.0423, subp. 2, would require a storm shelter for all Group E occupancies with an occupant load of 50 or more in the same counties listed in proposed rule 1311.1106.

The exceptions are identical to the exceptions in the 2018 IEBC.

1311.1201 SECTION 1201, GENERAL.

Section 1201.2 Report. This rule part is amended to delete "repair" for consistency with the 2018 IEBC. Section 1201.2 of the 2018 IEBC does not require a designer to submit a report to the code official when a historic building undergoes repair. It is reasonable not to require the submission of a report when a building undergoes repair because a repair is only intended to maintain or correct damage to a building and is not as extensive as the changes that occur when a building undergoes alteration or a change of occupancy.

1311.1301 SECTION 1301, GENERAL.

Current rule 1311.1401 is being renumbered to 1311.1301, and references to sections and chapters are renumbered because of the renumbering of sections and chapters in the IEBC. Also, in subpart 1, Group I-2 has been moved from the group of occupancies exempted from the subsections of section 1301.2 to the group of occupancies that must comply with the subsections of section 1301.2. This is needed and reasonable for consistency with the 2018 IEBC, which moved Group I-2 occupancies to the group of occupancies that need to comply with the subsections of section 1301.2.

1311.1401 SECTION 1401, GENERAL.

Current rule 1311.1301 is being renumbered to 1311.1401, and references to sections are renumbered because of the renumbering of sections in the IEBC.

1311.1402 SECTION 1402, REQUIREMENTS.

Current rule 1311.1302 is being renumbered to 1311.1402, and references to sections are renumbered because of the renumbering of sections in the IEBC. All other amendments are discussed below.

Subpart 1. Section 1402.3, Wind loads. Exception number 2 is modified to clarify how designers are to evaluate demand-capacity ratios and design lateral loads, which include the effects of the force of wind on the building. The first sentence of second exception is amended to clarify that, when a building is relocated, the demand-capacity ratio for the structural elements is only permitted to reach a total of 110 percent. The IEBC language and the current exception 2 would allow the demand-capacity ratio to increase by up to 10 percent. This means the structural elements may carry up to ten percent more load than the structural elements carried before the relocation. The purpose of the language was to prevent the structural elements from carrying more than ten percent greater load than the structural elements are permitted to carry by the IBC. The proposed language does just that. In other words, if the structural elements only carried half of the demand-capacity ratio before the relocation, it would not make sense to limit the increase to ten percent. Similarly, if the structural elements carried 106 percent of the demand-capacity ratio before the relocation, allowing an additional ten percent would permit too much load on the elements, causing a risk that the structural elements will fail. Under the proposed rule, the load could be increased to up to 110 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

Under the proposed second sentence of the second exception, the calculation of the demand-capacity ratios, and design lateral loads, forces, and capacities must include the effects of all additions and alterations since the original construction. It is necessary to take into account the cumulative effects of all additions and alterations because the structural elements may fail if they are overloaded.

Subp. 2. Section 1402.5, Snow loads. Section 1402.5 is modified to eliminate the reference to the IRC because chapter 1311 does not apply to residential construction. *See* Minnesota Rules, part 1311.0020, subpart 9. The exception is modified to clarify how designers are to evaluate the demand-capacity ratio. The first sentence of the proposed exception clarifies that, when a building is relocated, the demand-capacity ratio for the structural elements is permitted to increase to a total of 105 percent. The IEBC language and the current rule would allow the demand-capacity to increase by five percent. This means the structural elements may carry five percent more load than the structural elements carried before the relocation. The purpose of the language was to prevent the structural elements from carrying more than five percent greater load than the structural elements are permitted to carry by the IBC. The proposed language does just that. In other words, if the structural elements only carried half of the demand-capacity ratio before the addition, it would not make sense to limit the increase to five percent. Similarly, if the structural elements carried 102 percent of the demand-capacity ratio before the relocation, allowing an additional five percent would permit too much load on the element, causing a risk that

the structural element will fail. Under the proposed rule, the load could be increased to up to 105 percent of the demand-capacity ratio, which provides the necessary limitations to avoid failure while allowing reasonable load increases.

Under the second sentence of the proposed exception, the evaluation of the structural elements' ability to support the demand of loads and forces must include the effect of all the additions and alternations since the original construction. It is necessary to take into account the cumulative effects of all additions and alterations because the structural elements may fail if they are overloaded.

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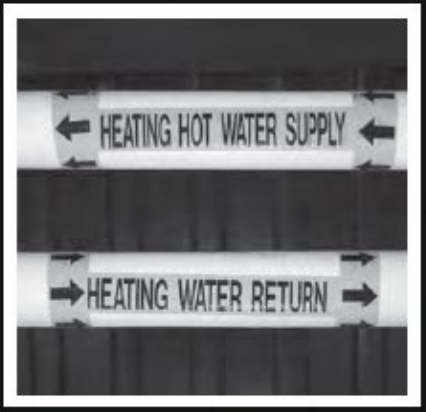
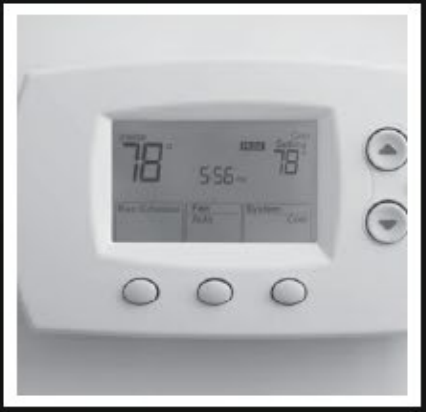
with ANSI/ASHRAE/IES STANDARD 90.1-2016





ASHRAE

ICC INTERNATIONAL CODE COUNCIL

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Adoption of the Commercial Provisions of the 2018 International Energy Conservation Code, Minnesota Rules, Chapter 1323; Revisor's ID Number R-04513

INTRODUCTION

The Commissioner ("Commissioner") of the Department of Labor and Industry ("Department") and certain local authorities enforce the Minnesota State Building Code, which consists of 22 chapters of the Minnesota Rules. One of those 22 chapters is chapter 1323, the Minnesota Commercial Energy Code. *See* Minnesota Rules, part 1300.0050.

The Commissioner proposes to adopt amendments to the Minnesota Commercial Energy Code, Minnesota Rules, chapter 1323. The proposed rules will incorporate by reference the commercial provisions of the 2018 International Energy Conservation Code ("IECC"), with amendments.

The International Code Council ("ICC") publishes the IECC. The ICC reviews and modifies the ICC Model Codes every three years to incorporate the most current construction code criteria to provide the construction industry with the most current code provisions for use throughout the nation.

The IECC establishes the minimum standards for the efficient use and conservation of energy in new and remodeled residential buildings (*see* Residential Provisions) and in new and remodeled commercial buildings (*see* Commercial Provisions). Commercial buildings include all buildings except for one- and two-family dwellings and townhouses that are three stories or less in height.[34] The IECC addresses energy conversation requirements for all aspects of energy use including heating, ventilation, lighting, water heating, and power usage for appliances and building systems. The IECC provides design requirements for all facets of energy conservation.

The current chapter 1323 adopts and amends the 2012 edition of the IECC. *See* Minnesota Rules, part 1323.0010, subp. 1. Accordingly, the Department currently administers and enforces the 2012 edition of the IECC with amendments as contained in Minnesota Rules, chapter 1323. Although the ICC published a 2015 edition of the IECC, the Department did not adopt the 2015 edition of the IECC due to legislation that requires the Department to review and adopt the model codes with amendments every six years, beginning with the 2018 edition of the model codes.[35]

Minnesota Statutes, section 326B.106, subdivision 1, requires the Department to consult with the Construction Codes Advisory Council ("CCAC") in adopting amendments to the Minnesota State Building Code. The Department has consulted with the CCAC in connection with this rulemaking.

In consultation with the CCAC, the Department utilized a Technical Advisory Group ("TAG" or "Energy Code TAG") to review the current Chapter 1323 and the commercial provisions of the 2018 IECC to propose reasonable and necessary amendments to the existing rule and the model code. The Energy Code TAG members were appointed by the CCAC, and consisted of representatives from the Association of Minnesota Building Officials; Builders Association of Minnesota; Builders Association of the Twin Cities--Housing First; American Society of Heating, Refrigerating, and Air-Conditioning Engineers ("ASHRAE"); energy conservation associations; and department personnel. The proposed amendments in this rulemaking incorporate changes to the commercial provisions of the 2018 IECC proposed by Energy Code TAG members.

[34] *See* Minn. R. 1300.0040, subp. 2.
[35] See Minn. Stat. § 326B.106, subd. 1(c) (2018).

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1323
MINNESOTA COMMERCIAL ENERGY CODE

1323.0010 INCORPORATION BY REFERENCE OF THE INTERNATIONAL ENERGY CONSERVATION CODE—COMMERCIAL ENERGY PROVISIONS.

Subpart 1. General. This subpart is amended to provide the necessary information to incorporate by reference the applicable portions of the 2018 IECC, which is copyright 2017. Because the 2018 IECC includes both residential and commercial provisions and because Minnesota Rules chapter 1323 is limited to commercial provisions, it is necessary to clarify that chapter 1323 only incorporates commercial provisions. Moreover, because Minnesota's administrative provisions are in chapter 1300, it is reasonable not to incorporate the administrative provisions of the IECC (which are in chapter 1). As discussed in connection with subpart 2 below, it is reasonable not to incorporate chapter 5.

Subp. 2. Mandatory chapters. This subpart is amended to update which commercial energy chapters of the IECC must be applied and enforced as a part of the Minnesota State Building Code. The proposed rule deletes the reference to IECC chapter 5. Chapter 5 of the 2018 IECC is a new chapter that was not included in the 2012 IECC. Chapter 5 of the 2018 IECC addresses energy use and efficiency requirements for existing buildings. Minnesota State Building Code requirements only apply to existing buildings undergoing renovation. The requirements for existing buildings undergoing renovation are located in Minnesota Rules, Chapter 1311, Minnesota Conservation Code for Existing Buildings. The proposed rule instead mandates the application of commercial energy chapter 6 of the 2018 IECC. Chapter 5 of the 2012 IECC was on referenced standards. That topic has been moved to chapter 6 of the 2018 IECC. It is therefore reasonable to mandate chapter 6 instead of chapter 5 of the 2018 IECC.

Subp. 3. References to administration. This subpart is amended for clarification and to reference the 2018 edition of the IECC. Chapter 1 of the IECC is not incorporated by reference and therefore does not need to be deleted. Instead, references to chapter 1 of the IECC and to code administration are replaced by Minnesota's administrative provisions, chapter 1300. The rule needs to refer to the 2018 edition of the IECC because the proposed rule incorporates by reference chapters from that edition.

1323.0020, REFERENCES TO OTHER INTERNATIONAL CODE COUNCIL (ICC) CODES.

This rule part is amended to add commonly used abbreviations for various model codes that are referred to in the IECC. Specifically, in subpart 2, IBC is added because it is used as an abbreviation for the International Building Code. In subpart 3, IRC is added because it is used as an abbreviation for the International Residential Code. In subpart 6, IMC is added because it is used as an abbreviation for the International Mechanical Code.

1323.0100 ADMINISTRATION FOR COMMERCIAL ENERGY CODE.

Subpart 4. Change of occupancy or use. The references to table and section numbers are revised to coordinate with numbering changes made in the 2018 IECC.

Subp. 6. Compliance. This subpart is amended to clarify that the amendments to the residential provisions of the IECC are located in Minnesota Rules, Chapter 1322 and the amendments to the commercial provisions are located in this chapter. This amendment is reasonable because it clarifies to code users and designers that the residential provisions are amended in a different rules chapter. This is helpful for designers from other states who may not be familiar with the organization of the Minnesota State Building Code.

Subp. 9. Low-energy buildings. Repeal. This subpart is repealed because similar requirements for low-energy buildings are located in Section C402.1.1 of the 2018 IECC. The only substantive difference is that Section C402.1.1 of the 2018 IECC exempts greenhouses, which are not exempted in current subpart 9. It is reasonable to exempt greenhouses because they do not have a thermal envelope; they rely on radiant heat from sunlight and radiant energy. Therefore, this subpart is no longer needed.

Subp. 10. Information on construction documents. This subpart requires code users to include details on construction documents so building officials can verify that the project complies with energy use and conservation requirements. The language is revised to clarify that the code user must provide any of the listed details applicable to the construction project. The current text has caused confusion because some designers have not included all details applicable to their projects on construction documents.

The applicable details are re-formatted as a list of subitems for ease of use by both designers and building officials. Subitems G, L, and N are new details. Subitem G is added because Section C403.2.10.2 of the 2012 IECC and Section C403.8.2 of the 2018 IECC require fan brake horsepower to be included on construction documents; however, fan brake horsepower is often not included on construction documents because it is not listed in this subpart. For consistency with the exception to Section C403.8.2 of the 2018 IECC, the fan brake horsepower is only required for fan motors that are 1 horsepower or greater. The addition of subitem G to this subpart will ensure that designers include fan brake horsepower on construction documents.

Subitem L is added because Section C103.2, Information on construction documents, requires that the location of daylight zones is provided on construction documents. Section C103.2 is a part of Chapter 1 of the 2018 IECC commercial energy provisions, and Chapter 1 is not incorporated by reference. *See* Minnesota Rules part 1323.0010, subpart 1. The addition of subitem L is reasonable because the building official needs to know the location of daylight zones to properly evaluate lighting controls. Subitem L also requires that provisions for the functional testing of lighting controls are included on construction documents. Section C408.3 requires functional testing of lighting controls to ensure they work in accordance with the design provided on construction documents. It is therefore reasonable to include information about the functional testing on the construction documents.

Subitem N is added so designers and builders are aware that the building official can request additional details necessary to determine whether the work will conform to code requirements. A request for additional details by a building official can help ensure that designers and builders comply with code requirements before construction begins, which avoids costly changes at the end of the project.

Finally, several grammatical changes are made to subitem M. These are needed for grammatical parallelism and do not substantively modify the code. These changes are reasonable because they will provide clarity.

1323.0202 SECTION C202, GENERAL DEFINITIONS.

A. Definitions contained in this subsection modify the definitions in section C202 of the IECC.

Building thermal envelope. This definition is deleted because the definition for "building thermal envelope" in the 2018 IECC has been revised and is similar to the definition in this rule part. The current rule lists "air barrier," which is not listed in the 2018 IECC. The 2018 IECC lists "ceilings," which is not listed in the current rule. However, because both "air barriers" and "ceilings" provide a boundary between conditioned space and exempt or unconditioned space, both of these types of barriers would be included in both the current rule and the 2018 IECC definition of "building thermal envelope." It is reasonable to delete the current definition from this rule part and use the definition in the IECC for consistency and ease of use.

Computer room. This definition corrects the 2018 IECC definition. The IECC definition states that a computer room "has a design electronic data equipment power density of less than 20 watts per square foot" or "a connected design electronic data equipment load of less than 10 kW." The definition is modified to replace "less than" with "greater than" in both instances. This is necessary because computer spaces contain extensive computer equipment and are designed with watt densities exceeding 20 watts per square foot. The proposed change will ensure that computer rooms are designed to the correct parameters.

Infiltration. The words "infiltration means" are added to the beginning of this definition for consistency with the structure of the other definitions.

U-factor (thermal transmittance). This definition modifies the IECC definition. The difference between the IECC definition and the proposed definition relates to air films. The U- factor is the rate of heat loss. An air film is a layer of still air adjacent to the surface that provides some thermal resistance, and therefore has some insulating properties that prevent heat loss. The IECC definition calculates the U-factor by looking at the difference between the warm side and cold side air films. The proposed definition calculates the U-factor by looking at the difference between the warm side and cold side of the building component or assembly, inclusive of the inside and outside air films. It is reasonable to require the calculation of the U-factor to include the inside and outside of air films because air has some insulating properties that affect the calculation of the U-factor. The proposed change clarifies the calculation of the U-factor so designers and building officials can correctly verify that the design complies with code requirements.

B. Because two of the definitions in this subsection are deleted (see below), only one remaining additional definition is needed: the definition of "code." Therefore, the introductory phrase of this subsection is amended.

Continuous insulation. The definition of

"continuous insulation" is deleted from this rule part because the definition of "continuous insulation" is included in Section C202 of the 2018 IECC. There are no substantive differences between the definition of "continuous insulation" in the current rule and the definition in the 2018 IECC. The current rule definition is therefore unnecessary.

Roof replacement. The definition of "roof replacement" is deleted from this rule part because the definition for "roof replacement" is included in the Section C202 of the 2018 IECC. There are no substantive differences between the definition of "roof replacement" in the current rule and the definition in the 2018 IECC. The current rule definition is therefore unnecessary.

1323.0303 SECTION C303, MATERIALS, SYSTEMS, AND EQUIPMENT.

IECC Section C303.1, Identification. The last sentence of this rule part is modified for clarity. There is no substantive change.

1323.0402 SECTION C402, BUILDING ENVELOPE REQUIREMENTS.

Subpart 1. IECC section C402.2.1.2 Insulation requirements for roof replacement.

IECC section C402.2.1 is amended by adding a new subsection C402.2.1.2 to read as follows:

C402.2.1.2 Insulation requirements for roof replacement. For roof replacement on an existing building where the insulation is entirely above the deck and where the roof slope is less than two units vertical in 12 units horizontal, the insulation shall conform to the energy conservation requirements specified in Tables C402.21.3 and C402.1.4~~, Opaque Thermal Envelope Requirements.~~

Exception: Where the required R-value or U-factor cannot be provided because of the thickness limitations that occur with the existing rooftop conditions, including heating, ventilation and air-conditioning equipment, low door or glazing heights, parapet heights, or proper roof flashing heights, the maximum thickness of insulation compatible with the available space and existing rooftop conditions shall be installed, as approved by the building official. In no case shall the R-value of the roof insulation be reduced or the U-factor of the roof assembly be increased as part of the roof replacement.

Statement of Need and Reasonableness for the modification to the proposed rule.

The amendments to this subpart were suggested in a comment. These amendments clarify the insulation requirements for roof replacements.

The amendment in the sentence before the exception is necessary to correct an erroneous cross-reference. The current rule refers to Table C402.2, Opaque Thermal Envelope Requirements. There is no Table C402.2 in the 2018 IECC. Table C402.2 has been replaced with two tables: C402.1.3 and C402.1.4. It is therefore needed and reasonable to correct the table number. Inserting the correct table numbers does not substantially change the rule.

It is also needed and reasonable to add the phrase "or U-factor" in the first sentence of the exception, as suggested by the commenter. There are now two tables replacing Table C402.2. One table relates to R-values (Table C402.1.3) and the other table relates to U-factors (Table C402.1.4). "U-factor" and "R-value" are defined terms in the 2018 IECC. *See* 2018 IECC section C202. A comparison of the mathematical definitions of each term shows that the U-factor is simply the inverse of the R-value. For example, an R-value of R-30 is a U- Factor of .03. The U-factor is a different way of calculating performance of an assembly of the building that is comparable to the R-value.

Referring to the U-factor in the first sentence of the exception is not a substantial change to the proposed rule because it is comparable to the R-value and because other subsections and tables in section C402 of the 2018 IECC mention the U-factor. For example, section C402.1.4 lists U-factor as a basis for complying with building thermal envelope requirements. Section C402.1.4 also cross-references section C402.4. Section C402.4 requires compliance with Table C402.4, which concerns building envelope fenestration maximum U-factor requirements. The proposed rules adopt section C402 without amendment, except for this proposed amendment from the commenter. Therefore, the proposed amendment is a logical outgrowth of the proposed rules.

The Department has added the following new phrase to the exception, as suggested by the commenter: "as approved by the building official." This is for clarification and does not change the substance of the rule. Under the current state building code, a permit is required for roof replacement, and the building official must review the permit application before work is commenced in order to ensure that the proposed work complies with the building code.

Finally, the Department has added the following sentence at the end of the exception, as suggested by the commenter: "In no case shall the R-value of the roof

insulation be reduced or the U-factor of the roof assembly be increased as part of the roof replacement." Generally, maintenance and repairs must conform to the code under which the building was constructed. For example, the administrative provisions of the building code require that all devices or safeguards required by the Minnesota State Building code must be maintained according to the code edition under which the devices or safeguards are installed. Similarly, the Minnesota Conservation Code for Existing Buildings (chapter 1311) requires alterations of existing commercial buildings to comply with the laws in effect at the time the building or affected portion was built.

The purpose of chapter 1323 is to achieve energy efficiency in commercial construction to the extent possible with reasonable cost. The R-value of the current roof insulation may be the minimum permitted under the code in effect at the time of construction. Even if the R-value was not the minimum under that code, the R-value of the current roof insulation must have been reasonably achievable by the builder. Similarly, the U-factor of the current roof assembly may be the maximum permitted under the code in effect at the time of construction. Even if that was not the case, the U-factor of the current roof assembly must have been reasonably achievable by the builder. It would be contrary to the energy efficiency purpose of chapter 1323 to allow a reduction in energy efficiency by reducing the R-value of the insulation or increasing the U-factor of the roof assembly. It is therefore reasonable and necessary to clarify section C402.2.1.2 by stating that the R-value of the roof insulation cannot be reduced and the U-factor of the roof assembly cannot be increased.

The Department is adopting these amendments to section 1323.0402, subpart 1, in response to a comment. These amendments clarify the rule, do not make the rule substantially different, and are a logical outgrowth of the proposed rule, considering the purposes of chapter 1323.

Subp. 2. IECC Section C402.4.1.1, Air Barrier construction. Repeal. This subpart is being repealed because the requirements for air barrier construction in Section C402.5.1.1 of the 2018 IECC are similar to the requirements in the current rule. The current rule directs code users to a different section, C402.4.2 of the 2018 IECC, for requirements for sealing air barrier penetrations. The 2018 IECC now incorporates the requirements for sealing air barrier penetrations in the section addressing air barrier construction. The only difference between the 2012 IECC and 2018 IECC requirements for sealing air barrier penetrations is that the 2018 IECC provides additional guidance for the sealing of air barrier penetrations caused by fire sprinklers. The additional guidance for the sealing of air barrier penetrations caused by fire sprinklers will help improve a building's thermal performance by ensuring that another penetration where air may leak from the building is properly sealed.

Subp. 3. IECC Section C402.4.5.1, Stairways and shaft vents. Repeal. This subpart is being repealed because the 2018 IECC has been revised to include the damper requirements for stairway and shaft vents in Section C403.7.7, Shutoff dampers (mandatory). The proposed amendment of section C403.7.7 of the 2018 IECC is discussed below in connection with proposed rule 1323.0403, subp. 9.

Subp. 4. IECC Section C402.4.5.2 Outdoor air intakes and exhausts. Repeal. This subpart is being repealed because requirements for outdoor air intake and exhaust are included in Section C403.7.7 of the 2018 IECC, Shutoff dampers (mandatory). The proposed amendment of section C403.7.7 of the 2018 IECC is discussed below in connection with proposed rule 1323.0403, subp. 9.

1323.0403 SECTION C403, BUILDING MECHANICAL SYSTEMS.

Subpart 1. IECC section C403.1.1, Calculation of heating and cooling loads. The section references are renumbered because those sections are renumbered in the 2018 IECC. The first sentence of this subpart is also modified to clarify that Table C403.1.1 is added. The language of section C403.1.1 is amended to match the language in Section C403.1.1 of the 2018 IECC. The proposed rule is the same as Section C403.1.1 of the 2018 IECC, with one exception: the first sentence of Section C403.1.1 refers to Chapter 3 while the first sentence of the proposed rule refers to Table C403.1.1. There is no Table C403.1.1 in the 2018 IECC. For clarity and ease of reference, it is reasonable to refer the reader to the specific climate data design conditions effective in Minnesota, which are in Table C403.1.1. (Because the section has been renumbered, the table also needs to be renumbered.).

Subp. 2. IECC section C403.4.1.4, Heated or cooled vestibules (mandatory). The current language modifying provisions for equipment and system sizing is deleted because it is outdated. This language is no longer needed because of national standards addressing the oversizing of equipment.

The proposed rule is the same as Section C403.4.1.4 of the 2018 IECC with the exception of two temperatures in the rule. The proposed rule requires the heat source to the vestibule to shut down when the outdoor temperature is greater than 60 degrees Fahrenheit, instead of greater than 45 degrees Fahrenheit. Also, the proposed rule permits the vestibule to be heated to a maximum of 68 degrees Fahrenheit instead of a maximum of 60 degrees

Fahrenheit. Vestibules are walk-through spaces that provide a buffer between the outdoor air and the heated interior of a building. Vestibules that are only heated when the outdoor air temperature is below 45 degrees and are only heated to a maximum temperature of 60 degrees Fahrenheit will permit more cold air to enter the building. As a result, the reception area of the building will be colder and more energy will be expended to heat the interior of the building. The proposed amendment will not increase or decrease overall energy use but will make the building more comfortable, especially in reception areas.

Subp. 2a. IECC section C403.4.1.5, Hot water boiler outdoor temperature setback control (mandatory). This new subpart is added to modify Section C403.4.1.5 of the 2018 IECC by adding an exception. Section C403.4.1.5 requires the temperature of boiler water to be lowered based on the outdoor temperature in certain situations. The exception would permit boiler systems used for service water heating to maintain a constant water temperature rather than lowering the water temperature based on the outdoor temperature. This exception is necessary because: (1) hot water will get to the faucet faster, to avoid wasting cold water before it becomes hot; and (2) maintaining a constant water temperature prevents a hotter temperature that has the potential for scalding the user.

Subp. 3. IECC section C403.4.2.1, Thermostatic setback. The section reference number and heading are changed to correspond to changes in the 2018 IECC. The minimum cooling setpoint for thermostatic controls is changed from 90 degrees Fahrenheit to 85 degrees Fahrenheit, which is consistent with the cooling setpoint in Section C403.4.2.1 of the 2018 IECC. This means the thermostatic controls used to control cooling must maintain a temperature of 85 degrees Fahrenheit or higher when a space is unoccupied. An unoccupied space can still have a cooling setpoint of 90 degrees Fahrenheit or higher but the proposed change permits the cooling setpoint to be a lower temperature where necessary to prevent high humidity in a space.

Subp. 4. IECC section C403.4.3.3.2, Heat rejection. The existing language is deleted because the requirements for freeze protection and snow melt system controls have been revised in the 2018 IECC and relocated to Sections C403.12.3 and C403.12.2, respectively. The requirements of Sections C403.12.3 and C403.12.2 are substantively the same as the existing requirements in rule; therefore, the amendments are no longer needed.

The proposed amendments to subpart 4 modify item 3 of Section C403.4.3.3.2 so that it applies to closed-circuit towers as well as open-circuit towers. The modifications to item 3 are necessary because closed-circuit towers can be used for the same purposes as open-circuit towers. The rest of the proposed rule is identical to Section 403.4.3.3.2 of the 2018 IECC. Because the exception in the IECC is listed after item 3 in the 2018 IECC, a sentence is added to clarify that the exception is not changed.

Subp. 5. IECC Section C403.4.3.3.3, Two-position valve. The current language in subpart 5 is relocated to proposed subpart 7, with amendments discussed below. Proposed subpart 5 is identical to subpart 13 of the current rule. This language is moved to subpart 5 to maintain the numerical order of the amendments to subsections of IECC Section C403.

Subp. 6. IECC section C403.6.5, Supply-air temperature reset controls. The current language in subpart 6 is moved to proposed subpart 8, and is discussed below. Proposed subpart 6 is a revised version of the language in current subpart 14. The requirements regarding supply- air temperature reset controls have been moved to subpart 6 to maintain numerical order consistent with the renumbering of the model code sections. The language of proposed subpart 6 is identical to the language in current subpart 14 except that the IECC section has been renumbered from C403.4.5.4 to C403.6.5.

Subp. 7. IECC section C403.7.4, Energy recovery ventilation systems. The current language in subpart 7 is relocated to proposed subpart 11a, with amendments discussed below. Proposed subpart 7 is a revised version of the language in current subpart 5. The requirements regarding energy recovery ventilation systems have been moved to subpart 7 to maintain numerical order consistent with the renumbering of the model code sections.

Subp. 8. IECC Table C403.7.4 Exhaust air energy recovery. The current language in subpart 8 is relocated to proposed subpart 12a, with amendments discussed below. Proposed subpart 8 was moved from current subpart 6. Current subpart 6 changes the title of a table. Because related tables in the 2018 IECC are proposed for replacement as discussed below, the current language in subpart 6 is no longer needed.

Proposed subpart 8 contains a table that replaces Tables C403.7.4(1) and C403.7.4(2) of the 2018 IECC with proposed Table C403.7.4. The 2018 IECC has two tables with different energy recovery requirements depending on the number of hours per year the ventilation system operates. Proposed Table C403.7.4 provides simplified, cost-effective, energy recovery requirements that apply to all ventilation systems regardless of the number of hours the ventilation system operates. The energy recovery requirements in proposed Table C403.7.4

are the requirements in 2012 IECC Table C403.2.6, with modifications to clarify code requirements for low airflow and to eliminate climate zones that are not applicable to Minnesota.

The proposed rule deletes Tables C403.7.4(1) and C403.7.4(2) of the 2018 IECC. Table C403.7.4(1) applies to ventilation systems operating less than 8,000 hours per year and Table C403.7.4(2) applies to those operating 8,000 or more hours per year. Both tables include many climate zones that do not apply to Minnesota. All counties in Minnesota are either in zone 6A or zone 7. *See* Table C301.1 of the 2018 IECC. In climate zones 6A and 7, both Table C403.7.4(1) and Table C403.7.4(2) of the 2018 IECC require ventilation systems to be equipped with an energy recovery system when the percentage of outdoor air at full design air rate is between 10 percent and 29 percent. Energy recovery systems recover energy used by the ventilation system to cool, heat, humidity, or de-humidify outdoor air. A ventilation system with lower outdoor airflow has little energy to recover because less air is conditioned. The modest savings that an energy recovery system provides to systems with lower outdoor airflow does not justify the cost of an energy recovery system, which can be from $37,000 to $96,000 depending on the size of the system, according to an industry expert on the TAG. Both tables also require an energy recovery system at a low design supply fan airflow rate where the percentage of outdoor air at full design airflow rate is more than 50 percent in climate zones 6A and 7. However, due to Minnesota's cold climate conditions, particularly in the northern part of the state located in climate zone 7, there is energy that can be recovered at lower design supply fan airflow rates. The energy recovery requirements in Tables C403.7.4(1) and C403.7.4(2) are not cost effective for ventilation systems with a low percentage of outdoor air at full design air rate and are not sufficiently energy efficient for ventilation systems in northern Minnesota with a high percentage of outdoor air at full design airflow rate.

Proposed Table C403.7.4 is 2012 IECC Table C403.2.6 with modifications to clarify code requirements and eliminate climate zones not applicable to Minnesota. The rows for climate zones 3B, 3C, 4B, 4C, 5B; 1B, 2B, 5C; and 6B are deleted because Minnesota is located in climate zones 6A and 7. Columns are added for 10 to 20 percent and 20 to 30 percent outdoor air at full design airflow rate to clarify that there is not a requirement for an exhaust energy recovery system. This is reasonable because for ventilation systems with less than 30 percent outdoor airflow, there is little energy for the system to recover; therefore, an energy recovery system is an unnecessary expense. Energy recovery systems continue to be required for ventilation systems with a high percentage of outdoor air at full design airflow rate where there are low design supply fan airflow rates. Finally, a method of conversion from United States Customary Units to the International System Units is provided for consistency with the conversion method in the 2018 IECC. It is reasonable to provide a method for ease of use when converting table values to the International System Units.

Subp. 9. IECC section C403.7.7, Shutoff dampers (mandatory). The current language of subpart 9 regarding protection of piping insulation is relocated to subpart 15, as discussed below. Proposed subpart 9 amends the exception to section C403.7.7 of the 2018 IECC, so that nonmotorized gravity dampers are permitted instead of motorized dampers for certain exhaust and relief openings. The language of the proposed exception deletes the following item from the itemized list in the exception: "In buildings of any height located in Climate Zones 1, 2 or 3." This language is not applicable in Minnesota because Minnesota is located in climate zones 6A and 7.

The proposed rule also changes the paragraph after the itemized list by providing two alternative requirements for nonmotorized dampers. The following language from the model code is comparable to the language in item 1 (the first alternative) of the proposed rule:

> Nonmotorized gravity dampers shall have a maximum air leakage rate of not greater than 20 cfm/ft2 (101.6 L/s • m^2) where not less than 24 inches (610 mm) in either dimension and 40 cfm/ft2 (203.2 L/s • m^2) where less than 24 inches (610 mm) in either dimension. The rate of air leakage shall be determined at 1.0 inch water gauge (249 Pa) when tested in accordance with AMCA 500D for such purpose.

The model code requires all of these nonmotorized gravity dampers to be tested for air flow leakage. The proposed rule adds a second alternative (item 2); proposed item 2 does not require this testing for an exhaust duct 8 inches in diameter or smaller that is equipped with a spring-loaded backdraft damper and a weather hood at the point of discharge. This language regarding ducts 8 inches or smaller is in the current rule, part 1323.0402, subp. 4 (exception number 3).

Subp. 10. IECC section C403.9.4, Tower flow turndown. The existing language modifying Section C403.2.10.1 of the 2012 IECC is deleted because allowable fan motor horsepower is now addressed in Section C403.8.1 of the 2018 IECC. Because the 2018 IECC includes requirements comparable to the requirements in current subpart 10, the current language is deleted.

The proposed amendment modifies Section

C403.9.4 of the 2018 IECC to add an exception permitting an increase in the water flow rate in open-circuit cooling towers during freezing conditions to prevent excessive ice buildup on the tower. Ice buildup can damage the tower and other equipment and is hazardous to maintenance technicians. The proposed amendment is reasonable because Minnesota's climatic conditions can cause damaging and hazardous ice to build up on cooling towers.

Subp. 11. IECC Table C403.2.10.1(2) Fan power limitation pressure drop adjustment. Repeal. The current language in subpart 11 (current Table C403.2.10.1(3)) is no longer needed because Table C403.8.1(2) of the 2018 IECC contains similar requirements.

Subp. 11a. IECC section C403.11.1, Duct and plenum insulation and sealing. The proposed language in subpart 11a is the same as the language in current subpart 7 regarding duct and plenum insulation and sealing (current section C403.2.7), except for the following:

1. The section number has been changed to C403.11.1 because of the renumbering of the model code.

2. The cross-references to the Table and subpart have been changed because of the renumbering of the model code and change in subpart number.

3. In the last sentence, the reference to a specific section in the International Mechanical Code has been removed because section numbers often change with the amendment of the International Mechanical Code. Eliminating the specific reference may avoid the future need for amendment or future confusion when the section number changes.

Subp. 12. IECC section C403.4.2.1 Static pressure sensor location. Repeal. The current language in section 12 regarding static pressure sensor location is no longer needed because Section C403.6.9 of the 2018 IECC has clearer requirements for the location of the static pressure sensors.

Subp. 12a. IECC Table C403.11.1, Minimum required duct and plenum insulation. Proposed Table C403.11.1 is the same as current Table C403.2.7 in current subpart 8, except for the following:

1. The table number is changed because of the renumbering of the model code.

2. The insulation requirements for exterior ducts and ducts located in unconditioned spaces (attics, garages, and ventilated crawl spaces) are modified for consistency with Section C403.11.1 of the 2018 IECC. Specifically, the minimum insulation R-value is increased from R- 8 to R-12 for exterior ducts and ducts in unconditioned spaces. The 2018 model code requires insulation with a minimum R-value of R-12 in Minnesota's climate zones (6A and 7). Insulation with an R-12 rating better resists heat flow than insulation with an R-8 rating, and can improve the building's use of energy and reduce energy costs.

3. In footnote "c," the reference to a specific section in the International Mechanical Code has been removed because section numbers often change with the amendment of the International Mechanical Code. Eliminating the specific reference may avoid the future need for amendment or future confusion when the section number changes.

4. Footnote "f" is modified to clarify how to determine the extent of insulation needed to reduce the temperature of the supply ducts. There are no changes to the requirements for duct insulation; the modification to the footnote merely clarifies that sufficient insulation must be provided for the supply duct to limit the temperature rise to 3 degrees Fahrenheit.

Subp. 13. IECC section C403.11.2, Duct construction (mandatory). As previously discussed, the language in the current subpart 13 regarding two-position valves was amended and moved to subpart 5. The proposed language in subpart 13 regarding duct construction is the same as current sections C403.2.7.1 through C403.2.7.1.3 in subpart 7, except for the following:

1. The section numbers have been changed because of the renumbering of the model code.

2. Proposed sections C403.11.2, C403.11.2.1, and C403.11.2.2 each add a reference to chapter 1346, for the convenience of the reader.

3. The cross-reference in proposed sections C403.11.2.2 and C403.11.2.3 has been changed because of the renumbering of the model code.

4. The equation number in proposed section C403.11.2.3 has been changed for consistency with the numbering of equations in the 2018 IECC.

Subp. 14. IECC Table C403.11.3, Minimum pipe insulation thickness. The proposed language in subpart 14 modifies Table C403.11.3 to add Footnote "d." Footnote "d" clarifies that insulation is not required for piping that is a part of the radiant heating system. The heat transmitted by the pipes in a radiant heating system heats a space, so insulation of the pipes would make the system

ineffective and inefficient. The proposed amendment provides necessary clarification to ensure the proper functioning of radiant heating systems.

Subp. 15. IECC section C403.11.3.1, Protection of piping insulation. This language in this subpart is identical to the language in current subpart 9, except that the section has been renumbered because of the renumbering of the model code.

1323.0404 SECTION C404, SERVICE WATER HEATING (MANDATORY).

This subpart is amended to reflect numbering changes in the model code. The proposed rule does not change the current code requirement that a vapor-retardant cover is required for all pools and spas, unless the exception applies. The amendment to the current rule is only an amendment to the exception. The exception is modified to increase the percentage of site- recovered energy from 70 percent to 75 percent, so that a pool receiving 75 percent of energy for heating from site-recovered energy is not required to have a cover. This modification is reasonable because it is consistent with the percentage in the 2018 IECC.

Reliance on the exception is not required, of course. The vapor-retardant cover continues to be the most cost effective and commonly used option in Minnesota because covers prevent evaporation of water in the pool or spa. When evaporation occurs, the owner of the pool or spa incurs costs to add fresh water and to heat that water. For those wishing to use the site-recovered energy option to heat a pool or spa, there would be a cost increase for additional equipment such as an additional solar panel or extra piping in order to comply with the exception.

1323.0405 SECTION C405, ELECTRICAL POWER AND LIGHTING SYSTEMS. Repeal.

This rule part is being repealed for consistency with the Minnesota Electrical Code. The 2018 IECC is silent regarding "conductor sizing; voltage drop." Therefore, there is no language in the 2018 IECC that needs to be deleted or amended. It is reasonable to leave the issue of conductor sizing/voltage drop to the Minnesota Electrical Code. Minnesota adopts the National Electrical Code (*see* Minn. Rule 1315.0200). The National Electrical Code ("NEC") contains recommendations, not requirements, to adjust for voltage drop when sizing conductors. *See* NEC Informational Notes to sections 210.19(A), 215.2(A)(4), and 310.15(A)(1). Specifically, the NEC recommends that the maximum combined voltage drop for both the feeder and branch circuit should not exceed 5%, and the maximum on the feeder or branch circuit should not exceed 3%. This recommendation is a performance issue, not a safety issue. Because this is addressed in the NEC, it is reasonable to repeal rule 1323.0405.

1323.0408 SYSTEM COMMISSIONING.

Subpart 1. IECC section C408.2, Mechanical systems and service water heating systems commissioning and completion requirements. This subpart is modified for consistency with 2018 IECC by adding commissioning and completion requirements for plumbing systems. To that end, the section heading is modified to add "service water heating systems" and the first sentence is modified to add "plumbing inspections." The word "passing" is not needed because by definition, an inspection is not "final" unless the system passes the inspection.

The subpart is also modified to match a provision in the model code permitting the owner's authorized agent to accept the construction documents. It is reasonable to permit the building owner's authorized agent to receive the documents since that individual may be more involved with the day-to-day maintenance and operations of the building than the owner.

A cross-reference is amended because of the renumbering of the model code.

Finally, the last sentence is added to clarify that subsections C408.2.1 through C408.2.5.2 are not amended.

Subp. 2. IECC Section C408.2.2.1, Air systems balancing. Repeal. This subpart is being repealed because the 2018 IECC now contains similar language with the same substantive requirements for air systems balancing. Therefore, this subpart is no longer necessary.

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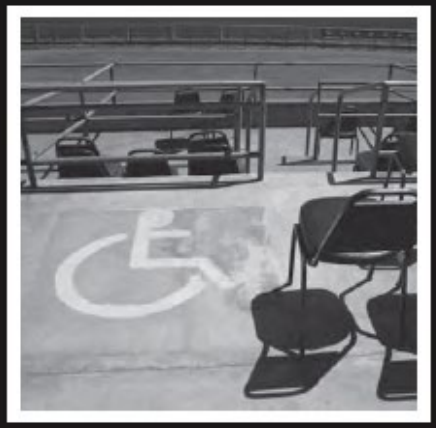
MINNESOTA ACCESSIBILITY CODE



ICC INTERNATIONAL CODE COUNCIL

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Minnesota Accessibility Code, Minnesota Rules, chapter 1341; Revisor's ID Number R-04514

INTRODUCTION

The Commissioner ("Commissioner") of the Department of Labor and Industry ("Department") proposes to amend rules governing accessibility for buildings and facilities of the Minnesota State Building Code, Minnesota Rules, Chapter 1341.

The Minnesota State Building Code consists of twenty-two separate chapters of Minnesota Rules.[36] Chapter 1341 incorporates by reference the necessary accessibility provisions found in the International Code Council ("ICC") model codes and standards, with amendments, for use in Minnesota. This rule chapter provides direction as to which building elements in newly designed and constructed buildings or existing buildings undergoing renovation are required to be accessible, the minimum number of required accessible elements, and the technical design of those elements to make commercial and public buildings readily accessible to and usable by individuals with disabilities.

The Americans with Disabilities Act of 1990 ("ADA") is a federal civil rights law that prohibits discrimination on the basis of a disability. As a part of that law, the U.S. Department of Justice promulgates regulatory requirements that contain a set of scoping and design criteria for the built environment to ensure that buildings and facilities do not construct barriers to accessibility that would adversely affect persons with disabilities. One of the first federal documents intended to be used as a model to help states incorporate accessibility requirements for design and construction was the Americans with Disabilities Act Accessibility Guidelines ("ADAAG"). In 2010, the ADAAG were updated and incorporated into the "2010 ADA Standards for Accessible Design."[37] These federal standards set minimum requirements, both scoping and technical, for newly designed and constructed or altered governmental buildings, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities. The model code provisions and standards proposed for incorporation into this rule, including any amendments thereto, meet or exceed that federal standard.

The proposed rules incorporate by reference, with amendments, chapter 11 of the 2018 edition of the International Building Code ("IBC") and section 305 of the 2018 edition of the International Existing Building Code ("IEBC"). The 2009 edition of the International Code Council/American National Standards Institute's ("ICC/ANSI") A117.1 Standard, Accessible and Usable Buildings and Facilities, is incorporated by reference in the existing rule and remains the controlling standard. *See* Minnesota Rules, part 1341.0010, Referenced Standard (2015).[38]

In consultation with the Construction Codes Advisory Council ("CCAC"), the Department of Labor and Industry ("Department") utilized a Technical Advisory Group ("TAG") committee to review existing rule Chapter 1341 and the 2018 ICC model building codes and to propose reasonable and needed changes to the accessibility provisions of the State Building Code, contained in that rule chapter. The proposed amendments in this rulemaking incorporate changes proposed by Chapter 1341 TAG members to the accessibility provisions in the 2018 ICC model codes that affect this chapter and other chapters of the Minnesota State Building Code.

[36] A complete list of the Chapters making up the Minnesota State Building Code can be found at Minnesota Rules, part 1300.0050 (2016).
[37] A copy of the 2010 ADA Standards for Accessible Design can be viewed at: 2010 ADA Standards for Accessible Design
[38] For purposes of this SONAR, the ICC/ANSI A117.1-2009 design standard is referred to throughout as the "ICC A117.1 standard." A copy of the ICC A117.1-2009 standard can be viewed at: https://codes.iccsafe.org/content/ICCA117_12009?site_type=public

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1341
MINNESOTA ACCESSIBILITY CODE

GENERAL TERM USAGE.

Throughout the Rule-by-Rule Analysis section of this SONAR, specific terms are used to help explain accessibility requirements based on an occupancy type, a unit type, or some other unique occupancy. These terms are specifically defined within the 2018 International Building Code or the ICC A117.1-2009 standard, but are more fully described in this "GENERAL TERM USAGE" section, below.

Accessible. "Accessible" is defined in ICC A117.1, section 106.5 (2009), and means that a person with a vision disability, hearing disability, aging disability, a disability of coordination, or any other disability that significantly reduces mobility, flexibility, coordination, or perceptiveness can access or use a space, area, device, or piece of equipment. In that regard, a "unit" refers to a room or a space intended for human occupancy and an "occupancy" means the use or intended use of a building or part of a building that is rented, leased, or otherwise used or occupied by people.

Dwelling unit. A "dwelling unit" is defined in ICC A117.1, section 106.5 (2009), and means a single, complete, and independent room or space where people reside, including permanent provisions for living, sleeping, eating, cooking and sanitation.

Sleeping unit. A "sleeping unit" is defined in ICC A117.1, section 106.5 (2009), and means a room or space independent of a dwelling unit where people sleep.

Accessible unit. An "Accessible unit" is defined in Section 202 of the 2018 IBC and means a unit that provides the highest level of accessibility. This type of accessibility is generally required for transient facilities, which have frequent turnover, and the users have no ability to modify the unit.

Type A unit. A "Type A unit" is defined in Section 202 of the 2018 IBC and only applies to apartments, monasteries, and convents. These units provide a level of accessibility that is slightly less than that of an Accessible unit. Accommodations must be made in Type A units to provide grab bars or to remove cabinets under sinks.

Type B unit. A "Type B unit" is defined in Section 202 of the 2018 IBC and refers to a unit that provides the lowest level of accessibility. The accessibility level in a Type B unit is consistent with the requirements found in the Federal Fair Housing Act. These units must provide an accessible route throughout the unit and clear floor spaces next to bathroom fixtures and kitchen appliances to accommodate a person with a disability.

Ambulatory toilet compartment. An "ambulatory toilet compartment" means a toilet compartment that is intended for people who are ambulatory but need assistance by using grab bars to use the toilet or fixture. The term is further described and illustrated in section 604.10 of the ICC A117.1-2009 standard. The compartment must be three feet wide and must provide grab bars on each side of the toilet fixture.

Occupancy Groups.

Occupancy Classification and Use. Occupancy classification is the formal designation of the primary purpose of a building, structure or portion thereof. *See* generally Chapter 3 of the 2018 International Building Code.

Group A occupancies (A-1, A-2, A-3, A-4, and A-5). Generally, Group A occupancies are places where people assemble in small or large groups. Examples of Group A occupancies would include indoor symphony or concert halls, night clubs, restaurants, amusement arcades, places of worship, bowling alleys, gymnasiums, museums, outdoor amusement park structures, outdoor grandstands, and outdoor stadiums. Group A occupancies are more fully described in Chapter 3, section 303 of the 2018 International Building Code.

Group I occupancies (I-1, I-2, I-3, and I-4). Generally, Group I occupancies are facilities or buildings that provide care services for people, long-term detention for people, or serve as a long-term residence for persons that receive custodial care from persons other than parents or guardians. Examples of Group I occupancies would include assisted living facilities, group homes, rehabilitation facilities, hospitals, nursing homes, detoxification facilities, prisons, reformatories, and detention centers. Group I occupancies are more fully described in Chapter 3, section 308, of the 2018 International Building Code.

Group R occupancies (R-1, R-2, R-3 and R-4). Group R occupancies are typically places that people

board for short or long periods of time, family dwellings, adult and child care facilities, congregate living facilities, and residential care or assisted living facilities. Examples of Group R occupancies include boarding houses, hotels, motels, apartment houses, fraternities, sororities, monasteries, one and two family dwellings, short term (less than 24 hours) adult care facilities, smaller short term (less than 24 hours) child day care facilities, congregate living facilities (16 or fewer persons), and residential care/assisted living facilities (5-16 persons). Group R occupancies are more fully described in Chapter 3, section 310, of the 2018 International Building Code.

1341.0005 INCORPORATION OF THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL EXISTING BUILDING CODE BY REFERENCE.

The heading of this rule part is amended because section 305 of the International Existing Building Code ("IEBC") is being incorporated by reference in addition to chapter 11 of the International Building Code ("IBC"). The 2018 edition of the IEBC was revised to include a section specifically addressing accessibility requirements for existing buildings undergoing alteration, change of occupancy, or addition.

This rule part is modified by revising the language to properly incorporate by reference chapter 11 of the 2018 IBC. The changes to the language incorporating by reference the 2018 IBC are necessary to ensure that the proper edition of the model code is incorporated and that the publisher's copyright information is included.

Section 305 of the 2018 edition of the IEBC is also being incorporated by reference and the publisher's copyright information added to this subpart. The 2018 edition of the IEBC was revised and reformatted to address accessibility requirements in section 305. The accessibility requirements for existing buildings in that section are consistent with the accessibility requirements located in existing Minnesota Rules, part 1341.0011, subparts 11, 12, and 13. Existing subparts 11, 12, and 13 are being repealed because they are no longer necessary.

1341.0011 IBC CHAPTER 11.

Subpart 1. IBC Section 1101.2, Equity. The existing language concerning equivalent elements from subpart 1, subitem 1101.3 Equity, is carried forward from the existing rule subpart without change, but the subitem is renumbered to 1101.2 because the 2018 IBC was reformatted by deleting subsection 1101.2, Design, and creating a new section 1102 which addresses design compliance.

Subpart 1a. IBC Section 1101.3, Calculation of percentages. The existing language concerning calculation of ratios and percentages from subpart 1a is carried forward without change, but the subitem is renumbered to 1101.3 because the 2018 IBC was reformatted by deleting subsection 1101.2, Design, and creating a new section 1102 which addresses design compliance.

Subpart 2. IBC Section 1102, Definitions [REPEAL]. Existing subpart 2 is being repealed because the 2018 IBC was reformatted to provide for all definitions throughout in Chapter 2, section 202. To avoid duplicity and confusion while promoting uniformity, subpart 2 is repealed.

Subpart 2a. IBC Section 1102.2, Terms not Defined [REPEAL]. Existing subpart 2a is being repealed because the 2018 IBC was reformatted to provide for all definitions, including guidance when terms are not defined, in Chapter 2, section 202. To avoid duplicity and confusion while promoting uniformity, subpart 2a is repealed.

Subpart 3. IBC Section 1103, Scoping requirements.

A. 1101.2.1 Specific requirements. This subitem is modified by replacing the reference to section "1113" with section "1111" because section 1113 contains accessibility requirements for existing buildings and is being deleted. This rule part is being amended to modify the accessibility provisions for new buildings in the IBC. A new rule part, 1341.0030, is being added to modify the accessibility provisions of the IEBC that pertain to existing buildings. It is reasonable to modify this subpart to specify the correct sections addressing accessibility requirements for new construction.

B. 1103.2.8 Areas in places of religious worship (new subitem). The content of existing subitem B is deleted because of renumbering and reformatting of the 2018 IBC and 2018 IEBC. The language of existing subitem B concerning existing buildings is relocated to new subpart 3a.

The language of subitem B is amended to delete section 1103.2.8 of the 2018 IBC to carry forward the existing accessibility requirements for new places of religious worship. Section 1103.2.8 of the 2018 IBC exempts from accessibility requirements areas in places of religious worship that are less than 300 square feet in area, located seven inches or more above or below the finished floor, and "used primarily for the performance of religious ceremonies." The members of the 1341 Technical Advisory Group recommended deleting section

1103.2.8's exception because application of this provision could prevent or hinder a person with a disability from accessing raised or lowered areas that other members of the congregation and the public have to access. In some places of religious worship, the congregation and the public use the raised or lowered areas to perform religious ceremonies or merely to address those present, including providing eulogies for the deceased, fund raising encouragement, or general announcements and speeches. Persons with a disability attempting to access these areas could suffer an injury due to the lack accessible features or be completely dissuaded from addressing the congregation at all. It is necessary and reasonable to carry forward the existing accessibility requirements for new places of religious worship for the safety and inclusion of everyone who accesses raised or lowered areas used within places of religious worship.[39]

Finally, it is important to note that raised or lowered areas used *exclusively* by members of the clergy and other employees in places of religious worship ("Employee Work Areas") are still not required to be fully accessible under the 2010 ADA Standards for Accessible Design, the 2018 IBC, and Minnesota law. Section 1103.2.2 of the 2018 IBC continues to exempt from accessibility requirements employee work areas that are less than 300 square feet in area and located seven inches or more above or below the finished floor. The members of the 1341 Technical Advisory Group concluded that the continuing exemption provided for in 2018 IBC section 1103.2.2, Employee Work Areas, is sufficient to exempt from full accessibility requirements areas used only by employees and not by the general congregation or the public. The proposed deletion of the exception contained in section 1103.2.8 is reasonable given that raised or lowered areas used by the congregation or the public will continue to be fully accessible to all while employee work areas used only by clergy and other employees will continue to remain exempt from full accessibility requirements.[40]

D. 1103.2.15 Recreational facilities (re-lettered). Existing subitem D is deleted because reformatting of the 2018 IBC has relocated accessibility requirements for live/work units to section 1107.6.2.1. Existing subitem E is re-lettered to subitem D and is modified by renumbering the section reference numbers due to numbering changes in the 2018 IBC. The language is changed to clarify this section is added to the IBC.

Subpart 3a. IBC Section 1103, Scoping Requirements (new subpart).

Section 1103.3 Existing buildings. This subpart is added to direct the code users to section 305 of the IEBC, as amended by proposed rule part 1341.0030, for accessibility requirements for existing buildings. The renovation of existing buildings must include accessible elements; however, accessibility requirements for existing buildings are not addressed in the 2018 edition of the IBC. Therefore, the proposed subpart directs code users to the IEBC for the accessibility requirements for existing buildings. It is reasonable to provide code users with a reference to the accessibility requirements for existing buildings.

Subpart 4. Section 1104, Accessible route.

A. Section 1104.4, Multilevel buildings and facilities (re-lettered). Existing subitem A is deleted because this exception was deleted in the 2018 edition of the IBC. Therefore, the existing subitem is no longer necessary. Existing subitem B is re-lettered to subitem A.

New subitem A is amended to modify section 1104.4.1 to replace the term "level" with "accessible story" and to add "occupied roofs" for consistency with the new language of section 1104.4.1 of the 2018 IBC. Exception number 1 is amended by adding the phrase "or occupied roofs" to make the language in the exception consistent with changes made to it by the 2018 IBC. Exception number 2 is amended by modifying the term "levels" to "stories, mezzanines or occupied roofs" for consistency with the code language as written in the 2018 IBC. Replacing the vague term "levels" with "stories, mezzanines or occupied roofs" is reasonable and needed to clarify the types of spaces the requirements apply to. Existing exception 4 is deleted because the 2018 IBC now addresses vertical access to elevated employee work stations within courtrooms in section 1104.4.1. Therefore,

[39] The 1341 Technical Advisory Group was also troubled by 2018 IBC section 1103.2.8's use of the phrase "used primarily for the performance of religious ceremonies." Not only is the use of the term "religious ceremonies" in this phrase undefined and subject to various interpretations, the term "used primarily for" is also vague and may be interpreted overly broadly to otherwise exempt from accessibility requirements raised and lowered areas in places of worship used routinely by both clergy and members of the congregation or public.

[40] While generally exempt from accessibility requirements, the "Employee Work Area" exemption contained in both the 2010 ADA Standards for Accessible Design and 2018 IBC section 1103.2.2 still require employee work areas to comply with other ADA regulations and select chapters of the IBC regarding fire protection, means of egress, and accessible approach routes. *See* Section 203.9 of the 2004 ADAAG and section 1103.2.2 of the 2018 IBC.

exception number 4 is no longer necessary and is being deleted.

Item 2 and Item 3 of section 1104.4.2 are revised to correct a typographical error omitting the parentheses around the occupancy classifications. The parentheses are necessary to indicate the requirements apply to health care providers, nongovernment passenger transportation, and airport facilities located in those occupancies.

B. Section 1104.5, Location (re-lettered). Existing subitem C is re-lettered to subitem B because existing subitem A is proposed to be deleted and existing subitem B is being relettered to subitem A. The language of the subitem remains unchanged.

Subpart 5, Section 1105, Accessible entrances.

B. Section 1105.1.6, Tenant Spaces. Existing subitem B is re-lettered to subitem C. New subitem B is added to delete section 1105.1.6 of the 2018 IBC and its exception. Section 1105.1.6 requires one accessible entrance be provided to tenants and the exception does not require an accessible entrance be provided for self-service storage facilities that are not accessible. The Department is carrying forward the existing amendment modifying section 1105.1 to require a minimum of sixty percent of public entrances to tenant spaces be accessible and each tenant in a building to provide an accessible public entrance. The existing exception 1 does not require accessible entrances to areas not required to be accessible; thereby, exempting self-service storage facilities not required to be accessible from the accessible entrance requirement. It is reasonable to delete section 1105.1.6 of the 2018 IBC because the existing requirement provides for more accessible tenant entrances and does not require accessible entrances for areas not required to be accessible.

C. Section 1105.2, Dwelling unit and sleeping unit entrances. Existing subitem B is re-lettered to subitem C. This subitem is modified by replacing the section reference number to reflect the 2018 IBC renumbering.

Subpart 6. IBC Section 1107, Dwelling units and sleeping units.

A. Section 1107.3, Accessible spaces. The existing modification to section 1107.4 is deleted because the 2018 IBC now contains similar language. Therefore, this modification is no longer necessary. The language of the subitem is amended to delete exception 3 of section 1107.3 of the 2018 IBC. Exception 3 is being deleted because existing rule part 1341.1004, subpart 1, modifies ICC A117.1-2009 to address changes in level from the interior space of a Type B unit to exterior decks, patios, and balconies. The change in level is a technical provision and more appropriately belongs in the ICC A117.1 standard. The deletion of the third exception is necessary to eliminate conflict between the 2018 IBC and ICC A117.1-2009, as modified by this rule chapter.

D. Section 1107.5.1.3, Boarding care. The heading of this subitem is amended to clarify that section 1107.5.1.3 is being added to Section 1107.5.1, Group I-1, of the 2018 IBC.

E. Section 1107.5.2, Group I-2 nursing homes. This subitem is amended to increase the percentage of accessible resident sleeping rooms required in Group I-2 nursing homes from ten percent to fifty percent to comply with the 2010 ADA Standards for Accessible Design, the 2018 IBC, and the Minnesota Department of Health's licensing requirements. Existing Minnesota Rules, part 1341.0011, subpart 6, subitem E, requires only ten percent of resident rooms to be accessible in Group I-2 nursing homes. However, both the 2010 ADA Standards for Accessible Design and the 2018 IBC require fifty percent.

The ICC and the Minnesota Department of Health ("MDH") have identified a national need for more accessible resident rooms in nursing homes and have revised and supported the IBC, respectively, to increase the required percentage of accessible resident rooms. MDH recognizes and supports a need for more accessible resident rooms in nursing homes because the number of persons with disabilities, including the population of elderly persons in general, is increasing. As a result, MDH has required more than ten percent of the resident rooms in licensed nursing homes to be accessible. The healthcare industry also recognizes the demand for more accessible resident rooms and typically constructs Group I-2 nursing homes with a greater number of accessible resident rooms than is required by the existing rule part. The proposed amendment is therefore needed to come into conformity with the ADA and to make more resident rooms accessible to accommodate both the increase in disabled and elderly nursing home populations and to standardize accessibility requirements throughout the state of Minnesota.

As noted in paragraph number (5) of the Regulatory Analysis section above, the proposed amendment will increase the cost of construction for Group I-2 nursing homes where the resident rooms contain toilet rooms. The cost to provide a resident room with accessible features is minimal. However, if a toilet room is provided in the accessible resident room, then the toilet room must be accessible as well. An accessible toilet room is twenty square feet larger than a toilet room without accessible features to allow for wheelchair maneuverability. The additional square footage required for an accessible toilet room increases the cost of

construction by approximately $8,000 per an accessible toilet room.

This amendment is needed to re-align the existing Minnesota Accessibility Code with the federally mandated ADA Standards for Accessible Design and the requirements of the 2018 IBC. It also addresses a recognized need in Minnesota for a greater number of accessible resident sleeping rooms in Group I-2 nursing homes. The increase in the required number of accessible resident rooms will increase construction costs for accessible resident rooms containing toilet rooms. However, this increase in costs is justified because it is in direct response to a need for realignment and uniformity with a federal ADA regulatory mandate and a need for additional accessible resident rooms in nursing homes in Minnesota.

F. Section 1107.6 Group R. Existing subitem F is deleted because the 2018 IBC now contains similar language. Therefore, this modification is no longer necessary and is being deleted. Existing subitem G is re-lettered to subitem F, but the content remains unchanged.

G. Section 1107.6.1, Group R-1 (re-lettered). Existing subitem H is re-lettered to subitem G, but the content remains unchanged.

H. Section 1107.6.1.1, Accessible units (re-lettered). Existing subitem I is re-lettered to subitem H. This subitem is modified by deleting the existing language to further clarify the calculation of required number of accessible dwelling units or sleeping units on a site with multiple structures. The existing language caused confusion among users as to the calculation of the required number of accessible units on a site with multiple structures. The proposed language now mirrors that of 2018 IBC section 1107.6.1.1 which directs the user to calculate the required number of accessible units based on whether the number of sleeping units or dwellings units within a structure is more than 50. These changes are necessary to coordinate with changes made to the 2018 IBC and to assist with uniform enforcement of accessibility provisions for sites containing multiple structures. Unlike 2018 IBC section 1107.6.1.1, the modified subitem does not include the language of that section which addresses dispersion of accessible dwelling units or sleeping units because Minnesota rules address "dispersion" separately in existing subitem K, which the proposed rules now re-letter to subitem J.

I through K (re-lettered). Sections 1107.6.1.3, Communication features, 1107.6.1.4, Dispersion, and 1107.6.1.5, Passenger doors, are re-lettered but the content remains unchanged.

L. Section 1107.6.2, Group R-2 (re-lettered). Existing subitem M is re-lettered to subitem L. This subitem is also modified by replacing section numbers because they were renumbered in the 2018 IBC. Additionally, 2018 IBC section 1107.6.2.1, Live/work units, is deleted because the requirements for live/work units are deleted from Chapter 1305 of the Minnesota State Building Code, allowing local zoning ordinances to apply instead. Live/work units are commonly referred to as "home occupations" and are regulated in Minnesota by local zoning codes, not by the State Building Code. Therefore, this modification is reasonable because it will promote consistency with Chapter 1305 and prevent conflicts with local zoning codes and regulations.

M. Section 1107.6.2.2.1, Type A units (re-lettered). Existing subitem N is re-lettered to subitem M. This subitem is also modified by replacing the section number due to renumbering in the 2018 IBC. However, the language of this subitem remains unchanged.

N. Section 1107.6.2.3, Group R-2 other than apartment houses, monasteries, and convents (re-lettered). Existing subitem O is re-lettered to subitem N. This subitem is also modified by replacing section numbers because they are renumbered in the 2018 IBC. The new language corresponds to changes made to the 2018 IBC and clarifies that only one accessible bedroom in a dwelling or sleeping unit may be counted towards the number of required accessible bedrooms within certain types of congregate living facilities. The existing language caused confusion and resulted in some designers locating all required accessible bedrooms within a single dwelling unit or sleeping unit so that persons with disabilities were located in a single dwelling unit or sleeping unit. The proposed change is necessary to ensure accessible bedrooms are dispersed into several sleeping or dwelling units in the congregate living facility so that persons with disabilities are not isolated in a single dwelling or sleeping unit.

O. Section 1107.6.3, Group R-3 (re-lettered). Existing subitem P is re-lettered to subitem O. Section 1107.6.3.2 is modified to add dormitories, sororities, and fraternities. Dormitories, sororities, and fraternities can be classified as Group R-3 occupancies, so it is reasonable to clarify the requirements of this section that apply to those uses. The added language also clarifies that all bedrooms within congregate living facilities, dormitories, sororities, fraternities, boarding houses, and care facilities are to be counted as sleeping units. A correct count of the number of sleeping units is necessary to calculate the correct required number, and dispersal of, accessible and Type B units. These modifications are reasonable as they coordinate with changes made in the 2018 IBC.

P and Q (re-lettered). Section 1107.7, General exceptions, and 1107.7.6, Owner occupied units, are re-lettered but the content remains unchanged.

Subpart 8. Section 1109, Other features and facilities.

C. Section 1109.2.2, Water closet compartment. This subitem is modified to coordinate with the requirements of the 2018 IBC by requiring five percent of water closet compartments to be wheelchair accessible and where there are at least two compartments, then five percent must be ambulatory accessible. The existing language permitted buildings with several water closet compartments to have only one wheelchair-accessible compartment and one ambulatory accessible compartment; effectively permitting stadiums, arenas, and public transportation facilities to have only two accessible water closet compartments for the entire facility. This amendment is necessary to ensure larger facilities have a sufficient quantity of accessible compartments. Additionally, existing subpart 1a, which is being relocated to subpart 1b, ensures that smaller buildings will provide accessible compartments by requiring rounding to the next whole number when a percentage of required facilities or elements is calculated. Therefore, where one water closet compartment is provided in a building it must be wheelchair-accessible. Finally, this subitem contains needed grammatical changes.

F. Section 1109.7, Elevators (re-lettered). Existing subitem F is deleted because the 2018 IBC contains similar language in section 1110.4.14. Therefore, this modification is no longer necessary. Existing subitem G is re-lettered to subitem F, but the content remains unchanged.

G. Section 1109.8, Lifts (re-lettered). Existing subitem H is re-lettered to subitem G. Additionally, item number 1 is modified to delete the limiting phrase "Group A occupancies" to conform to changes made in the 2018 IBC and because occupancies other than assembly occupancies have performing areas and speaker platforms that require accessible routes as well. It is reasonable to permit platform lifts as a part of the accessible route to performing areas and speaker platforms in all occupancies, rather than just Group A occupancies. This change is also reasonable as it corresponds to changes made to the 2018 IBC.

Existing item 5 of this subitem is deleted for consistency with changes made to the 2018 IBC. The deletion of existing item 5 is reasonable and needed because accessible routes to dining terraces are addressed by the proposed changes to section 1104.4.1 located in existing subpart 4, new subitem A, and section 1108.2.9 of the 2018 IBC.

H through K (re-lettered). Sections 1109.10, Detectable warnings, 1109.12.3, Point of sale and service counters, 1109.14, Fuel dispensing systems, and 1109, Other features and facilities, are re-lettered but the content remains unchanged.

Subpart 8a. IBC Section 1110, Recreational Facilities (new subpart).

A. Section 1110.4.8, Amusement rides. Section 1110.4.8 of the 2018 IBC is modified to require amusement rides to comply with sections 1110.4.8.1 and 1110.4.8.2 because the proposed rule deletes section 1110.4.8.3 of the 2018 IBC. It is reasonable to modify the section reference numbers to provide the correct code sections that amusement rides are required to comply with.

B. Section 1110.4.8.2, Wheelchair spaces, ride seats designed for transfer, and transfer devices. This subitem modifies section 1110.4.8.2 of the 2018 IBC to delete the requirements for amusement ride seats designed for transfer and transfer devices to be on an accessible route. The Minnesota State Building Code does not regulate recreational equipment, including amusement rides, and recreational equipment is exempt from accessibility provisions. *See* Minnesota Rules, part 1341.0011, subpart 3, item E (Scoping requirements). The Minnesota Accessibility Code does not require amusement ride seats to be accessible, nor can it require a device be provided to transfer a person from a wheelchair to the ride. However, the Minnesota Accessibility Code can require that accessible routes be provided, so section 1110.4.8.2 is modified to require an accessible route to the position serving the wheelchair space.

C. Section 1110.4.8.3, Minimum number. This subitem is added to delete IBC section 1110.4.8.3 regarding the minimum number of wheelchair spaces and amusement ride seats required for amusement rides. As noted above, Minnesota Rules, part 1341.0011, subpart 3, exempts recreational equipment, including amusement rides, from accessibility provisions because the Minnesota State Building Code does not regulate recreational equipment. It is necessary to delete IBC section 1110.4.8.3's provisions for amusement rides because the regulation of amusement rides and equipment is not within the scope of the Minnesota State Building Code.

D. Section 1110.4.12, Miniature golf facilities. This subitem is added to delete IBC section 1110.4.12 and its subsections addressing accessibility requirements for miniature golf facilities. As noted above, Minnesota Rules, part 1341.0011, subpart 3, item E, exempts recreational

equipment, including miniature golf facilities, from accessibility provisions because the Minnesota State Building Code does not regulate recreational equipment. It is necessary to delete IBC section 1110.4.12's provisions for miniature golf facilities because the regulation of miniature golf facilities is not within the scope of the Minnesota State Building Code.

Subpart 9. IBC Section 1111, Signage.

This subpart is modified by renumbering the section and subsection references throughout to reflect the renumbering of these references in the 2018 IBC.

A. Section 1111.1 General. This subitem is amended by renumbering the section numbers to coordinate with renumbering changes made to the 2018 IBC. No changes are made to the content of this subitem.

B. Section 1111.2, Designations. This subitem is amended by renumbering the section reference numbers to coordinate with renumbering changes made to the 2018 IBC. Item number 4 is added to this subitem to require signs identifying accessible lockers. This requirement is needed and reasonable as it corresponds to changes made to the 2018 IBC concerning accessible locker signage.

C. Section 1111.3, Directions and informational signs. This subitem is amended by renumbering the section reference numbers to coordinate with renumbering changes made to the 2018 IBC. Section 1111.3 is also modified to clarify that directional and informational signs are to comply with the visual character requirements found in ICC A117.1-2009. This modification is consistent with changes made to the 2018 IBC and is needed and reasonable because it specifies what signage requirements contained in ICC A117.1-2009 are required to be complied with in Minnesota.

Section 1111.3.1 is added to this subitem to require that directional signs be provided at building elements without accessibility features to direct building occupants to the nearest similar accessible building element. This change corresponds with requirements of the ADA and changes made to the 2018 IBC. It is reasonable to require directional signs so persons with disabilities know the location of the nearest accessible building element.

D. Section 1111.4, Means of Egress. This subitem is amended by renumbering the section numbers to coordinate with renumbering changes made to the 2018 IBC. No changes are made to the content of this subitem.

E. Section 1111.5, Parking. This subitem is amended to exempt parking facilities with four spaces or fewer from providing an identified accessible parking space. The amendment is reasonable and needed to coordinate with the 2010 ADA Standards for Accessible Design and section 1111.1(1) of the 2018 IBC. [41] Accessible parking spaces are effectively the size of two standard parking spaces. A parking facility with four spaces, if required to provide an accessible parking space, will have one accessible parking space and two standard spaces. Smaller businesses with four or fewer parking spaces may have less business because of the reduction in the number of parking spaces available to all customers.

While following the ADA and the 2018 IBC may result in the unavailability of disability parking spots in some small commercial parking lots, Minnesota law allows vehicles with disability parking certificates or disability plates to legally park at an angle and occupy two standard spaces where a disability parking space is unavailable.[42] It is reasonable to exempt parking facilities with four spaces or fewer from providing an identified accessible parking space because the reduction in total available parking spaces without the exemption can be burdensome to small business and facilities with limited parking, whereas persons with disabilities will still be permitted to park in the facility by using two standard spaces and parking at an angle when the need arises.

Exception number 2 is amended to specify that the identification of accessible parking spaces is not required for Group I-1, R-2, R-3, and R-4 occupancies with assigned parking spaces. This exception corresponds to changes made to section 1106.2 of the 2018 IBC, which identifies accessible parking space requirements for specific residential facilities. The language is further amended to add "sleeping units" because the occupancies listed may contain either dwelling units or sleeping units under the 2018 IBC.

F through J. These subitems are amended by renumbering the section numbers to coordinate with renumbering changes made to the 2018 IBC. No changes are made to the content of these subitems.

[41] The 2010 ADA Standards for Accessible Design for public accommodations and commercial facilities include both the Title III regulations at 28 CFR part 36, subpart D, and the 2004 ADAAG regulations at 36 CFR part 1191, appendices B and D. The signage and identification exception for parking lots with four or fewer total spaces is found at section 216.5 of the 2004 ADAAG.

[42] *See* Minnesota Statutes, section 169.346, subdivision 1a (2018)

Subpart 11. Section 1111, Additions [REPEAL]. Subpart 11 is being repealed because the proposed rule incorporates by reference section 305 of the 2018 IEBC, with amendments, to address accessibility for additions to existing buildings. The 2018 edition of the IBC does not address requirements for existing buildings. For consistency with I-code formatting, it is no longer necessary to add a section to the IBC to address accessibility requirements for additions added to existing buildings. Therefore, this subpart is being repealed because it is no longer needed.

Subpart 12. Section 1112, Alterations [REPEAL]. Subpart 12 is being repealed because the proposed rule incorporates by reference section 305 of the 2018 IEBC, with amendments, to address accessibility when alterations are made to existing buildings. The 2018 edition of the IBC does not address requirements for existing buildings, including alterations. For consistency with I-code formatting, it is no longer necessary to add a section to the IBC to address accessibility requirements when alterations are made to existing buildings. Therefore, this subpart is being repealed because it is no longer needed.

Subpart 13. Section 1113 Change of occupancy [REPEAL]. Subpart 13 is being repealed because the proposed rule incorporates by reference section 305 of the 2018 IEBC, with amendments, to address accessibility when an existing building undergoes a change of occupancy. The 2018 edition of the IBC does not address requirements for existing buildings, including changes of occupancy. For consistency with the I-code formatting, it is no longer necessary to add a section to the IBC to address accessibility requirements for existing buildings undergoing a change of occupancy. Therefore, this subpart is being repealed because it is no longer needed.

1341.0030 IEBC SECTION 305, ACCESSIBLITY FOR EXISTING BUILDINGS

This new rule part is added to modify section 305 of the 2018 IEBC. Section 305 of the 2018 IEBC addresses accessibility requirements for additions, alternations, and changes of occupancy to existing buildings. The proposed amendments to section 305 do not make substantive changes to existing rule requirements for existing buildings undergoing renovation. However, the amendments are relocated from existing part 1341.0011, subparts 11, 12, and 13 and modified for consistency with the 2018 IEBC. The 2018 edition of the IBC does not address accessibility for existing buildings, so it is inconsistent with I-code formatting to modify the IBC to include requirements for existing buildings. The proposed amendment to part 1341.0005 incorporates section 305 of the 2018 IEBC by reference.

Subpart 1. Section 305.1.2, References to other International Code Council codes. This section is added to the IEBC to specify that any references to the International Building Code in section 305 means the Minnesota Accessibility Code, Minnesota Rules, part 1341.0011. Section 305 of the IEBC frequently directs users to accessibility provisions located in chapter 11 of the IBC. Chapter 11 of the IBC is amended by part 1341.0011 of this chapter. This subpart is necessary to direct code users to the IBC code provisions as amended for use in Minnesota so users apply the correct code provisions.

Subpart 2. Section 305.4.2, Complete change of occupancy. Section 305.4.2 of the 2018 IBC is modified to add item number 7. The text of item number 7 is consistent with existing part 1341.0011, subpart 13, but is relocated to this rule part and revised due to reformatting of the 2018 IEBC. The language of item number 7 is also revised for clarity and consistency with changes made to part 1341.0011, subpart 9, Signage. Additionally, an exception is added to address the inclusion of Type B dwelling or sleeping units after a complete change in occupancy. If the change in occupancy results in Type B dwelling units being provided, then the exception permits an exemption from the additional accessible route requirements of this subpart. This exception is consistent with long standing IBC requirements for new buildings and is needed to maintain the lower accessibility character of Type B units in existing buildings undergoing alteration, renovation or repair. As well as encouraging the creation of additional Type B units where none or fewer existed before, the proposed exception will also tend to reduce overall construction costs.

Subpart 3. Section 305.7, Alterations affecting an area containing a primary function. The current requirements addressing alterations affecting an area containing a primary function located in existing part 1341.0011, subpart 12, subitem G, are relocated to this proposed subpart and the formatting and language is revised for clarity and ease of use. This proposed subpart makes no substantive changes to the existing requirements for alterations affecting an area containing a primary function. However, similar to the proposed exception in subpart 2 above, exception number 5 is added to address the inclusion of Type B dwelling or sleeping units after alterations affecting an area occur. This exception is consistent with long-standing IBC accessibility requirements for new buildings and is needed to maintain the lower accessibility character of Type B units in existing buildings undergoing alteration, renovation, or repair. As well as encouraging the creation of additional Type B units where none or fewer existed before, the proposed exception will also tend to reduce overall construction costs.

Subpart 4. Section 305.8. Scoping for alterations.

A. Section 305.8.2, Elevators. Section 305.8.2 of the 2018 IBC is modified to require elevators to comply with Minnesota Rules, chapter 1307, Minnesota Elevators and Related Devices. No other substantive changes were made. It is reasonable to modify this section to require elevators to comply with the Minnesota rules chapter addressing elevator safety.

B. Section 308.8.3, Platform lifts. Section 305.8.3 of the 2018 IEBC is modified to require platform lifts to comply with Minnesota Rules, chapter 1307, Minnesota Elevators and Related Devices. No other substantive changes were made. It is reasonable to modify this section to require platform safety to comply with the Minnesota rules chapter addressing platform lift safety.

C. Section 305.8.7, Type A dwelling or sleeping units. Section 305.8.7 of the 2018 IEBC is modified to require the IBC requirements for Type A units to apply when more than seven Group R-2 dwelling units or sleeping units are altered or added. This is consistent with existing part 1341.0011, subparts 11 and 12 requirements for Type A units when additions or alterations are made to Group R-2 occupancy dwelling or sleeping units. This subitem makes no substantive changes to the existing requirements for Type A units when Group R-2 dwelling or sleeping units are altered or added.

D. Section 305.8.10.1 Ambulatory compartment. The 2018 IEBC is modified by adding subsections 305.8.10.1 and 305.8.10.2 to permit an existing toilet or bathing room to be altered to include an ambulatory compartment where it would be technically infeasible to alter the existing toilet and bathing rooms to include an accessible compartment or to provide a family or assisted-use toilet or bathing room. An ambulatory compartment contains features for use by persons with mobility disabilities but lacks sufficient area in which to maneuver a wheelchair. The provisions in these additional subsections are consistent with the requirements of existing part 1341.0011, subpart 12, item H, for ambulatory compartments in existing toilet or bathing rooms undergoing alteration. It is necessary to add subsections 305.8.10.1 and 305.8.10.2 to maintain an alternative method of compliance so compartments with accessible features are provided where there would otherwise be none. This subitem makes no substantive changes to the existing requirements for ambulatory compartments for existing buildings undergoing alteration.

E. Section 305.8.13, Fuel dispensers. Section 305.8.13 of the 2018 IEBC is deleted because the Minnesota State Building Code does not address fuel dispensers. Facilities are required to provide accessible fuel dispensers by the ADA. The requirement for fuel dispensing systems is deleted in the current Accessibility Code for new buildings and facilities. This deletion is necessary to carry forward current Minnesota State Building Code requirements and ensure uniform enforcement.

F. Section 305.8.15, Amusement rides. Section 305.8.15 of the 2018 IEBC is deleted because it addresses the alteration of the structural or operational characteristics of an amusement park ride that changes the amusement ride's performance. The Minnesota State Building Code does not regulate recreational equipment, including amusement rides and their performance, and recreational equipment is exempt from accessibility provisions. *See* Minnesota Rules, part 1341.0011, subpart 3 (Scoping requirements). Therefore, it is reasonable to delete this section because the State Building Code does not regulate amusement rides.

G. Section 305.8.16, Addition of pedestrian route. A section is added to require an accessible route be provided where a pedestrian route is added. This is necessary to ensure any new route of travel in an existing building is accessible. This requirement is consistent with the requirement located in existing part 1341.0011, subpart 12, item H, and contains no substantive changes to the existing requirements for accessible routes.

H. Section 305.8.17, Assembly areas. Three sections are added to address requirements for wheelchair seating and performance areas in assembly areas undergoing alterations where full compliance with accessibility requirements is technically infeasible. This amendment is reasonable because it provides alternative methods of compliance. The requirements in this subitem are consistent with existing requirements located in existing part 1341.0011, subpart 12, item H, for seating and performance in existing assembly areas undergoing alterations. No substantive changes are made to the existing requirements for wheelchair seating and accessible routes to performance areas.

I. Section 305.8.18, Check-out aisles. Section 305.8.18 is added to require existing check-out aisles undergoing alteration be made accessible until the number required for new check-out aisles found in IBC section 1109.12.2 is reached. This is reasonable to ensure that accessible check-out aisles are provided where check-out aisles are undergoing remodeling. This requirement is consistent with the existing requirements located in part 1341.0011, subpart 12, item H, for the alteration of check-out aisles. This subitem makes no substantive changes to the existing Accessibility Code requirements for the alternation of check-out aisles.

J. Section 305.8.19, Parking restriping. Section

305.8.19 is added to address changes and alterations made to parking lots. This requirement is consistent with the existing requirement located in part 1341.0011, subpart 12, item H, and makes no substantive changes to the existing requirements for parking restriping.

1341.0406 A117.1 SECTION 406, CURB RAMPS AND BLENDED TRANSITIONS.

Section 406.15 is added to provide design criteria for accessible parallel curb ramps. The current Accessibility Code provides design criteria for curb ramps, but does not provide any guidance for the design of parallel curb ramps. Parallel curb ramps have been installed in Minnesota; however, the design and dimensions of the parallel curb ramps are inconsistent because uniform criteria is not provided in the Minnesota State Building Code. The 2017 edition of the ICC A117.1 now contains design criteria for parallel curb ramps and the proposed amendment uses the criteria of that document to ensure that parallel curb ramps are accessible. This amendment is necessary for uniform application and enforcement of design criteria for parallel curb ramps so they are accessible to everyone.

The Department does not propose incorporating by reference the entirety of the 2017 edition of the ICC A117.1 at this time. The 2018 editions of IBC and IEBC reference the 2009 edition of the ICC A117.1. The 2017 edition of the ICC A117.1 has significant changes from the 2009 edition that may conflict with provisions of the 2018 editions of the IBC and IEBC. Therefore, the Department has decided not to incorporate by reference the entirety of the 2017 edition of the ICC A117.1, and instead is modifying the 2009 edition to include provisions of the 2017 edition of the ICC A117.1 standard as necessary to improve accessibility.

1341.0904 A117.1 SECTION 904, SALES AND SERVICE COUNTERS

Section 904 of the 2009 A117.1 standard is modified to clarify criteria for sales and service counters and windows. The proposed changes are based on the 2017 edition of the A117.1 standard and provide more design flexibility for the height and length of accessible sales and service counters and windows and clarifies that accessibility requirements apply only to the public use side of the counter. A section is added to address accessibility for sales and services counters with vertical barriers and to permit vertical barriers of greater heights where security glazing is necessary. This is reasonable so vertical barriers are accessible but service or counter window staff are still protected in buildings where it is necessary. Additionally, the requirements for parallel and forward approach are modified to require a minimum 12 inches of space between the accessible counter and any projecting objects above so that projecting objects do not impede access to the counter. The proposed modifications are reasonable as they permit flexibility in the design of sales and service counters while improving accessibility.

The 2017 edition of the ICC A117.1 contains similar design criteria for sales and service counters. However, the Department does not propose incorporating by reference the entirety of the 2017 edition of the ICC A117.1 at this time. The 2018 editions of IBC and IEBC reference the 2009 edition of the ICC A117.1. The 2017 edition of the ICC A117.1 has significant changes from the 2009 edition that may conflict with provisions of the 2018 editions of the IBC and IEBC. Therefore, the Department has decided not to incorporate by reference the entirety of the 2017 edition of the ICC A117.1, and instead is modifying the 2009 edition to include provisions of the 2017 edition of the ICC A117.1 as necessary to improve accessibility.

1341.1002 A117.1 SECTION 1002, ACCESSIBLE UNITS.

Section 1002.15 of the ICC A117.1-2009 standard is modified to add a section requiring a facility with an accessible dwelling or sleeping unit to provide at least one bed that is between 17 inches and 23 inches from the floor to the top of the mattress. Many lodging facilities, such as hotels, have beds of greater height that are difficult for person in mobility devices to access. It is reasonable to require an accessible unit to have a bed that is accessible to persons in mobility devices.

The 2017 edition of the ICC A117.1 contains similar requirements for beds in accessible units. However, the Department does not propose incorporating by reference the entirety of the 2017 edition of the ICC A117.1 at this time. The 2018 editions of IBC and IEBC reference the 2009 edition of the ICC A117.1. The 2017 edition of the ICC A117.1 has significant changes from the 2009 edition that may conflict with provisions of the 2018 editions of the IBC and IEBC. Therefore, the Department has decided not to incorporate by reference the entirety of the 2017 edition of the ICC A117.1, and instead is modifying the 2009 edition to include provisions of the 2017 edition of the ICC A117.1 as necessary to improve accessibility.

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MINNESOTA MECHANICAL and FUEL GAS CODE

WITH ANSI/ASHRAE STANDARD 62.2-2016 and ANSI/ASHRAE STANDARD 154-2016

ASHRAE

ICC INTERNATIONAL CODE COUNCIL

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Adoption of the International Mechanical and Fuel Gas Codes, Minnesota Rules, Chapter 1346; Revisor's ID Number R-04515

INTRODUCTION

The Commissioner of the Department of Labor and Industry ("Commissioner") proposes to amend rules governing the Minnesota Mechanical and Fuel Gas Codes, Minnesota Rules, chapter 1346, within the Minnesota State Building Code.

The Minnesota State Building Code consists of twenty-two separate chapters of Minnesota Rules.[43] Chapter 1346 incorporates by reference the International Mechanical Code ("IMC"), with amendments, and the International Fuel Gas Code ("IFGC"), with amendments, for use in Minnesota. The current chapter 1346 incorporates by reference, with amendments, the 2012 editions of the IMC and IFGC. The proposed rules incorporate by reference, with amendments, the 2018 editions of the IMC and IFGC.

The International Code Council ("ICC") publishes the IMC and IFGC. The ICC is an association that develops several model construction codes "used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures."[44] These model codes are used throughout the nation. The IMC regulates the design, installation, maintenance, alteration, and inspection of mechanical systems that are permanently installed and provide control of environmental conditions within a building. The IFGC regulates the design and installation of fuel-gas piping systems, fuel gas appliances, gaseous hydrogen systems and related accessories.

Minnesota Statutes, section 326B.106, subdivision 1, requires the Department to consult with the Construction Codes Advisory Council ("CCAC") in adopting amendments to the Minnesota State Building Code. In consultation with the CCAC, the Department of Labor and Industry ("Department") utilized a Technical Advisory Group ("TAG") to review existing rule chapter 1346 and the 2018 editions of the IMC and IFGC to propose necessary and reasonable changes to the mechanical and fuel gas provisions in chapter 1346. The CCAC reviewed the TAG committee's report. This consultation is discussed in detail on page 3 of this Statement of Need And Reasonableness.

[43] A complete list of the chapters making up the Minnesota State Building Code can be found at Minnesota Rules, part 1300.0050 (2018).
[44] *See* https://www.iccsafe.org/about/who-we-are/

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 1346
MINNESOTA MECHANICAL AND FUEL GAS CODE with
ANSI/ASHRAE Standards 62.2-2016 and 154-2016

NOTE.

Many code sections in the 2012 IMC have been renumbered in the 2018 IMC so the rule is amended to reflect these renumbered sections where applicable. Throughout the rule, grammatical changes are made to clarify the requirements. This includes modifying numeric formats to provide clarity to the user. The term "modify" (and its derivations) is generally used to describe the changes to the IMC by the rules; and "amend" (and its derivations) is generally used to refer to the rules or changes to the current rules.

1346.0050 TITLE; INCORPORATION BY REFERENCE.

The proposed rule amendment changes the rule range from 1346.0050 to 1346.1606 because sections 1346.1503 through 1346.1606 are part of the Minnesota Mechanical Code but is incorrectly not included in the current rule. The language replaced prior language through Revisor edit. It is necessary and reasonable to amend the rule to reflect the accurate rule part range that includes the entire Minnesota Mechanical Code.

The proposed rule amendment incorporates by reference the 2018 edition of the IMC to replace the 2012 edition, incorporates by reference the 2017 edition of the NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations ("NFPA 96") to replace the 2012 edition, newly incorporates by reference the 2016 edition of ANSI/ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings ("ASHRAE 62.2") and newly incorporates by reference chapters 1 through 9 of the 2016 edition of ANSI/ASHRAE 154 Ventilation for Commercial Cooking Operations ("ASHRAE 154").[45] ASHRAE 62.2 is an acceptable alternative to the ventilation requirements for residential dwellings located in Minnesota Rules, chapter 1322, Residential Energy Code. *See* part 1346.0401 below for a full explanation of this change and statement of why it is necessary and reasonable. The IMC contains requirements for ventilation of commercial cooking operations but these provisions conflict with the provisions of NFPA 96, resulting in confusion for designers, building officials, and fire safety officials. As a result, the proposed amendments to this chapter replace the IMC requirements for commercial kitchens with the requirements in ASHRAE 154. The 2011 edition of ASHRAE 154 is included as a supplemental standard in the existing Minnesota Rules, part 1346.1500. The requirements in ASHRAE 154 are consistent with the requirements of NFPA 96.

ASHRAE 154 is the product of scientific research conducted by ASHRAE, the leading organization on commercial kitchen ventilation research and standards development. ASHRAE 154 provides a more comprehensive set of standards for commercial kitchen ventilation than the IMC. Design professionals use ASHRAE 154 to design commercial kitchen ventilation systems, which includes the design for ducts serving Type II hoods. Because ASHRAE 154 is an industry recognized standard with comprehensive requirements for ducts serving Type II hoods, it is reasonable to require ducts to comply with ASHRAE 154.

Both ASHRAE 154 and NFPA 96 address hood vents in food service establishments however there are some complementary differences. For example, ASHRAE 154 covers both Type I and Type II hoods while NFPA 96 covers only Type I hoods. NFPA 96 has some fire suppression standards that are not included in ASHRAE 154. Therefore, while there is some overlap between the two standards, they really complement each other to provide clear, comprehensive standards for hoods and ducts in food service establishments. *See* parts 1346.0506, 1346.0507, and 1346.0508 below for a full explanation of this change and why it is necessary and reasonable.

1346.0202 GENERAL DEFINITIONS.

[45] "ANSI" is the abbreviation for the American National Standards Institute, the institute that "oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector." *See* https://www.ansi.org/about_ansi/overview/overview?menuid=1. "ASHRAE" is the abbreviation for the American Society of Heating, Refrigerating and Air-Conditioning Engineers, an organization whose mission is to "advance the arts and sciences of heating, ventilating, air conditioning and refrigerating to serve humanity and promote a sustainable world." *See* https://www.ashrae.org/about.

Commercial cooking appliance. The proposed rule amendment replaces the definition for "commercial cooking appliance" in the 2018 IMC with the definition in ASHRAE 154. The modification clarifies commercial cooking appliances are appliances used in a food-service-establishment kitchen and appliances intended for residential use are considered commercial appliances when installed in a commercial food-service-establishment. These modifications are necessary to clarify any cooking appliance used in a food-service-establishment kitchen is a commercial cooking appliance and must be ventilated as such.

Ready access (to). The definition for "ready access (to)" is being deleted because the term is defined in the 2018 IMC. The definition in the Minnesota amendment defines "ready access (to)" as "without requiring the use of portable access equipment," meaning that equipment or appliances attached to the ceiling and requiring the use of ladders or lifts to access are not considered equipment or appliance a person has "ready access (to)." The Minnesota amendment conflicts with other sections of the code that consider appliances or equipment requiring ladders or lifts to reach as appliances and equipment a person has "ready access (to)."As a result, the definition for "ready access (to)" in the rule part conflicts with other sections of the code. It is reasonable to delete the current definition of "ready access (to)" from subpart 1 and use the definition in the IMC to provide consistency.

1346.0303 SECTION 303 EQUIPMENT AND APPLIANCE LOCATION.

Section 303.8. Section 303.8 does not allow mechanical systems to be located in an elevator shaft. The proposed rule deletes section 303.8 for consistency with Minnesota Rules, chapter 1307, the Minnesota Elevator Code. Section 303.8 conflicts with the provisions of ASME A17.1/CSA B44-2010, Safety Code for Elevators and Escalators ("ASME A17.1/CSA B44-2010") as incorporated by reference in Minnesota Rules, chapter 1307.[46] ASME A17.1/CSA B44-2010 permits mechanical equipment, specifically air conditioning equipment, in the elevator shaft in order to cool elevator components and machinery. In a separate rulemaking, Minnesota Rules, chapter 1305, the Minnesota Building Code, is being amended to permit mechanical equipment in the elevator shafts in order to heat or cool the equipment within the elevator shaft.[47] The proposed deletion of section 303.8 is necessary for consistency with other chapters of the Minnesota State Building Code and for the cooling or heating of elevator components and machinery so they function safely and correctly.

1346.0306 SECTION 306, ACCESS AND SERVICE SPACE.

Subpart. 1. Section 306.5, Mechanical equipment and appliances on roofs or elevated structures. The proposed rule renumbers subsection 306.5.1 Permanent ladders to subsection 306.5.3 for consistency with numbering in the 2018 IMC.

Subsection 306.5.3 Sloped roofs has been renumbered to 306.5.1 for consistency with numbering in the 2018 IMC.

All subpart numbering is deleted because the modified subsections in the subparts fall under the umbrella created in subpart 1 where section 306.5 is amended, which includes all 306.5 subsections.

1346.0307 SECTION 307, CONDENSATE DISPOSAL.

The proposed rule adds this new rule part to delete section 307.3 to permit the equipment and appliance to continue to operate in the event their condensate pump fails. IMC section 307.3 requires that equipment and appliances turn off if the condensate pump fails. In Minnesota, the equipment and appliance are necessary to control and maintain the temperature within the building. If the equipment and appliance are prevented from operating, then the temperature within the building can drop below freezing during the winter months. Equipment, appliances, and systems can be damaged by freezing temperatures within the building. For example, the water distribution system could fail from low temperatures and consequently require extensive repairs with large costs. The damage to freezing equipment, appliances, and systems can be more extensive and costly than the damage caused by equipment and appliances continuing to operate when the condensate pump fails. If equipment and appliances continue to operate when the condensate pump fails, condensation can gather and potentially cause some

[46] *See* Minn. R. 1307.0020. Chapter 1307 is currently undergoing rulemaking. The proposed rule updates the reference to ASME A17.1/CSA B44-2010 to ASME A17.1/CSA B44-2016. The 2016 edition also permits mechanical equipment in the elevator shaft.

[47] *See* 1305 rulemaking docket. Specifically, proposed rule part 1305.3302, subpart 4 amends IBC section 3002.9.2 to read: "Mechanical systems and mechanical components in hoistways shall be limited to those serving the hoistway. Mechanical systems serving the hoistway shall not serve other portions of the building." The term "hoistway" means elevator shaft.

water to pool but the building temperature will not fall below freezing. It is reasonable to delete section 307.3 because it is necessary for buildings to be heated during the winter months to prevent damage to building equipment, appliances, and systems.

1346.0313 SECTION 313, CARBON MONOXIDE ALARMS.

Section 313.1, General The proposed rule modifies the 2018 IMC by adding section 313 to require carbon monoxide alarms in new and existing rooms containing fuel-burning appliances, such as furnaces and boilers, that are used to control environmental conditions. A malfunctioning or poorly-vented fuel-burning appliance can elevate carbon monoxide levels in a room to hazardous levels. Prolonged exposure to carbon monoxide can result in permanent heart and brain damage, and possibly death. Technicians servicing fuel-burning appliances are at particular risk of carbon monoxide poisoning due to the time they spend in enclosed spaces with the fuel-burning appliance. Requiring carbon monoxide alarms in rooms containing fuel burning appliances that control environmental conditions is a cost-effective safety measure that alerts technicians and building occupants to unsafe levels of carbon monoxide in a room with fuel-burning appliances.

The two exceptions to section 313.1 are for boilers that are regulated by Minnesota Rules, chapter 5225, and for fuel-burning appliances that are located in residential buildings and regulated by Minnesota Rules, chapter 1309, the International Residential Code. Chapter 5225 regulates boilers of a greater capacity than those regulated by this chapter. As result, boilers regulated by chapter 5225 are inspected by different inspectors than those who enforce chapter 1346 and the boilers are regulated under their own statutes and standards. Minnesota Rules, chapter 1309, contains requirements for carbon monoxide alarms for residential dwellings, and therefore residential dwellings are exempt from this section.

Section 313.2, Carbon monoxide alarms. This section is added to specify that carbon monoxide alarms subject to 313.1 must comply with the requirements described in sections 313.2.1 through 313.2.1.4 as described below.

Section 313.2.1 Power Source. Section 313.2.1 requires the carbon monoxide alarms installed in rooms of new buildings containing the fuel-burning appliance to receive their power from the building wiring and to be equipped with a battery as a back-up power source. Specifically, the rule refers to "commercial source" and "commercial power." "Commercial source" and "commercial power" simply means power provided to a building by a public utility (e.g., Xcel Energy, CenterPoint Energy, etc.). This is consistent with the power source requirements for carbon monoxide detectors located in section 915 of the International Building Code ("IBC").[48] It is reasonable to require carbon monoxide alarms to receive their power from the building's wiring when they are installed in new rooms with fuel-burning appliances when possible because that is the most reliable power source. When a building is new construction, it is easy and cost-effective to plan for this wiring from the beginning or to add this during construction as the wiring is already exposed, allowing for easy installation of hard-wired carbon monoxide alarms. Requiring a battery backup power source is an inexpensive way to ensure the carbon monoxide alarm always has power.

The exceptions to section 313.2.1 permit the use of battery-powered carbon monoxide alarms in buildings without commercial power and existing rooms that contain a fuel-burning appliance. It is reasonable to exempt buildings without a commercial power source from the requirement because the building does not have wiring to provide power to the carbon monoxide alarm. Adding wiring and commercial power service could cost thousands of dollars and would be unduly burdensome. It is also reasonable to allow battery-powered carbon monoxide alarms in existing buildings because hard wiring carbon monoxide alarms can cost several hundred dollars due to the electrical work required to access the wiring in the walls. The added expense to install wiring in an existing building shifts the cost-benefit analysis as compared to a new room. Without a battery-powered option for existing rooms, the cost of wiring an existing room might deter people from complying with this requirement and result in no carbon monoxide alarm at all. Battery-powered carbon monoxide alarms are a cost-effective means of alerting building occupants to the presence of dangerous levels of carbon monoxide. The first exception is consistent with the IBC, which allows for battery-powered carbon monoxide alarms when a commercial energy source is not available. The second exception is consistent with the International Existing Building Code ("IEBC") and the International Fire Code ("IFC") that allow carbon monoxide alarms that are solely battery operated in existing rooms. Both the IEBC and the IFC are incorporated by reference into Minnesota rules.[49] It is necessary and reasonable to have consistent

[48] The IBC is adopted, with amendments, in Minnesota and is chapter 1305 of the Minnesota State Building Code.

[49] *See* Minnesota Rules, chapter 1311 for the IEBC, as amended in Minnesota, and chapter 7511 for the IFC, as amended in Minnesota.

requirements for similar circumstances across the various chapters of the Minnesota State Building Code.

Section 313.2.1.2, Listings. This section requires carbon monoxide alarms to be listed in accordance with UL 2034, Standard for Single and Multiple Station Carbon Monoxide Alarms ("UL 2034"). A UL-listed device is one that UL has tested and determined meets specific safety requirements.[50] It is reasonable to require the carbon monoxide alarm device to meet a commonly-used life safety standard to ensure it was designed properly and meets industry-accepted benchmarks. Other ICC codes that are incorporated by reference into the Minnesota State Building Code require carbon monoxide alarms to be listed in accordance with UL.[51]

Section 313.2.1.3, Carbon monoxide alarms. This section permits the use of combination devices that are both a carbon monoxide alarm and smoke alarm in place of single device carbon monoxide alarms. The combination carbon monoxide and smoke alarm must be listed in accordance with UL 2034 and UL 217 Standard for Smoke Alarms. Again, other ICC codes incorporated by reference into the Minnesota State Building Code require combination carbon monoxide and smoke alarms to be listed in accordance with UL. Combination carbon monoxide and smoke alarms perform the same function as carbon monoxide alarms but also provides fire safety without additional wiring or visual clutter. Therefore, combination alarms are a reasonable, acceptable alternative to alarms that alert building occupants only to the presence of abnormal levels of carbon monoxide.

Section 313.2.1.4, Carbon monoxide detection systems. This section permits the use of a carbon monoxide detection system in place of a carbon monoxide alarm. A carbon monoxide detection system consists of separate devices that are interconnected and alerts a central monitoring station of the presence of abnormal levels of carbon monoxide in any part of the building where the devices are placed. The carbon monoxide detection system must comply with NFPA 720 – Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment, and be listed in accordance with UL 2075. NFPA 720 and UL 2075 are commonly-used life-safety standards for carbon monoxide detection systems. Carbon monoxide detection systems are significantly more expensive than carbon monoxide alarms because they have a notification component that notifies a person at a continuously occupied location. Carbon monoxide detection systems are not reasonably necessary in most cases. Therefore, it is reasonable to permit the use of carbon monoxide detection systems and not require them where alarms are sufficient. It is necessary and reasonable to allow a carbon monoxide detection system in lieu of an alarm because it provides the same protection as an alarm but has added benefits such as the interconnected alert system.

1346.0401 SECTION 401, GENERAL.

Subpart 1. Section 401.2. IMC section 401.2, Ventilation required, is amended to read as follows:

401.2 Ventilation required. Every occupied space other than residential buildings constructed in accordance with the IRC and ~~dwelling units~~ Group R-2, R-3, and R-4 occupancies three stories and less in height shall be ventilated by natural means in accordance with section 402 or by mechanical ventilation in accordance with section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with section 407.

~~**Exception:**~~ **401.2.1 Ventilation in IRC buildings.** Ventilation in ~~dwelling units and residential~~ buildings constructed in accordance with the IRC shall comply with ~~ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings or~~ Minnesota Rules, chapter 1322.

401.2.2 Ventilation in Group R-2, R-3, and R-4 occupancies three stories and less in height. Ventilation in Group R-2, R-3, and R-4 occupancies three stories and less in height shall be provided with a balanced ventilation system and shall comply with the fan efficacy requirements located in Minnesota Rules, chapter 1322, and the ventilation requirements in (1) Minnesota Rules, chapter 1322, or (2) ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings.

401.2.3 Ventilation in Group R-2, R-3, and R-4 occupancies more than three stories in height. Ventilation in group R-2, R-3, and R-4 occupancies more than three stories in height above grade plane shall comply with ventilation requirements of section 402, section 403, or ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings.

Statement of Need and Reasonableness for this Amendment to the Proposed Rule:

[50] UL is a "global independent safety science company with more than a century of expertise innovating safety solutions from the public adoption of electricity to new breakthroughs in sustainability, renewable energy and nanotechnology." https://standardscatalog.ul.com/standards/en/standard_2034

[51] *See* Minnesota rules, chapters 1305 (IBC) and 1309 (IRC).

Based on comments and requests for hearing received during the comment period, it became evident further clarification was necessary and the industry desired a modification to this part.

Clarification. The modifications to this rule part are necessary to clarify the ventilation requirements for different types of residential buildings. Chapter 1 of the IMC excludes "[d]etached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures" from the IMC. Because our administration chapter is Minn. R. chapter 1300, which does not exclude one- and two-family dwellings and townhouses not more than three stories high, we need to specifically exclude those residential buildings and clarify requirements for them in the rule part. The initial proposed rule attempted to do that however the term "residential building" is not defined in the International Mechanical Code ("IMC") and does not clearly describe the buildings exempt from the ventilation requirements of sections 402 and 403. The modifications eliminate the "exception" and organize the various residential building requirements into subsections. The reorganization breaks down ventilation requirements for three types of "residential buildings." They are:

1. (401.2.1) buildings constructed in accordance with the International Residential Code ("IRC") (one- and two-family dwellings and townhouses);
2. (401.2.2) Group R-2 (apartment buildings and congregate living facilities with more than 16 occupants), R-3 (congregate living facilities with 16 or fewer occupants), and R-4 occupancies (care facilities) three stories and less in height; and
3. (401.2.3) Group R-2, R-3, and R-4 occupancies more than three stories in height.

The distinction between the occupancies that are three stories and less and more than three stories in height (items 2 and 3 above) is one made in the IMC.

Modification: Subsection 401.2.1. Under the modification, ventilation requirements for buildings constructed in accordance with the IRC (one- and two-family dwellings and townhouses) revert back to the current code. That is, they are required to comply with the existing requirements for mechanical ventilation in Minnesota Rules, chapter 1322, and are not permitted to comply with ASHRAE 62.2 Ventilation and Acceptable Indoor Air Quality in Residential Buildings ("ASHRAE 62.2"). The comments and requests for hearing submitted to the Department indicate strong and widespread industry preference for the requirements of chapter 1322 and rejection of ASHRAE 62.2 for this type of building. The mechanical ventilation requirements of chapter 1322 were developed for buildings constructed in accordance with IRC (one- and two-family dwellings and townhouses), and for larger dwelling units in Group R-2, R-3, and R-4 occupancies three stories and less in height. The mechanical ventilation requirements in chapter 1322, like the IRC, are more prescriptive and intended for use by those with less technical expertise. ASHRAE 62.2 is a technical, performance-based standard that allows additional design flexibility. That additional flexibility is obtained through additional testing of the building's air leakage rates and design time. Commenters expressed concern that ASHRAE 62.2 does not provide adequate standards for one- and two-family dwellings and townhouses and opined it is not as cost-effective as chapter 1322 due to the additional testing and design time costs.

A builder with enough expertise in the design of mechanical ventilation systems may propose a system designed in accordance with ASHRAE 62.2 as an alternative material, design, or method of construction subject to individual approval. The building official may approve or deny that proposal. *See* Minnesota Rules, part 1300.0110, subpart 13. It is unlikely that builders will utilize ASHRAE 62.2 as an alternative to the prescriptive requirements in chapter 1322 for one- and two-family dwellings and townhouses. It is necessary and reasonable to allow only chapter 1322 compliance for IRC buildings because chapter 1322 was developed for that type of building and buildings complying with ASHRAE 62.2 should be subject to individual review and approval given the performance-based aspect of that standard to ensure adequate ventilation.

Clarification: Subsection 401.2.2. The modifications do not change the ventilation requirements in Group R-2, R-3, or R-4 occupancies three stories and less in height as they are still permitted to comply with the ventilation requirements of Minnesota Rules, chapter 1322, or those in ASHRAE 62.2 as proposed. This is a format modification and not a substantive modification.

The rule is further modified to clarify that the ventilation systems in Group R-2, R-3, and R-4 occupancies three stories and less in height must be balanced and comply with the fan efficacy requirements in chapter 1322. The comments received by the Department revealed a misunderstanding that because ASHRAE 62.2 does not require ventilation systems to be balanced and does not include fan efficacy requirements, that under ASHRAE 62.2 the systems would not be balanced and there would be no fan efficacy requirements. However, existing part 1346.0309 adds a general regulation to the

mechanical code to require all mechanical ventilation systems to be balanced; therefore a mechanical ventilation system designed in accordance with ASHRAE 62.2, as incorporated by reference in chapter 1346, must be balanced. The language is modified to reiterate the requirement located in the general regulations and to eliminate confusion regarding code requirements. ASHRAE 62.2 does not include fan efficacy requirements and chapter 1322 does so the rule is modified to direct code users to chapter 1322 for fan efficacy requirements if fans are used as part of the mechanical ventilation system.

Modification: Subsection 401.2.3. Lastly, the modifications allow ventilation in Group R-2, R-3, and R-4 occupancies that are more than three stories in height to comply with the ventilation requirements in the IMC or ASHRAE 62.2. The 2018 IMC and ASHRAE 62.2 mechanical ventilation requirements as applied are similar for Group R-2, R-3, and R-4 occupancies more than three stories in height. Because of the similarities in requirements and application, upon further consideration, ASHRAE 62.2 is added as a compliance option for these residential buildings.

These modifications do not result in a substantially different rule because the modifications are within the scope of the matter announced in the notice of intent to adopt the proposed rule, which includes ventilation requirements for buildings used for residential purposes. The modifications clarify what was meant by "residential buildings" and more accurately reflect the industry-accepted standards for the different types of residential buildings.

Subp. 2. Section 401.4, Intake opening location. The proposed rule amendment corrects the reference to "501.2.1" by replacing it with a reference to "501.3.1." There is no section 501.2.1 in the 2012 IMC, the current Minnesota Mechanical Code or the 2018 IMC. This is a typo. The correct reference is section 501.3.1. Section 501.3.1 is not amended in chapter 1346 currently or in the proposed rule. There is no substantive change. The proposed rule is necessary and reasonable as it corrects a typo.

1346.0403 SECTION 403 MECHANICAL VENTILATION.

Subpart 1. **Section 403.1, Ventilation system.** IMC section 403.1 is amended to read as follows:

403.1 Ventilation system. Mechanical ventilation shall be provided by a method of supply air and return or exhaust air. 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.

Subpart 2. **Section 403.3 Outdoor air and local exhaust airflow rates.** IMC section 403.3 is amended to read as follows:

403.3 Outdoor air and local exhaust airflow rates. Group R-2, R-3, and R-4 occupancies three stories and less in height above grade plane shall be provided with outdoor air and local exhaust in accordance with Section 401.2.2. Other buildings intended to be occupied shall be provided with outdoor air and local exhaust in accordance with Section 403.3.1.

Subpart 3. **Sections 403.3.2 to 403.3.2.5.** IMC sections 403.3.2 to 403.3.2.5 are deleted in their entirety.

Statement of Need and Reasonableness for this Amendment to the Proposed Rule:

Modification: 403.1. These modifications to IMC section 403 are necessary to coordinate with the modifications to IMC section 401 above. The modification removes IMC language that addresses mechanical ventilation requirements for Group R-2, R-3, and R-4 occupancies three stories and less in height. The proposed rule already provides ventilation requirements for Group R-2, R-3, and R-4 occupancies three stories and less in section 401. The modifications to parts 1346.0401 and 1346.0403 are necessary to eliminate conflicting requirements and direct code users to either Minnesota Rules, chapter 1322, or ASHRAE 62.2 for mechanical ventilation requirements for Group R-2, R-3, and R-4 occupancies three stories and less in height.

Modification: Section 403.3. Subpart 2 modifies section 403.3 to replace the reference to section 403.3.2 with a reference to section 401.2.2 for mechanical ventilation requirements for Group R-2, R-3, and R-4 occupancies three stories and less in height. This amendment is necessary because section 403.3.2 and its subsections are being deleted because they conflict with the existing mechanical ventilation requirements in Minnesota Rules, chapter 1322.

Modification: Subsections 403.3.2 to 403.3.2.5. Subpart 3 deletes subsections 403.3.2 to 403.3.2.5 because these subsections permit Group R-2, R-3, and R-4 occupancies three stories and less in height to be ventilated by a supply system, exhaust system, or a combination of the two systems. Those ventilations systems conflict with Minnesota Rules, chapter 1322, which requires these buildings to have balanced ventilation systems. The modifications to part 1346.0401 include ventilation

requirements for Group R-2, R-3, and R-4 occupancies three stories and less in height that do not conflict with existing requirements in other chapters of the Minnesota State Building Code.

1346.0404 SECTION 404, GARAGES.

Subpart 1. Section 404.1, Enclosed parking garages. The proposed rule amendment clarifies that this regulation applies to enclosed parking garages. The proposed rule amendment also requires all enclosed parking garages to be equipped with both a carbon monoxide detection device and a nitrogen dioxide detection device. The current rule describes conditions that, if met, triggers the requirement to have a carbon monoxide detector and/or a nitrogen dioxide detection device that will activate the ventilation system. Gas-powered vehicles emit both carbon monoxide and nitrogen dioxides gases, which are hazardous to human life and safety in high concentrations. All enclosed parking garages will accommodate gas-powered vehicles thereby requiring both a carbon monoxide detector and nitrogen dioxide detector. Even if some vehicles using enclosed parking garages will be electric, the number of gas-powered vehicles far surpass the number of electric vehicles. Therefore, it is reasonable to amend this subpart to require ventilation systems in enclosed parking garages to activate upon detection of abnormally high concentrations of either or both gases.

The subpart is also amended to include UL listing and installation requirements for carbon monoxide detection devices and nitrogen dioxide devices. These requirements correspond with the listing and installation requirements in the 2018 IMC. It is reasonable to require the carbon monoxide detection devices and nitrogen dioxide devices to meet a commonly-used life safety standard to ensure they are properly designed for the intended function.

Subp. 2. Section 404.2, Occupied spaces accessory to public garages. The proposed rule amendment is renumbered to subpart 3 because the section pertaining to this subject was renumbered in the 2018 IBC. The section reference number “403.3” is renumbered to “403.3.1” because the corresponding section reference number was changed in the 2018 IMC. Otherwise, the language remains unchanged.

Subp. 3. Section 404.3, Minimum exhaust. The proposed amendment is renumbered to subpart 2 because of renumbering and reformatting changes to the 2018 IMC. The language is modified to add “served” following “floor area” to clarify the requirements are referring to the floor area served by the mechanical ventilation system.

1346.0501 Section 501, GENERAL

Subp. 2. Section 501.4 Pressure equalization. The proposed rule amends subpart 2 by deleting “IMC” before “Table 501.4.1,” “Table 501.4.2,” and “section 501.4.2” because these tables and sections are not part of the 2018 IMC but rather are added by Minnesota Rules, chapter 1346. Referring to these tables as “IMC tables” and “IMC section” has caused confusion with code users who are uncertain as to whether the tables are modified IMC tables or completely added by Minnesota rule amendment. The proposed elimination of “IMC” before these references will clarify to code users that the tables are not original to the IMC. For the same reason, Section 501.4.1 is modified to remove “IMC” before a reference to “section 501.4.2” because there is no section 501.4.2 in the original 2018 IMC.

The proposed rule further amends subpart 2 by replacing the phrases “dwelling unit” and “dwelling units” with “dwelling” and “dwellings,” respectively, in sections 501.4.1 and 501.4.3 and tables 501.4.1, 501.4.2, 501.4.3(1), 501.4.3(2), and 501.4.3(3). Section 202 of the 2018 IMC defines the term “dwelling” as “a building or portion thereof that contains not more than two dwelling units.” For example, one- or two-family homes. "Dwelling unit" is defined as “a single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.” Examples of dwelling units include individual apartment units and individual condominium units. Prior to the adoption of the 2012 IMC, Section 501.4 applied only to one- and two-family homes. During the adoption of the 2012 IMC, this subpart was amended to apply to apartments and condominiums (a.k.a. dwelling units).

The application of Section 501.4 and its subsections to apartments and condominiums (dwelling units) resulted in unintended consequences. For example, using the Tables to determine makeup air for some dwelling unit arrangements meant some heating/cooling equipment could not be used because the equipment manufacturer’s specifications conflicted with the tables. In particular, this was an issue because of the increase in the number of small “efficiency” units being built. Some builders were able to use the heating/cooling equipment they preferred to use by getting it approved as an alternate method. One reason a builder would choose heating/cooling equipment that does not comply with the tables in dwelling units is because the equipment was not appropriate for that particular building and as a result, too much makeup air would be added to dwelling units, particularly to dwelling units equipped with electric appliances (e.g., electric dryers). This can result in an air pressure imbalance within the dwelling unit.

The other possible consequence of using heating/cooling equipment compliant with the tables in dwelling units is more expensive equipment. That is, the air pressure within the dwelling unit is fine but came at a higher cost than if other equipment was used that did not comply with the tables. Because the current code was either not used when applied to dwelling units and alternate methods were used instead or the more expensive option that complied with the tables was used, there is little concern that dwelling units were constructed with inappropriate equipment.

By amending this subpart so it no longer applies to apartments and condominiums (dwelling units), dwelling units will be treated like all other buildings as described in part 1346.0040, Scope. There are many considerations to take into account when determining makeup air for a dwelling unit including the size of the building containing the dwelling unit, the number of dwelling units, the size of the dwelling units, and the appliances within the dwelling units. The size of dwelling units can range from small 350 square foot apartments to condominiums over 5,000 square feet in size. Buildings often contain dwelling units of different sizes as well. For example, an apartment building can contain units that are between 350 square feet to over 1,000 square feet. The dwelling unit can contain all vented combustion appliances, no vented combustion appliances, or a combination of vented combustion appliances and electric appliances. Because of these factors, it is difficult to use prescriptive requirements, such as the tables, or methods to determine makeup air for dwelling units. The Minnesota Mechanical Code addresses all these issues. The application of Section 501.4 to dwelling units can result in too much or too little makeup air in dwelling units.

The proposed amendment deletes the exception to subsection 501.4.1. The exception to section 501.4.1 permits makeup air for new dwellings to be determined using a test in accordance with ASTM Standard E1998-02, Standard Guide for Assessing Depressurization-Induced Backdrafting and Spillage from Vented Combustion Appliances or a test approved by the building official. The exception applies only to arrangements with vented combustion appliances and should not be used to determine makeup air for arrangements with only electric appliances or both vented combustion appliances and electric appliances. This has caused confusion about whether the exception applies when both types of appliances are present. Applying the exception incorrectly (e.g., to dwelling units with both vented combustion appliances and electric appliances) is costly. The cost of incorrect application could mean changing the heating/cooling equipment to meet the criteria in the tables. Deleting the exception and the change from "dwelling units" to "dwellings" means combustion air for new dwellings must be determined using Table 501.4.1. Table 501.4.1 has a column that can be used to determine makeup air for dwellings with both types of appliances.[52] The proposed deletion of the exception to Section 501.4.1 is necessary and reasonable because it caused more confusion than the good it offered.

1346.0505 SECTION 505, DOMESTIC KITCHEN EXHAUST APPLIANCES.

This rule part is amended by renumbering section number "505.1" to "505.2" and deleting the existing rule language. The existing rule language is replaced with the 2018 IMC section 505.2 language with an added item, item number 5. Item number 5 is added to the 2018 IMC language to direct the code user to other rule parts to clarify the requirements for make-up air and capacities for domestic kitchen exhaust hoods not covered in items 1-4. The deleted rule language is no longer necessary because it is addressed in section 505.3 of the 2018 IMC. This modification to section 505.2 is necessary and reasonable because all domestic kitchen exhaust hood types should be addressed and this clarifies where code users can find additional, existing requirements for this type of domestic cooking exhaust equipment.

1346.0506 SECTION 506, COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST EQUIPMENT.

This rule part is modified by replacing the word "appliances" in the title with the word "equipment" for consistency with the title of section 506 of the 2018 IMC.

Subpart 1. Section 506.3, Ducts serving Type I hoods. The current rule requires ducts serving Type I hoods to comply with NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations ("NFPA 96"). The proposed rule adds that the ducts must also comply with ASHRAE 154 Ventilation for Commercial Cooking Operations. The proposed rule is not a substantive change to the requirements for ducts serving Type I hoods because the existing rule already requires compliance with ASHRAE 154 in part 1346.0507, subp. 2. The proposed rule moves the two requirements into one section. It is easier for the code user to see and understand all the necessary requirements when they are in one section part as presented in this proposed amendment.

[52] See column titled "Multiple appliances that are atmospherically vented gas or oil appliances or solid fuel appliances."

NFPA 96 provides a more comprehensive set of standards for ducts serving Type I hoods and the ventilation of commercial kitchens. Type I hoods are placed above commercial cooking appliances that produce smoke and grease so ducts serving Type I hoods become grease laden. Grease has ignition potential so ducts serving Type I hoods must comply with NFPA 96 to ensure a minimum level of life-safety in commercial kitchens. Functionally, the proposed rule replaces IMC section 506.3 and all its subsections. There is a proposed amendment to part 1346.0507, subp. 2, below so this requirement will not be duplicated in both sections. Compliance with both NFPA 96 and ASHRAE 154 is necessary and reasonable because NFPA provides standards for hoods in general, particularly for fire safety precautions, and ASHRAE 154 provides standards for Type I and Type II hoods specifically as well as testing requirements.

Subp. 2. Section 506.4, Ducts serving Type II hoods. The current rule deletes sections 506.3.1 to 506.3.2.4 and replaces the requirements with chapters 1 to 10 and 12 to 15 of NFPA 96. Because the proposed rule, in subpart 1 above, already deletes sections 506.3.1 to 506.3.2.4, the current rule as written is no longer necessary. The proposed rule instead modifies section 506.4 of the 2018 IMC, ducts serving Type II hoods, by adding a reference to ASHRAE 154. ASHRAE 154 was written and coordinated with NFPA 96 to address the areas not covered in the NFPA 96. Although Type I hoods are covered in the NFPA 96, Type II hoods are not. ASHRAE 154 provides testing requirements of ductwork for Type II hood systems. It is necessary and reasonable to require Type II hoods to comply with the testing requirements in ASHRAE 154 to ensure the ductwork is installed and functioning correctly.

Section 506.4.1, Ducts. The Ducts section has been renumbered from 506.4.2 (*see* subpart 3 of the current rule) to section 506.4.1. The proposed rule modifies section 506.4.1 of the 2018 IMC to clarify that ducts subject to both positive pressure and conveying moisture-laden air are included and to require ducts meeting certain conditions to be tested. The 2018 IMC requires ducts "subject to positive pressure and ducts conveying moisture-laden air or waste-heat-laden air" to meet the requirements of section 506.4.1; however, ducts may be both subject to positive pressure and convey moisture laden air. The proposed rule clarifies that ducts subject to both positive pressure and that convey moisture laden air are subject to this requirement. The proposed rule also requires the ducts to be tested, as described in subsection 506.4.1.1. Specifically, testing will determine if there is any leakage in the ducts. It is necessary and reasonable to modify the code language to clarify that ducts that are both subject to positive pressure and conveying moisture-laden air must comply with the requirements of this section and to require testing of the ducts to ensure successful construction and installation.

Section 506.4.1.1, Testing. The proposed rule adds this subsection to explain the specific testing requirement referenced in section 506.4.1. Specifically, it requires duct leakage testing in accordance with ASHRAE 154 for duct conditions listed in section 506.4.1. Because of this amendment, subpart 3, "Requirements for existing duct leakage testing," is no longer necessary and is proposed for repeal. Type II hoods are placed above appliances, such as dishwashers and stoves, that produce heat and steam so duct-leakage testing is necessary to ensure the duct is air-tight to remove warm, moisture-laden air from the building.

This modification is necessary and reasonable to ensure uniform testing and enforcement of requirements for ducts serving Type II hoods. Furthermore, it is necessary and reasonable to require ducts serving Type II hoods to comply with ASHRAE 154 in addition to sections 506.4.1 and 506.4.2 to have comprehensive regulation from hood to termination. Specifically, ASHRAE 154 regulates the hood itself, section 506.4.1 provides testing criteria, and section 506.4.2 adds clarity about exhaust terminations.

Subp. 2a. Section 506.5, Exhaust equipment. The current rule deletes section 506.3.2.5. All section 506.3 (including subsections) modifications are addressed in subpart 1 above so the current rule is no longer necessary. The proposed rule amends subpart 2a to delete IMC section 506.5, including the subsections. Section 506.5 addresses exhaust equipment. The proposed rule requires exhaust equipment to be in compliance with NFPA 96 and ASHRAE 154. The proposed amendment is based on input from multiple code users that the current rule is difficult to follow. The proposed rule essentially maintains the same requirements in a clearer format. Rule 1346.0506, subpart 4, which is proposed for repeal below, deletes section 506.5. The proposed rule deletes the same section but relocates the deletion to subpart 2a and adds the explicit requirement to comply with NFPA 96 and ASHRAE 154. The current code requires compliance with NFPA 96 and ASHRAE 154 for exhaust equipment.[53] The current rule requirements are piecemeal from multiple sources: Minnesota Rules, ASHRAE 154, and NFPA 96. The proposed rule streamlines these requirements into a

[53] *See* parts 1346.0506 and 1346.0507, which require a Type I or Type II hood to be installed at or above all commercial cooking appliances in accordance with ASHRAE 154.

simple, streamlined rule that requires compliance with ASHRAE 154, NFPA 96, and Minnesota Rules. This streamlined approach is easy for code users to follow. Based on feedback from TAG members, this proposed amendment was one of the most supported amendments to the rule.

Subp. 2b. Sections 506.3.3 to 506.3.13.3. The current rule deletes subsections 506.3.3 to 506.3.13.3. All modifications to subsection 506.3.3 et al. are addressed in subpart 1 above. This rule part is no longer necessary. Therefore, this subpart is proposed to be repealed.

Subp. 3. Section 506.4.2, Ducts. The proposed rule repeals this subpart because the content is in the 2018 IMC whereas it was not in the 2012 IMC.[54] As a result, this rule part is no longer necessary.

Subp. 4. Sections 506.5 to 506.5.5. The proposed rule repeals this subpart because the amendment to sections 506.5 to 506.5.5 is addressed in subpart 2a as discussed above.

1346.0507 SECTION 507, COMMERCIAL KITCHEN HOODS.

Subpart 1. Section 507.1, General. The proposed rule deletes the existing rule language and adds language requiring Type I hood construction and installation to comply with ASHRAE 154 and NFPA 96 and Type II hood construction and installation to comply with ASHRAE 154.

Like in section 506, the proposed rule maintains essentially the same net requirements but more clearly conveys the requirements. That is, parts of ASHRAE 154, NFPA 96 and Minnesota rules are required currently and in the proposed rule. Instead of the confusing piecemeal format that the current rule uses, the proposed rule clearly states the requirements.

The proposed amendments to this rule part simplify the description of requirements for Type I and Type II hood design, construction, and installation by directing code users to NFPA 96 and ASHRAE 154 rather than incorporating the relevant requirements of NFPA 96 and ASHRAE 154 into the text of the rule. NFPA 96 and ASHRAE 154 are code books that are very familiar to people in the industry. Therefore, it is easier for them to be referred to NFPA 96 and ASHRAE 154 instead of piecemeal explanations in the Minnesota Mechanical Code and IMC, as amended.

The requirements for Type II hood materials in section 507.1.2.1 are relocated from existing subpart 7. It is necessary and reasonable to move this language as a subsection under section 507.1 for logical, consistent organization of the commercial kitchen exhaust hood requirements.

Subp. 2. Sections 507.2 to 507.6.1. The existing language of subpart 2 is deleted and the subpart is amended to delete sections 507.2 to 507.6.1 of the 2018 IMC. Deleted sections 507.2 to 507.6.1 are replaced with NFPA 96 and ASHRAE 154. Specifically, sections 507.1.1, 507.1.2, and 507.1.2.1 require users to comply with NFPA 96 and ASHRAE 154 for the installation of Type I and Type II hoods over commercial kitchen appliances in addition to requirements for hood sizing, exhaust capacity, and performance testing. The existing rule incorporates language and tables from ASHRAE 154 in addition to language from the 2012 IMC. The proposed amendment simplifies requirements for Type I hoods and Type II hoods by eliminating IMC language and refer code users directly to ASHRAE 154 and NFPA 96. There are not significant substantive differences between the current requirements and the proposed requirements. It is necessary and reasonable to refer to NFPA 96 and ASHRAE 154 in this format instead of the current rule because it is clear when NFPA 96 must be followed and when ASHRAE 154 must be followed.

Subp. 6. Section 507.4, Type I material. The existing rule deletes 2012 IMC section 507.4. The proposed rule repeals this subpart because section 507.4 was renumbered to section 507.2.3 in the 2018 IMC and subpart 2 above deletes section 507.2.3. As a result, this subpart is no longer necessary. There is no resulting substantive change to the existing rule.

Subp. 7. Section 507.5, Type II hood materials. The existing rule amends 2012 IMC section 507.5. The proposed rule repeals this subpart because this language was moved to subsection 507.1.2.1 above. As a result, this subpart is no longer necessary. There is no resulting substantive change to the existing rule.

Subp. 8. Section 507.7, Hood joints, seams, and penetrations. The existing rule amends 2012 IMC section 507.7. The proposed rule repeals this subpart because hood joints, seams and penetrations are addressed in ASHRAE 154 and covered in the proposed rule in subparts 507.1.1 and 507.1.2.

Subp. 9. Section 507.7.1, Type I hoods. This existing rule requires Type I hoods to be in compliance with Chapter 5 of the NFPA. There is no section 507.7.1

[54] *See* section 506.4.1 of the 2018 IMC.

in the 2018 IMC. The proposed rule repeals this subpart because the proposed amendment to subpart 1 above already requires the construction and installation of Type I hoods to comply with NFPA 96 and adds ASHRAE 154. It is necessary and reasonable to add ASHRAE 154 as described above. As a result, this subpart is no longer necessary.

Subp. 10. Section 507.8 to 507.11.12. The existing rule deletes 2012 IMC section 507.8 to 507.11.2. There is are no sections 507.8 to 507.11.12 in the 2018 IMC. The proposed rule repeals this subpart because it deletes sections that do not exist. As a result, this subpart is no longer necessary.

Subp. 12. Section 507.14, Noncanopy size and location. This existing rule deletes 2012 IMC section 507.14. There is no section 507.14 in the 2018 IMC. The proposed rule repeals this subpart because it deletes a section that does not exist. As a result, this subpart is no longer necessary.

1346.0508 SECTION 508, COMMERCIAL KITCHEN MAKEUP AIR.

Subpart 1. 508.1 Makeup air. Makeup air shall be supplied during the operation of commercial kitchen exhaust systems that are provided for commercial kitchen appliances. The amount of makeup air supplied to the building from all sources shall be approximately equal to the exhaust air for all exhaust systems for the building. The makeup air shall not reduce the effectiveness of the exhaust system. Makeup air shall be provided by ~~gravity or~~ mechanical means and the exhaust and makeup air systems shall be electrically interlocked to insure that makeup air is provided whenever the exhaust system is in operation ~~or both. Mechanical makeup air systems shall be automatically controlled to start and operate simultaneously with the exhaust system.~~ Makeup air intake openings shall comply with IMC section 401.4.

Statement of Need and Reasonableness for this Amendment to the Proposed Rule:

The modification is necessary to no longer allow gravity as a means of providing makeup air in commercial kitchens and clarify that the exhaust and makeup air systems must be interlocked to ensure the proper amount of makeup air is provided. Stakeholders contacted the Department to express concern that allowing makeup air to be provided by gravity presents potential harm. Makeup air provided by gravity is delivered into the space by an opening to the outdoors without any controls. As a result, too much or too little makeup air may be provided. If too little makeup air is provided in a commercial kitchen when the exhaust system is in operation, then there is excessive negative pressure within the space. Exhaust equipment cannot function properly when there is excessive negative pressure, and as a result, carbon monoxide and other byproducts of cooking processes are not adequately removed from the commercial kitchen. Industry professionals opined that gravity is not a sufficiently reliable method for supply air in commercial kitchen settings.

Because sufficient makeup air is necessary for the proper function of the exhaust system and the removal of harmful air, the modification reverts to the current rule language and deletes language added in the proposed rule. Interlocked systems are preferred over automatically controlled systems because the exhaust system cannot operate without the makeup air system operating, such as in the event of a system malfunction.

Subp. 2. Section 508.2, Compensating hoods. The existing rule amends section 508.2 by replacing it with general language from ASHRAE 154. The proposed rule deletes the language in the subpart and states section 508.2 is deleted and that compensating hoods shall comply with NFPA 96 and ASHRAE 154. NFPA 96 and ASHRAE 154 provide standards for the location and temperature of makeup air for commercial kitchen cooking operations, which is critical to the proper operation of the exhaust hood system. The makeup air must be supplied in the same space as the exhaust hood, but cannot be too close to create turbulence within the exhaust hood. In winter in Minnesota, the makeup air must also be supplied at a high enough temperature to prevent cold drafts that create turbulence within the exhaust hood, which can cause inadequate capture and containment of the exhaust effluent by the exhaust hood system. The provisions for tempered makeup air and restriction on compensating hoods in NFPA 96 and ASHRAE 154 are similar to the requirements in the current Minnesota Mechanical Code. However, because industry professionals are familiar with both NFPA 96 and ASHRAE 154, it is easier for industry professionals to simply follow those two standards. Furthermore, NFPA 96 addresses fire protection and ASHRAE 154 allows compensating hoods to provide up to 10% makeup air, which is consistent with the rest of ASHRAE 154. Compliance with NFPA 96 is necessary to maintain minimum levels of life-safety and ASHRAE 154 includes regulations for compensating hoods. The proposed rule replacing the existing rule with NFPA 96 and ASHRAE 154 is reasonable because they provide more comprehensive standards than the IMC or the current mechanical code.

1346.0601 SECTION 601, GENERAL. [REPEAL]

This rule part is proposed for repeal for two reasons. First, the 601.1 language in the current rule is identical to the 2018 IMC language. Therefore, the Minnesota amendment is no longer necessary. Second, in the exception, the current rule requires linen chutes and trash chutes to comply with NFPA 82 requirements but does not require that chutes be open to the atmosphere. Both the current rule and the 2018 IMC language provide an exception for ducts discharging combustible material directly into any combustion chamber. The proposed repeal of this rule part will therefore eliminate the exception as applied to linen chutes and trash chutes. Linen chutes and trash chutes are not part of the mechanical system. Section 601 as a whole contains the requirements for duct systems used in HVAC systems and some exhaust systems, which convey air from one part of the building to another, and does not include requirements for linen chutes or trash chutes. Linen chutes and trash chutes are addressed in the IBC because they convey linen and trash[55]. Therefore, this rule part is no longer necessary and reasonable. Repeal of this rule part is necessary and reasonable.

1346.0602 SECTION 602, PLENUMS.

Section 602.2.1.7 is renumbered to section 602.2.1.9 to coordinate with numbering changes made in the 2018 IMC. The language of this rule part remains unchanged.

1346.0603 SECTION 603, DUCT CONSTRUCTION AND INSTALLATION.

Subpart 2. Table 603.4. This subpart is repealed because the 2018 IMC contains a similar table addressing minimum sheet metal thickness for the construction of ducts used in single dwelling units.[56] Therefore, this modification is no longer necessary.

Subp. 2a. Section 603.4, Metallic ducts. This subpart is repealed because the 2018 IMC contains similar language addressing construction of metallic ducts. Therefore, this modification is no longer necessary.[57]

Subp. 3. Section 603.7, Rigid duct penetrations. This subpart is repealed because the 2018 IMC contains language similar to the current rule.[58] It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible. Therefore, this modification is no longer necessary.

Subp. 4. Section 603.8, Underground ducts. This subpart is repealed because the 2018 IMC is consistent with the current rule language.[59] It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible. Therefore, this modification is no longer necessary.

Subp. 5. Section 603.8.1, Slope. This subpart is repealed because the 2018 IMC is consistent with the current rule language.[60] It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible.

Subp. 6. Section 603.8.2, Sealing. This subpart is repealed because the requirement in the 2018 IMC more performance-based than the current rule language. The 2018 IMC language is also clear that the leak test must be consistent with International Energy Conservation Code, also known as the "commercial energy code." The commercial energy code is a part of the Minnesota State Building Code in Minnesota Rules, chapter 1323.[61]Consistent with Minn. Stat. §§ 326B.106, subd. 1 and 14.002, performance-based rules are preferred over prescriptive rules when feasible.[62] The modification is no longer necessary.

[55] *See* section 713.13.

[56] Minnesota was ahead of the industry when it added the table. The 2012 IMC that is currently incorporated by reference into chapter 1346 also contains a similar table. The conversion to the IMC table instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

[57] The 2012 IMC contained similar language as well. The 2018 IMC even more closely followed Minnesota rule language. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

[58] The 2012 IMC contained similar language as well. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

[59] The 2012 IMC contained similar language as well. Conversion to the IMC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IMC.

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[61] *See* https://www.revisor.mn.gov/rules/1323/. Specifically, *see* https://www.revisor.mn.gov/rules/1323.0403/.

[62] Minn. Stat. § 326B.106, subd. states in relevant part, "To the extent possible, the code must be adopted in terms of desired results instead of the means of achieving those results, avoiding wherever possible the incorporation of specifications of particular methods or materials." Minn. Stat. § 14.002 states in relevant part, "Therefore, whenever feasible, state agencies must develop rules and regulatory programs that emphasize superior achievement in meeting the agency's regulatory objectives and maximum flexibility

Subp. 7. Section 603.8.3, Plastic ducts and fittings. The current rule allows plastic ducts to be constructed of PVC or high-density polyethylene. The 2018 IMC allows plastic ducts to be constructed of PVC or high-density polyethylene. This subpart is repealed because the 2018 IMC is consistent with the Minnesota modification; the modification is no longer necessary.

Subp. 9. Section 603.9, Joints, seams, and connections. This subpart is repealed because the 2018 IMC contains similar language. In particular, the rule addressed pressure-sensitive tape and other methods when used as a sealant. The 2018 IMC now addresses pressure-sensitive tape and other methods used as a sealant. Therefore, this modification is no longer necessary.

1346.0604 SECTION 604, INSULATION.

Subpart 1. General. The proposed rule amends the first paragraph to add subpart numbering. Currently, there is only one IMC section under 604 modified. The proposed rule modifies another section 604. Therefore, it is necessary and reasonable to indicate the two separate modified sections with subpart numbering.

Subpart 2. Section 604.3, Coverings and linings. The body of section 604.3 is verbatim from section 604.3 of the 2018 IMC. This section provides flammability standards for duct coverings and linings. ASTM E84 and UL 723, ASTM E2231 and ASTM C411 are referenced. ASTM E84 and UL 723 are recognized testing and safety standards for determining the combustibility of material and the amount of smoke it produces. ASTM E84 and UL 723 are thresholds for material and their classification for minimal flame and smoke propagation of the material being used for coverings and linings while, ASTM E2231 is the specimen preparation and mounting procedures to complete the testing. ASTM C411 is the testing method developed to verify the performance of the different forms of thermal insulating materials when exposed to simulated hot-surface application conditions. These standards and testing methods are used to determine the safety and appropriateness of materials and methods in various circumstances. In this case, we are looking at duct coverings and linings. The TAG recommended it be added to the Code because it is already being used as an alternate method, it is effective, safe, and cost-effective. As an exception, it can be used without individual approval each time it is used. Class A rating means the material is less likely to spread fire and produces less smoke than other materials. The other end of the spectrum is Class C materials, meaning the material is highly likely to spread fire and produces much smoke.[63]

The proposed rule modifies section 604.3 of the 2018 IMC by adding an exception that allows the use of certain spray polyurethane foam as insulating duct covering in residential dwellings where the ducts are located within the floors of spaces that are not heated or cooled, such as a garage, without additional ignition or thermal barrier protection. Spray polyurethane foam is different and should be given a special exception. This proposed rule is necessary and reasonable because spray polyurethane foam is a closed-cell insulation that provides adequate insulation without posing moisture risks. Because it is a closed-cell material, no moisture can enter the insulation as the entire piece becomes solid. Comparatively, other insulations are open-cell material. Open-cell materials dry and form a skin covering. If the skin breaks, air gets in, which means humidity and moisture get in. The air gets to the metal duct that it is covering and once the dew point is reached, moisture results, leading to mold and negatively affecting air quality. Because the closed-cell material does not allow air in, even if broken, then no moisture forms, which means no mold to affect air quality. Spray polyurethane foam also provides adequate insulation of the ducts consistent.

Spray polyurethane foam is potentially combustible. When used in living areas of a dwelling, a thermal or ignition barrier is required to prevent ignition of the spray foam. The International Residential Code[64] requires areas such as garages attached to dwellings to have a thermal or ignition barrier to prevent the spread of fire to living spaces within the dwelling. The ducts addressed in the exception are located in a floor assembly over areas that are not used for living purposes, such as garages. The floor assembly construction provides a sufficient thermal and ignition barrier. Therefore, an additional thermal or ignition barrier is not necessary.

Items 1 and 2 of the exception require the spray polyurethane foam to have sufficient insulating properties to prevent condensation buildup. Condensation in ductwork contributes to mold growth, and ultimately results in poor air quality within the dwelling as described above. It is necessary and reasonable to require the spray polyurethane foam to have qualities that prevent condensation buildup.

for the regulated party and the agency in meeting those goals."

[63] *See* IBC section 803.1.2, showing Class A is Flame spread index 0-25; smoke-developed index 0-450.

[64] The International Residential Code is part of the Minnesota State Building Code. *See* Minn. R. 1309.0010, https://www.revisor.mn.gov/rules/1309.0010/.

The fire hazard posed by spray polyurethane foam is mitigated by item 3 of the exception. Requiring the spray polyurethane foam to have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 is consistent with industry standards.[65] A material with flame spread index of 25 or less and a smoke-developed index of 450 or less is ranked as Class A, meaning the spray polyurethane foam is less likely to spread fire and produces less smoke than other materials.

The proposed rule is reasonable because the use of polyurethane spray foam as insulating duct covering will improve the air quality in dwellings and the potential fire hazards are mitigated by requiring the spray polyurethane foam to be ranked as Class A.

1346.1003 SECTION 1003, PRESSURE VESSELS.

The current rule modifies subsection 1003.3 of the 2012 IMC. The proposed rule repeals this part because the 2018 IMC similar language regarding welding on pressure vessels but is updated to current industry standards. There is no substantive difference between the current rule and the 2018 IMC. It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IMC as possible. As a result, this rule part is no longer necessary.

1346.1206 SECTION 1206, PIPING INSTALLATION.

Subpart 2. Section 1206.12, Mixing of radiation. The current rule amends IMC section 1206 by adding a new subsection that prohibits mixing radiation with different rates of heat transfer. The proposed rule repeals this subpart because changes in technology and radiators, have made this requirement obsolete. As a result, this subpart is no longer necessary and is being repealed.

Subp. 3. Section 1206.12, Draining and venting. This subpart is amended by renumbering the section reference number from "1206.13" to "1206.12" for consistency with section reference numbers in the 2018 IMC. The 2018 IMC has subsections through 1206.11 and the proposed rule repeals the rule part that currently adds a subsection 1206.12. The language of this amendment is unchanged. Therefore, the proposed rule amendment is necessary and reasonable.

1346.1500 CHAPTER 15, REFERENCED STANDARDS.

Subpart 2. Supplemental standards. This subpart is amended by revising the editions of the supplemental standards to reflect the most current edition of the standard. This subpart also adds a standard to the list, ASHRAE 62.2-2016, as subitem A, because this standard is referenced in the proposed rules and is not in the 2018 IMC list of referenced standards. The subsequent listed standards are re-lettered as a result of adding a new item A. Subitems K and L are two added referenced standards, UL 2034 and UL 217.These two referenced standards have been added because this proposed rule references UL 2034 and UL 217 in part 1346.0313.

2018 INTERNATIONAL FUEL GAS CODE

NOTE.

Throughout the rule, references to the 2012 IFGC have been changed to 2018 IFGC because the Department is incorporating the 2018 edition of this code. Many code sections have been renumbered in the 2018 IFGC so the rule is revised to reflect these renumbered sections.

1346.5050 TITLE; INCORPORATION BY REFERENCE.

This rule part is modified to incorporate by reference the 2018 edition of the International Fuel Gas Code, replacing the 2012 edition.

1346.5202 SECTION 202, GENERAL DEFINITIONS.

Subpart 1. Section 202. The proposed rule deletes the definition for "power vent appliance" because the definition for "appliance, vented" in the 2018 IFGC is sufficiently similar but also clarifies that the vent system must be approved. Using the terminology in the IFGC is preferable to creating terms when possible as the IFGC terms are used throughout the document. Therefore, this definition is no longer necessary. It is reasonable to delete the current definition from subpart 1 and use the definition in the IFGC for consistency and ease of use.

The proposed rule deletes "Subpart 1" because there are currently two subparts. However

Subpart 2. Definition amended. The proposed rule repeals this subpart because the modification to the definition for "ready access (to)" is no longer necessary and reasonable.[66] The current Minnesota amendment does not allow the use of portable equipment, such as a ladder, to be used to reach mechanical equipment and meet the definition of "ready access (to)." However, the key difference between "access (to)" and "ready access (to)"

[65] *See* IBC section 803.

[66] *See* section 306.5.

in the IFGC is whether there is an access panel or other similar barrier on the equipment itself. The Minnesota amendment, while necessary and reasonable at the time, has unintended consequences.[67] It is reasonable to delete the current definition of "ready access (to)" from subpart 2 and use the definition in the IFGC to provide consistency and ease of use.

1346.5303 SECTION 303, APPLIANCE LOCATION.

Subpart 1. Section 303.3. The proposed rule amends the first paragraph to add subpart numbering. Currently, there is only one IFGC section under 303 modified. The proposed rule modifies another section 303. Therefore, it is necessary and reasonable to indicate the two separate modified sections with subpart numbering.

Subpart 2. Section 303.3.1, Fireplaces and decorative appliances in Group I-1, Condition 2 and Group I-2, Condition 2 occupancies. Section 303.3.1 of the 2018 IFGC is modified to permit direct-vent gas fireplaces inside the smoke compartments of Group I-1, Condition 2 occupancies, such as assisted living facilities and group homes, and Group I-2, Condition 2 occupancies, such as hospitals.[68] This modification is necessary to prevent conflicts with the Minnesota Department of Health ("MDH") rules, and the Minnesota State Fire Code. MDH licenses these occupancies and enforces the NPFA 101 Life Safety Code in chapter 4658, as does the state fire marshal in the Fire Code in chapter 7511.[69] NFPA 101 permits direct-vent gas fireplaces inside the smoke compartments of Group I-1, Condition 2 occupancies and Group I-2, Condition 2 occupancies, in areas such as waiting rooms, lobbies, and shared living spaces. The five conditions direct-vent gas fireplaces must meet are consistent with the NFPA 101 safety requirements for direct-vent gas fireplaces in these occupancies. These five conditions are necessary to prevent injury to persons receiving care or visitors to these occupancies.

1346.5304 SECTION 304, COMBUSTION, VENTILATION AND DILUTION AIR.

Subpart 1. Section 304.1, General. The proposed rule deletes and relocates the language added to section 304.1. The proposed rule incorporates the 2018 IFGC language in the body of section 304.1, retains three of the six existing exceptions in 1346.5304, and adds two new exceptions. Specifically, the proposed rule deletes exceptions 1, 3, and 4 and renumbers existing exceptions 2, 5, and 6 to 1, 2, and 3 respectively. Existing exception 1 is deleted because it is addressed in the body of section 304.1 and is therefore no longer necessary. Existing exception 3 conflicts with the combustion air requirements located in Table 304.1 of this subpart, Worksheet E-1 located in part 1346.6012, and Minnesota Rules chapter 1322. Chapter 1322 allows 40% oversizing while existing exception 3 allows only 30% oversizing. Existing exception 4 is revised and relocated to new exception 4. New exception 4 modernizes the requirement. Existing exceptions 3 and 4 are deleted because as written, they conflict with the combustion air requirements located in Table 304.1 of this subpart and Worksheet E-1 located in part 1346.6012. The proposed rule corrects these unintended conflicts.

The language of renumbered exceptions 2 and 3 (existing exceptions 5 and 6) is modified because the language conflicts with the combustion air requirements located in Table 304.1 of this subpart and Worksheet E-1 located in part 1346.6012. Exception 4 directs the code user to determine combustion air for Category I, III, and IV gas-fired appliances by using Table 304.1. The proposed rule corrects these unintended conflicts.

The proposed rule amends Table 304.1 to specify it contains the combustion air requirements for Category I, III, and IV appliances. Because there are four appliance categories, it is reasonable to amend the table to specify which appliance categories it addresses. Exception 5 is added to direct the code user to parts 1346.6012 and 1346.6014 to calculate the combustion air requirements for appliances located in residential dwellings. It is reasonable in the rule part describing combustion air requirements for buildings to direct code users to the other rule parts specifically addressing residential dwellings.

Subp. 3. Section 304.6.2, One permanent opening method. The proposed rule deletes a portion of the last sentence that reads, "and shall have a minimum free area of 1 inch^2/3,000 Btu/hr (700 mm^2/kW) of the total input rating of all appliances located in the enclosure." The free area requirement of 1 square inch per 3,000 Btu per hour conflicts with combustion air requirements contained in Table 304.1, Worksheet E-1 in part 1346.6012, and Table E-1 in part 1346.6012. The proposed rule corrects this unintended conflict. The free

[67] The Minnesota amendment was added in 2004. *See* https://www.revisor.mn.gov/state_register/28/14/#page=5

[68] "Smoke compartments" are "A space within a building enclosed by smoke barriers on all sides, including the top and bottom." *See* the 2018 IBC, as adopted into the Minnesota Building Code per Minn. R. 1305.0011.

[69] *See* the MDH rule in Minnesota Rules, part 4658.3500, subp. 4, and part 7511.0102, subp. 4, of the Fire Code. DLI has rulemaking authority for the Fire Code but the State Fire Marshal enforces chapter 7511.

area requirement is no longer necessary because they create unnecessarily large air openings to the outside of the building for Category I and IV appliances. Deleting the free area requirement reduces the combustion air opening to the outside for Category I, III, and IV appliances and appliances located in residential dwellings. This reduction in the size of the opening for outside combustion air will prevent unnecessary drafts in buildings. The proposed rule is necessary and reasonable because it increases building efficiency while maintaining building safety.

1346.5306 SECTION 306, ACCESS AND SERVICE SPACE.

Subp. 3. Section 306.6, Guard. The proposed rule adds subpart 3 to modify the exception to section 306.6 of the 2018 IFGC. The proposed modification coordinates this exception with the exception to the section addressing guards in the 2018 IMC.[70] Specifically, the exception here is modified by simply requiring fall arrest/restraint anchorage connector devices to be installed pursuant to ANSI/ASSE Z 359.1. ANSI/ASSE Z 359.1 is a nationally recognized standard regarding restraining individuals near potential fall hazards. It is necessary and reasonable to coordinate the requirements between the mechanical and fuel gas codes to provide uniform application and enforcement of the consistent requirements. The 2018 IFGC language that is modified out of the proposed rule is redundant because the required compliance with ANSI/ASSE Z 359.1 provides sufficient guidance. It is reasonable to provide the most succinct, clear language.

1346.5307 CONDENSATE DISPOSAL

The proposed rule deletes IFGC section 307.6 in its entirety. Section 307.6 is new to the IFGC. Like the IMC, section 307.6 requires that equipment and appliances stop working if the condensate pump fails. In Minnesota, the equipment and appliance are necessary to control and maintain the temperature within the building. If the equipment and appliance are prevented from operating, then the temperature within the building can drop below freezing during the winter months. Equipment, appliances, and systems can be damaged by freezing temperatures within the building. The damage to freezing equipment, appliances, and systems can be more extensive and costly than the damage caused by equipment and appliances continuing to operate when the condensate pump fails. For example, if the temperature of the building falls below freezing, sprinkler systems could be damaged by sprinkler heads freezing and popping or pipes bursting. If equipment and appliances continue to operate when the condensate pump fails, condensation can gather and potentially cause some water to pool but the building temperature will not fall below freezing. It is reasonable to delete section 307.6 because it is necessary for buildings to be heated during the winter months to prevent damage to building equipment, appliances, and systems.

1346.5311 SECTION 311, CARBON MONOXIDE ALARMS.

Section 311.1, General. The proposed rule adds section 311 to require carbon monoxide alarms in new and existing rooms containing fuel burning appliances, such as furnaces and boilers. A malfunctioning or poorly-vented fuel-burning appliance might elevate carbon monoxide levels in a room to hazardous levels. Prolonged exposure to carbon monoxide can result in permanent heart and brain damage, and possibly death. Technicians servicing fuel-burning appliances are at particular risk of carbon monoxide poisoning due to the amount of time they spend in enclosed spaces with fuel-burning appliances. Requiring carbon monoxide alarms in rooms containing fuel-burning appliances is a cost-effective means of alerting technicians and building occupants to unsafe levels of carbon monoxide in a room with fuel-burning appliances. It is necessary and reasonable to require carbon monoxide alarms in rooms that have a high risk of carbon monoxide exposure.

The proposed rule has two exceptions to section 311.1. The two exceptions are for boilers that are regulated by Minnesota Rules, chapter 5225, and for fuel-burning appliances that are located in residential buildings regulated by Minnesota Rules, chapter 1309, the International Residential Code.[71] Boilers regulated by chapter 5225 are of a greater capacity than those regulated by this chapter. As result, boilers regulated by chapter 5225 are subject to different requirements for carbon monoxide alarms. Residential dwellings are exempt from this section because Minnesota Rules, chapter 1309, contains requirements for carbon monoxide alarms for residential dwellings.[72]

Section 311.2, Carbon monoxide alarms. The proposed rule adds this section to specify that carbon monoxide alarms are to comply with the requirements described in sections 311.2.1 through 311.2.1.4 as described below.

Section 311.2.1 Power Source. The proposed rule adds subsection 311.2.1, which requires carbon monoxide alarms installed in new buildings to receive their power from permanent building wiring and to be

[70] *See* IMC section 304.11.
[71] *See* Minn. R. 1309.0315.
[72] *See* Minn. R. 1309.0315.

equipped with a battery as a back-up power source. This requirement is consistent with the power source requirements for carbon monoxide alarms located in section 915 of the International Building Code ("IBC").[73] It is necessary and reasonable to require carbon monoxide alarms to receive their primary power from the building's wiring when they are installed in new rooms with fuel-burning appliances. Using the building wiring as primary and battery back-up ensures the alarms are powered. One of the most common carbon monoxide alarm failures is lack of power (e.g., dead batteries). The IBC requires carbon monoxide alarms installed in new buildings to receive power from the building wiring. Because the building is being newly constructed, the wiring is exposed, allowing for easy installation of hard-wired carbon monoxide alarms. It is necessary and reasonable to require all carbon monoxide alarms installed in new buildings to receive their power from the building wiring to ensure working alarms and for uniform application and enforcement of carbon monoxide alarm requirements for new buildings throughout the Minnesota State Building Code.

The proposed rule has two exceptions to section 311.2.1 that permit the use of battery-powered carbon monoxide alarms in buildings without commercial power and existing rooms that contain a fuel-burning appliance. It is reasonable to exempt buildings without commercial power from the requirement because the building does not have existing wiring to provide power to the carbon monoxide alarm. The exemption for existing buildings is reasonable because hard-wiring carbon monoxide alarms in an existing building can cost several hundred dollars due to the electrical work required to newly access the wiring in the existing building walls. Battery-powered carbon monoxide alarms are a cost-effective means of alerting building occupants to the presence of dangerous levels of carbon monoxide. Although hard-wired alarms are the preferred power source, the exception recognizes the reality of costs. To encourage compliance with the carbon monoxide alarm requirement, it is necessary and reasonable to allow batter-operated alarms in existing buildings and buildings without commercial power.

Section 311.2.1.2, Listings. This section requires carbon monoxide alarms to be listed in accordance with UL 2034. A UL listed device is one that UL has tested and determined meets specific safety requirements. The I-codes require carbon monoxide alarms to be listed in accordance with UL. It is necessary and reasonable to require the carbon monoxide alarm to meet a commonly-used life-safety standard to ensure they are of sufficient quality and function properly.

Section 311.2.1.3, Carbon monoxide alarms. This section permits the use of combination carbon monoxide and smoke alarms in place of carbon monoxide alarms. The combination carbon monoxide and smoke alarm must be listed in accordance with UL 2034 and UL 217. The I-codes require combination carbon monoxide and smoke alarms to be listed in accordance with UL. Combination carbon monoxide and smoke alarms perform the same function as carbon monoxide alarms, and therefore are an acceptable alternative to alarms that only alert building occupants to the presence of abnormal levels of carbon monoxide.

Section 311.2.1.4, Carbon monoxide detection systems. This section permits the use of a carbon monoxide detection system in place of a carbon monoxide alarm. A carbon monoxide detection system consists of separate carbon monoxide detecting devices that are interconnected and alerts a central monitoring station of the presence of abnormal levels of carbon monoxide in any part of the building. It is reasonable to allow the use of an alternative device that performs the same function. The carbon monoxide detection system must comply with NFPA 720 – Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment, and be listed in accordance with UL 2075. NFPA 720 and UL 2075 are commonly-used life-safety standards for carbon monoxide detection systems.

1346.5403 SECTION 403, PIPING MATERIALS.

Subpart 1. Section 403.4.2, Steel. The proposed rule deletes the existing language of this subpart (regarding section 403.8) and relocates it to subpart 1a and modifies section 403.4.2. The proposed rule modifies 2018 IFGC section 403.4.2 to keep the language and requirements of the 2012 IFGC. The 2018 IFGC permits the use of Schedule 10 steel, stainless steel and wrought-iron pipe, which is thinner than the Schedule 40 pipes permitted in the 2012 IFGC. The thicker Schedule 40 pipes are durable and able to withstand Minnesota's climatic conditions. Additionally, the 2018 IFGC does not address support for Schedule 10 pipes located on roofs. Unsupported gas pipes may become damaged and develop hazardous leaks. It is necessary and reasonable to amend this subpart to require the continued use of Schedule 40 pipes with the proper support for Schedule 40 pipes used on roofs for use in Minnesota because of their durability.

Subp. 1a. Section 403.8, Protective coating. The proposed rule deletes the existing rule language modifying section 403.10.1 and relocates the existing modification of section 403.8 from subpart 1 to subpart 1a. The relocated

[73] The International Building Code is part of the Minnesota State Building Code in Minn. R. chapter 1305.

language is unchanged. In order to keep the modified sections in Minn. R. 1346.5403 in numerical order, these relocations were necessary to accommodate the modification to section 403.4.2. It is necessary and reasonable to keep the sections in numerical order for clarity.

Subp. 1b. Section 403.10.1, Pipe joints. The proposed rule deletes the existing language modifying section 403.10.2 because the 2018 IMC contains similar language regarding tubing joints. Therefore, this modification is redundant and the duplicative language could cause confusion. The language modifying section 403.10.1 is relocated from subpart 1a without changes. Again, the relocation is necessary to keep the modified section in numerical order. It is necessary and reasonable to keep the sections in numerical order for clarity.

Subpart 2. Section 403.10.4, Metallic fittings. The proposed rule repeals this subpart because the 2018 IFGC contains similar language in subsection 403.10.5 (different numbering in the 2018 IFGC). Therefore, this modification is no longer necessary.

1346.5404 SECTION 404, PIPING SYSTEM INSTALLATION

Subpart 2. Section 404.8, Piping in solid floors. The proposed rule repeals this subpart because the 2018 IFGC contains similar language. Therefore, this modification is no longer necessary.

1346.5407 SECTION 407, PIPING SUPPORT.

The proposed rule repeals this rule part because the requirements are contained in the 2018 IFGC.[74] It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IFGC as possible. Therefore, the modification is no longer necessary.

1346.5408 SECTION 408, DRIPS AND SLOPED PIPING.

The proposed rule repeals this rule part because the requirements are contained in the 2018 IFGC.[75] It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IFGC as possible. Therefore, the modification is no longer necessary.

1346.5409 SECTION 409, SHUTOFF VALVES.

Subpart 1. Section 409.1.4, Main shutoff valve. The proposed rule amends subpart 1 to require the main shutoff valve be located no more than five feet above the floor. This change is necessary to ensure the main shutoff valve is easily accessible in the event of emergency and a ladder is not required to reach the main shutoff valve. The exception to this subpart is modified grammatically for clarity. It is necessary and reasonable to require main shutoff valves be easily accessible and to clarify the language.

1346.5501 SECTION 501, GENERAL.

Subpart 3. Section 501.12.1, Terminations. The proposed rule deletes the modification to section 501.12.1 because the 2018 IFGC contains similar language. The 2018 IFGC language also provides the correct reference to subsection 503.6.7, renumbered from 503.6.6 in the 2012 IFGC, where roof terminations are addressed in the 2018 IFGC.[76] Therefore, this modification is no longer needed.

1346.5503 SECTION 503, VENTING OF APPLIANCES.

Subpart 6. Section 503.6.10.1 Category I appliances. The proposed rule amends this subpart by renumbering section numbers to coordinate with numbering changes in the 2018 IFGC.

1346.5504 SECTION 504, SIZING OF CATEGORY I APPLIANCE VENTING SYSTEMS.

Subpart 1. Section 504.2.7, Liner system sizing. This subpart is repealed because the 2018 IFGC contains similar language.[77] It is clearer and more user-friendly for the code user to have as few amendments to the 2018 IFGC as possible. Therefore, this modification is no longer needed.

1346.5800 CHAPTER 8 REFERENCED STANDARDS.

[74] The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

[75] The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

[76] The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

[77] The 2012 IFGC contained similar language as well. Conversion to the IFGC language instead of the Minnesota amendment is intended to minimize the number of amendments to the 2018 IFGC.

Subpart 2. Supplemental standards. The proposed rule amends this subpart to update the referenced edition of NFPA 54 – National Fuel Gas Code from 2012 to 2018. There is no newer edition of the ANSI LC-4 – Press-Connect Metallic Fittings for Use in Fuel Gas. It is necessary and reasonable to use the latest edition of standards because they contain the newest safety standards and recognize newer materials where applicable.

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2020

MINNESOTA PLUMBING CODE

DEPARTMENT OF LABOR AND INDUSTRY

Minnesota Plumbing Board

STATEMENT OF NEED AND REASONABLENESS

Proposed Permanent Rules Governing the Minnesota Plumbing Code, *Minnesota Rules*, chapter 4714; Revisor's ID Number R-04633

INTRODUCTION

Plumbing in Minnesota has been supervised by a state entity since 1933. In 2007, the rulemaking authority for the Minnesota Plumbing Code was transferred to the then newly-established Minnesota Plumbing Board. Pursuant to statute, the Board consists of 14 members.

The Minnesota Plumbing Code ("Plumbing Code" or "Code") is part of the Minnesota State Building Code.[78] Although the Plumbing Code is adopted by the Board, it is administered and enforced by the Minnesota Department of Labor and Industry ("Department") and some local jurisdictions.79 The Board proposes to amend the current Plumbing Code in Minnesota Rules, chapter 4714, and update the incorporated referenced document from the 2012 Uniform Plumbing Code with amendments to the 2018 Uniform Plumbing Code ("2018 UPC") with amendments. The Board moved from a homegrown code to incorporating a model code, the 2012 UPC, which became effective in 2016. The Uniform Plumbing Codes are published by the International Association of Plumbing and Mechanical Officials ("IAPMO") every three years.

The Board formed an advisory committee, the Ad Hoc Code Review and Rulemaking Committee, to review the 2018 UPC. All advisory committee meetings followed the Open Meeting Law.[80] The advisory committee determined that all current Minnesota amendments would remain in place unless a proposed amendment was submitted to further amend or repeal the Minnesota amendment. Agencies, Board members, and members of the public submitted proposed amendments for the Board's consideration. After reviewing and discussing the entire 2018 UPC and numerous proposed amendments, the advisory committee submitted their recommendations to the Board. The Board then reviewed the entire 2018 UPC and the committee's recommendations. The proposed rule is the result of the Board members reaching consensus on the 2018 UPC and proposed amendments. After many months of review, discussion and public participation, the Board is proposing this permanent rule for adoption. The Board, pursuant to statute and Board bylaws, approved the proposed rules presented here by an affirmative two- thirds or more majority vote of all the voting members of the Board.[81]

[78] *See* Minn. R. 1300.0050.
[79] See Minn. Stat. § 326B.43, subd. 1.
[80] *See* Minn. Stat. chapter 13D.
[81] Minnesota Statutes, section 326B.435, subdivision 6(c). The Board took the official vote at the March 16, 2020,Special Board Meeting and approved minor corrections to the rule draft at the July 21, 2020, regular Board meeting.

RULE-BY-RULE ANALYSIS

MINNESOTA RULES, CHAPTER 4714
MINNESOTA PLUMBING CODE

4714.0050 TITLE; INCORPORATION BY REFERENCE.

The proposed amendments incorporate by reference the 2018 edition of the Uniform Plumbing Code to replace the 2012 Uniform Plumbing Code, as amended, in chapter 4714. The proposed amendment incorporates the 2018 UPC because it was the most current edition at the time the Board began to consider updating the Minnesota Plumbing Code.[82] The proposed amendments also update the specific chapter numbers that are incorporated by reference. Chapter 14 is no longer incorporated by reference because the Refenced Standards chapter in the 2012 UPC was chapter 14 but is now in chapter17. Chapter 14 in the 2018 UPC is Firestop Protection and the Board does not regulate firestop protection. Chapter 16 is newly incorporated because the Nonpotable Rainwater Catchment Systems chapter has been renumbered from chapter 17 (2012 UPC) to chapter 16 (2018 UPC). The references to specific portions of appendix I are deleted because they are not in the 2018 UPC and no longer need to be excepted from inclusion in the Plumbing Code.

Note: Chapter 2 of the 2018 UPC is the Definitions chapter.

4714.0204 TERMS DEFINED BEGINNING WITH B.

Building Supply. The proposed amendments add subpart numbering because a term beginning with "B" is being modified along with the existing rule that adds a definition. Specifically, the definition for "building supply" is modified because the 2018 UPC use of the term assumes the "building or other point of use or distribution on the lot," typically the water meter, is outside the building. However, due to Minnesota's climate, water meters are installed inside of buildings in Minnesota to protect them from freezing rather than located outside of buildings near the curb or property lines. The Board received a Request for Interpretation to address an unintended and absurd result or conflict between the UPC definition (both the 2012 and 2018 definitions are the same) and the code provision that prohibited certain pipe material inside of buildings.[83] The proposed definition of "building supply" now specifically includes the pipe from municipal water supply or the source of a water supply to a building water meter or a pressure tank, which will be located inside of buildings to protect from freezing. It is reasonable to address this definition to incorporate installations in Minnesota climate conditions, and provide for clarity and consistent enforcement of the applicable provisions throughout this code where the term "building supply" is used.

4714.0207 TERMS DEFINED BEGINNING WITH E.

Emergency Floor Drain. The proposed amendment adds the definition of "emergency floor drain" to the UPC definitions chapter to provide clarity where this term is used in Table 702.1. Table 702.1 addresses trap sizing and drainage fixture unit values. There are requirements for "Floor Drain, emergency" and "Floor Drain (for additional sizes see Section 702.0)." There was confusion as to what distinguishes an emergency floor drain from a regular floor drain. Generally, an emergency floor drain has no drainage load of its own. The Board clarified that an "emergency floor drain" is a floor drain that is located in restrooms, under emergency eyewash/shower equipment, and in laundry rooms and is intended 1) to function by capturing overflows from fixtures and therefore is considered to be emergency use to protect buildings from damage from overflows, and 2) does not serve as a receptor for receiving discharges from equipment (i.e., planned receptors assigned or intended to receive waste piping from a specific fixture). The proposed definition eliminates confusion and provides for consistent use of this code by assisting the designer in using Table 702.1 when sizing a standard floor drain verses an emergency floor drain.

4714.0214 TERMS DEFINED BEGINNING WITH L.

Low Pressure Water Dispenser. The proposed amendment adds a definition for "low pressure water dispenser" to chapter 2 to clarify the requirements and scope of the added subsection 417.6 proposed below. The proposed definition is needed and reasonable to identity that a low pressure water dispenser that dispenses drinking water above 160 degrees Fahrenheit or cold water or both at pressure of 15 psi or less is subject to subsection 417.6. The proposed amendment adds clarity for consistent application and enforcement of the Plumbing Code.

[82] The Uniform Plumbing Code is on a three-year cycle; the 2021 Uniform Plumbing Code was released in 2020.

[83] See the Final Interpretation.

4714.0220 TERMS DEFINED BEGINNING WITH R.

Registered Design Professional. There was no defined term for "registered design professional," "registered professional engineer" or "engineer" in the 2012 UPC so a definition for "registered professional engineer" was added to the Minnesota Plumbing Code when the 2012 UPC was incorporated by reference and amended.[84] All three terms are used throughout the 2018 UPC and existing Minnesota amendments so the Minnesota amendment includes references to "engineer" and "registered professional engineer." However, the 2018 UPC defines "registered design professional." One of the Board's priorities is to use the model code language when possible; therefore, the Minnesota term "registered professional engineer" is modified to the 2018 UPC term while maintaining the existing Minnesota definition. The proposed amendment is needed and reasonable for consistent and clear use of the term in this code.

4714.0225 TERMS DEFINED BEGINNING WITH W.

The proposed rule moves the definition of "water conditioning equipment" in subsection 611.1.1 to chapter 2, Definitions, where all the terms and definitions are located. Subsection 611.1.1 is a Minnesota amendment that is in the current Minnesota Plumbing Code that is proposed for amendment below to delete the definition currently in 611.1.1.85 The proposed amendment is not a significant change but rather provides consistent use of the UPC Chapters because users will look into Chapter 2 for definitions of terms rather than Chapter 6, Water Supply and Distribution. The proposed amendment also adds the term "water treating equipment" to the defined term to have the same meaning as "water conditioning equipment" for consistency throughout the code. "Water treating" equipment is used in the definition of a "plumbing system" in rule part 4714.0218 and section 610.6, and has the same meaning as water conditioning equipment. The proposed amendment is necessary to provide clear and consistent use of the terms.

4714.0301 SECTION 301.0 GENERAL

The proposed rule amends the title of section 301.0 to match the 2018 UPC title.

Subpart 1. Section 301.1. The proposed rule deletes Minnesota amendments to code sections 301.1, 301.1.1, and 301.1.2. The Minnesota amendments are no longer needed in these sections because the 2018 UPC language does what the Minnesota amendments did; that is, specifically addressed and removed non-plumbing language not regulated by this code. By deleting these Minnesota amendments, UPC 2018 sections 301.0, 301.1, 301.2, 301.2.1, 301.2.2 will be in the Minnesota code as is.

Subsection 301.2.5. Subsection 301.2.5 of the 2018 UPC addresses existing buildings. The proposed amendment deletes this subsection in its entirety because plumbing in existing building is already, and better, addressed in part 4714.0101, subparts 3 and 6. Rule part 4714.0101 better addresses existing buildings because it is more encompassing and more specific than the 2018 UPC language. The proposed amendment is necessary to avoid redundancy and confusion.

Subpart 2. Section 301.3 Alternate Materials and Methods of Construction Equivalency. The proposed amendment renumbers section 301.2 to 301.3, and related subsections, to align with the numbering in the 2018 UPC.

Related Subsections renumbering:

301.2.1 to	301.3.1
301.2.1.1 to	301.3.1.1
301.2.1.2 to	301.3.1.2

There are no substantive changes. It is necessary and reasonable to align numbering with the 2018 UPC.

Subpart 3. Section 301.5.6 Inspection and Testing. The proposed amendment renumbers section 301.4.6 to 301.5.6 to align with the numbering in the 2018 UPC. There are no substantive changes. It is necessary and reasonable to align numbering with the 2018 UPC.

4714.0313 HANGERS AND SUPPORTS.

Subpart 1. Table 313.3. The proposed amendments modify an existing table in the 2018 UPC. Specifically, the amendments add a footnote to include thermal expansion for plastic drain, waste, and vent (DWV), and storm drain plastic pipe suspended

[84] The current Minnesota Plumbing Code has the term "registered professional engineer" defined. This was a Minnesota amendment to the 2012 UPC that was incorporated by reference as amended. The term coordinated with licensure requirements for the practice of professional engineering as described in Minnesota Statutes, section 326.02, subdivision 3, that are specific to the State of Minnesota as a professional engineer by the Board of Architecture, Engineering, Land Surveying, Landscape architecture, Geoscience, and Interior Design.

[85] See pages 22-23 of the proposed rule dated July 23, 2020.

aboveground for proper support. The proposed amendments are needed and reasonable to coordinate and provide clear instructions to the plumbing designer to refer to Table 313.3.1 for expansion joint lengths when using plastic pipe for DWV and storm drain. The proposed amendments: 1) add footnote number 6 to the bottom of Table 313.3 which states "For expansion joints, see Table 313.3.1", and 2) add footnote number 6 to row, "Schedule 40 PVC, ABS DWV" both under columns horizontal and vertical installations by providing for expansion every 30 feet and allowing for the use of expansion joints in accordance with the proposed new Table 313.3.1 under Subpart 2.

Subpart 2. Table 313.3.1. The proposed amendment adds a new table coordinated with Table 313.3, Hangers and Supports. The proposed table establishes allowances and acceptable configurations of pipes and fittings for compensation of thermal expansion of plastic drain, waste, and vent (DWV), and storm drain pipe and fittings suspended aboveground for every 30 feet of installed pipe, both horizontal and vertical installation. The expansion joint lengths are established in the proposed Table 313.3.1 for pipe sizes from 1.5 to 12 inches based on the greatest expansion determined as limiting strain and thermal expansion of ABS materials for drain, waste, vent and storm pipe expansion. Methods, values, and formulas are based on the Plastic Pipe and Fitting Association, User Bulletin 17, with ABS limiting strain of 0.0035 In/Inch and coefficient of thermal expansion of 0.000055 In/Inch/Degrees Fahrenheit. ABS plastic pipe yields the most protective and conservative numbers and it is reasonable to conclude that any plastic pipe installation that meets the ABS numbers would be properly supported. Table 313.3.1 has two parts. The first part of the table is calculated for use "inside of building thermal envelope" using a change in temperature difference of 70 degrees Fahrenheit. The second part of the table is calculated for outside of the building thermal envelope using a change in temperature of 120 degrees Fahrenheit. For example, the temperature in an unconditioned parking ramp in the heat of summer and subzero degrees in the winter can reasonably vary 120 degrees. For pipe sizes not shown, a Minnesota licensed professional engineer (or registered design professional) may provide expansion joint length calculations to the administrative authority for review and approval for the specific project.

Footnote 1 of Table 313.3.1 allows multiple offsets or lengths of run to be used to provide for expansion for each 30-foot developed length of run of plastic pipe. Using one or multiple lengths of run of pipe sections established in the Table 313.3.1 for 10 feet, 20 feet, and 30 feet can be used to meet the minimum expansion joint lengths required for each plastic pipe size to provide for the required expansion for each 30-foot developed length of run under Table 313.3. The footnote creates options that allow the designer to use multiple small pipe sections to comply with the plastic pipe compensation limitation in installations with restraints to install long plastic pipe run installations. For example, for an installation outside the building thermal envelope, a 1.5" pipe must have 44-inch expansion joint for every 30-foot in developed length of run. The designer can install one 44-in expansion joint or multiple expansion joints totaling 44 inches for every 30-foot.

The proposed amendment is needed and reasonable to accommodate Minnesota's unique weather conditions and provides specific requirements needed for plastic pipe design and installation for consistent enforcement. Without the proposed table and methods for expansion of plastic pipe, there would be a lack of guidance for industry and regulating entities causing confusion and inconsistency.

Subpart 3. Section 313.7. The proposed rule adds subpart numbering and title. The current rule deletes section 313.7 because it regulates gas piping, which is not within the scope of the Minnesota Plumbing Code. This is only a formatting change as there is no change to the rule language.

4714.0403 → 4714.0412 URINALS.

The proposed rule renames the section "URINALS" and renumbers part 4714.0403 to 4714.0412 because the Water-Conserving Fixtures and Fittings section has been renamed and renumbered from section 403 to 412 in the 2018 UPC. The current Minnesota amendment imposes water consumption limits for urinals and requires nonwater urinals to be listed and comply with the applicable standards in the referenced standards table. These Minnesota amendments are no longer necessary because section 412.1 of the 2018 UPC provides water consumption limits matching the Minnesota amendment and references standards for all urinals. Effectively, there are no substantive changes. Furthermore, providing the specific standards in the body of the code makes it easier and clearer for the code user to comply with the relevant standards.

4714.0406 → 4714.0405 PROHIBITED FIXTURES.

The proposed rule renumbers part 4714.0406 to 4714.0405 because the Prohibited Fixtures section has been renumbered to section 405 in the 2018 UPC. The specific subsection that is deleted is also renumbered as reflected in the proposed amendment. There are no substantive changes.

4714.0407 LAVATORIES.

Subpart 1. The proposed rule amends section 407.3 to add another nationally recognized standard, ASSE 1084, Water Heaters with Temperature Limiting Capacity, which may be used to control and limit water temperature to lavatories to reduce the risks of scalding. Water heaters listed to ASSE 1084 are intended to supply tempered water at the point-of-use in order to reduce and control the risks of scalding to the user consistent with the same level of protection under the existing requirement. The proposed amendment adds an additional compliance option; it is not another requirement in addition to existing requirements.

Subpart 2. The proposed rule deletes UPC section 407.4 in its entirety because section 407.4 requires self-closing or self-closing metering faucets for all lavatories in transient public restrooms. The intent of requiring metering faucets is to conserve water by automatically shutting off the water flow after a preset timing cycle (a few seconds) without the the user manually doing so. Most metering faucets are automatic or electronic controlled (battery-operated) and incorporate an active infrared sensor to detect hand motion to turn on and shut off. Water conservation is an important factor to save water costs and contributes to buildings being identified as "green" buildings. Because metering faucets are electronically operated or spring operated, they are subject to continued maintenance. Metering faucets can and do fail, which can leave water running continuously or no available water due to a dead battery. The proposed deletion does not compromise public health and safety but rather increases reliability and availability of water for handwashing. Building owners of transient public lavatories may still install metering faucets but will not be required to do so. Furthermore, the term "transient public lavatory" is vague and results in confusion and inconsistencies among industry and code officials. The proposed deletion is necessary and reasonable to eliminate confusion among designers, plumbers, and regulatory authorities, for predictable, consistent enforcement, and to increase the reliability of availability of lavatories (aka bathroom sinks in this situation) for handwashing.

4714.0408 SHOWERS.

The proposed amendment to section 408.7 provides an exception from the shower liner requirement for shower receptors built onsite that are poured and built directly on the ground, adequately reinforced, and watertight. The shower liner is not needed since this type of shower receptor is built on the ground, poured-in-place receptor construction, complete with integral threshold, sides and back directly supported by the underlying ground, and impervious watertight receptor. Furthermore, the sides and back of the receptor pour must extend at least three inches above the finished threshold before the wall covering may be added as required to ensure watertightness between the wall and the receptor. The proposed amendment is consistent with the requirements of the UPC, but further adds language to clarify and to avoid confusion, for a more consistent code enforcement of this provision.

4714.0409 BATHTUBS AND WHIRLPOOL BATHTUBS.

Subpart 1. The proposed rule amends rule part 4714.0409 by aligning the language with the 2018 UPC language and updating the standard for whirlpool pedicure tubs. The 2018 UPC provides the specific nationally recognized standards in the body of the code instead of referring to the referenced standards table like the 2012 UPC did. Therefore, the proposed rule language matches the 2018 UPC language. The current Minnesota rule provides the required standard for whirlpool pedicure tubs and the proposed rule updates that standard's full number and title. The proposed rule also deletes reference to IAPMO IGC 155, Pipeless Whirlpool Bathtub Appliances because that standard is no longer active.

Subpart 2. The proposed rule amends section 409.4 to provide two additional nationally recognized standards, CSA B125.3 and ASSE 1084, Water Heaters with Temperature Limiting Capacity, which may be used to control and limit water temperature to bathtubs and whirlpool bathtubs to reduce the risk of scalding. The 2018 UPC references only one standard that may be used to comply temperature limiting requirements: ASSE 1070/ASME A112.1070/CSA B125.70 ("ASSE 1070"). The proposed amendment adds CSA B125.3 (2018) as a compliance option because it will allow compliance with the most current standard. Water heaters listed to ASSE 1084 have appropriate electric control protective measures that control the output temperature, limited to 120 degrees Farenheit for point of use application so the temperature is controlled and consistent with the existing requirements of this section. This proposed amendment adds CSA B125.3 and ASSE 1084 to the current standard as additional compliance options; it does not add another requirement in addition to existing requirements. It is necessary and reasonable to allow additional and updated options to comply with the existing requirement.

4714.0410 BIDETS.

The proposed rule amends section 410.3 similarly to the amendment to section 409.4 as it adds two additional compliance options, CSA B125.3 and ASSE 1084. The 2018 UPC references only one standard that may be used to comply temperature limiting requirements: ASSE

1070/ASME A112.1070/CSA B125.70. The proposed amendment adds CSA B125.3 (2018) as a compliance option because it will allow compliance with the most current standard. Water heaters listed to ASSE 1084 have appropriate electric control protective measures that control the output temperature that can be set to 110 degrees Farenheit for point of use application so the temperature is controlled and consistent with the existing requirements of this section. Updating to the most current standard consistent with the UPC and providing additional compliance options still reduce the risk of scalding.

4714.0414 DISHWASHING MACHINES.

The proposed amendment modifies UPC section 414.3 by adding another installation method for a domestic dishwater that does not require an installation of a listed air gap fitting on the discharge side of the dishwasher. The additional installation method allows the domestic dishwasher discharge pipe to be secured and routed as high as possible under the countertop and connected to a tailpiece of a kitchen sink or food waste grinder. This proposed method is limited to residential use dishwashers, residential style dishwashers in an employee break room, or at locations where the use is other than a licensed food or beverage establishment serving the public. The proposed amendment is necessary and reasonable because it allows for another compliance option that has lower installation costs, adds installation flexibility, and yet prevents unsanitary conditions from waste water backups from the kitchen sink or sewage backups.

4714.0416 EMERGENCY EYEWASH AND SHOWER EQUIPMENT.

The proposed rule amends UPC section 416.2 by allowing another nationally recognized standard, ASSE 1085, Water Heaters for Emergency Equipment, to be used for temperature control of the water to the emergency equipment to reduce the risks of scalding where hot water is supplied to emergency equipment. Water heaters listed to ASSE 1085 are intended to supply tempered water at the point of use in order to reduce and control the risks of scalding to the user consistent with the same level of protection as existing requirements. There are no other substantive changes to this requirement. This proposed amendment adds a compliance option; it does not add another requirement.

4714.0417 FAUCETS AND FIXTURE FITTINGS.

The proposed rule amendment adds subsection 417.6 to require low pressure water dispensers as defined in 4714.0214 to meet nationally recognized standards. Specifically, beverage faucets of these dispensers must comply with ASME A112.18.1/CSA B125.1, low-pressure water dispensers that dispense electrically heated water with an integral reservoir of water vented to atmosphere must comply with ASSE 1023, and electric devices that heat water must comply with UL 499. Because the dispensed beverages are intended for human consumption, the dispensers and materials must be properly tested and certified to be suitable and safe for human consumption.

4714.0418 FLOOR DRAINS.

Subpart 1. The proposed rule updates the reference to section 801.2.2 in section 418.4 with a reference to section 801.3.2 because that section has been renumbered in the 2018 UPC.

Subpart 2. The proposed rule further amends existing section 418.7 to specifically reference the code section for design requirements of oil and flammable liquid interceptors and updates the renumbered code sections stating when they are required. Sections 1009.1, 1011.1, and 1017.1 specify the conditions when interceptors are required. This is necessary to clarify that there are multiple subsections of the code that reference when an oil and flammable liquid interceptor is required as compared to the current code that contains all the conditions in one section.[86]

4714.0420 SINKS.

The proposed rule renumbers the references to UPC section 420.3 to section 420.4 because it was renumbered in the 2018 UPC. There are no substantive changes.

4714.0423 TRENCH DRAINS.

The proposed rule adds section 423, trench drains to provide standards for trench drains since the 2018 UPC does not. The proposed language allows two types of trench drains: 1) trench drains that meet a nationally recognized standard for trench drains, and 2) trench drains built onsite that do not meet the nationally recognized standard but meet the specific construction requirements listed in the rule part.

These two options provide for predictable, consistent enforcement. Trench drains are used in many plumbing systems especially in parking or repair garages and manufacturing which are built onsite to collect and discharge into the drainage system. The proposed language is reasonable since requiring listing on all trench

[86] See explanation of the amendment to section 1017 below.

drains as currently required under code section 301.1 (renumbered to section 301.2 in the 2018 UPC, which is proposed for adoption without amendment in this rulemaking) is overly restrictive since the code allows the use of brick and concrete constructed sand and flammable waste interceptors which both are not listed to any standard and more concerning than onsite built trench drains.

4714.0501 GENERAL.

Section 501.1 Applicability. The proposed amendment replaces the reference to table number "501.1" with "501.1(2)" for consistency with 2018 UPC renumbering, provides for current minimum capacity for storage water heaters reflecting the method revised by the U.S. Department of Energy for determining the first hour rating of water heaters as outlined in 2018 UPC, table 501.1(2), deletes some language and adds some language to match the 2018 UPC language. This section still amends the UPC language by eliminating language in the 2018 UPC that references "chimneys, vents, and their connectors" because it is outside the scope of the Plumbing Code.

4714.0504 WATER HEATER REQUIREMENTS.

Subpart 1. No proposed amendments.

Subpart 2. Section 504.6. The proposed amendment deletes the reference to NFPA 54 (titled "National Fuel Gas Code") because it is outside the rulemaking authority of the Board. It appears to have been inadvertently left in when the 2012 UPC was incorporated by referenced and amended to remove language referencing automatic gas shutoff devices. The proposed amendment also adds language referencing section 608.5 to match the 2018 UPC language. The proposed amendment is necessary to correct the reference to NFPA 54 and to update the language to reflect the 2018 UPC language.

4714.0508 APPLIANCES ON ROOFS.

The proposed rule updates the reference to UPC section range 508.0 to 508.4 with a reference to section range 508.1 to 508.3.3 because that section range has been renumbered in the 2018 UPC. There is no substantive change.

4714.0509 VENTING OF APPLIANCES.

The proposed rule updates the reference to UPC section 509.14 with a reference to section 509.15 because the 2018 UPC added an additional subsection that needs to be deleted with the other deleted provisions as it is also outside the scope of the Plumbing Code. There is no substantive change.

4714.0601 HOT AND COLD WATER REQUIRED.

The proposed rule renumbers the UPC section number references because they have been renumbered in the 2018 UPC. There are no substantive changes.

4714.0603 CROSS-CONNECTION CONTROL.

The proposed rule updates subpart 4 with new UPC section numbering because they have been renumbered in the 2018 UPC. The other subparts (1-3, 5) are not changed so there is no need to update numbering. There are no substantive changes.

4714.0607 POTABLE WATER SUPPLY TANKS.

Subpart 1. Section 607.3. The proposed rule amends the venting of potable water supply tanks that are necessary to prevent the tanks from developing pressure from filling of tanks or when water is used. The proposed amendment clarifies that vents on potable water tanks must not be located in an environment (e.g., a room) where potential gas, solvents, or other contaminations in the atmosphere can pollute the water supply. The proposed amendment requires all tank vents to be designed to prevent debris and contamination from falling or entering through the vent pipe by requiring the vent pipe to be turned downward. It is reasonable and necessary to make these amendments to protect the water supply from any contamination.

Subpart 2. Section 607.4. This code section requires potable water supply tanks to have overflow provisions to protect the tank from being overfilled or over pumped and provides some specific requirements. The proposed amendment clarifies that overflow pipes be sized to accommodate the maximum fill flowrate, be turned downward, and must not be piped directly to any drainage system. It is reasonable and necessary to protect the water supply from any potential contaminations or sewage backups by requiring the overflow pipe to discharge to through an air gap.

4714.0608 WATER PRESSURE, PRESSURE REGULATORS, PRESSURE RELIEF VALVES, AND VACUUM RELIEF VALVES.

Section 608.5. The current Minnesota code requires water heater safety relief valves to have discharge piping not smaller than the size of the relief valve outlet, to discharge to a safe place of disposal or within 18 inches of the floor because of high temperature discharge, and the relief valve discharge pipes must be constructed of

specific prescribed materials. The proposed amendment to 608.5 aligns the rule with the 2018 UPC language (slightly reworded) with the exception of item 3. Item 3 maintains a portion of the current Minnesota rule. Item 3 is maintained from the current Minnesota code because the 2018 UPC language does not adequately address safe discharge locations and allows discharge to the exterior of buildings. Discharge to the exterior of buildings raises concerns of freezing due to Minnesota winters.
The current Minnesota code language provides clear requirements that can be customized to each specific situation. The proposed amendment provides a single location for relief discharge piping requirements and aligns with the 2018 UPC language. The proposed amendment provides clear and consistent requirements for the industry and regulators.

4714.0609 INSTALLATION, TESTING, UNIONS, AND LOCATION.

Subpart 1. Section 609.1 Installation. The proposed amendment changes only the frost level requirement for installation of building water service piping to prevent freezing of water service pipes. The remainder of the section is verbatim from the 2018 UPC. The requirements provide three options for building water service piping installation: 1) 12 inches below the maximum local frost level, 2) provide provisions (heat insulation or approved methods) to protect the water pipe from freezing per section 312.6, or 3) an alternative installation approved by the administrative authority. The 2018 UPC language requires pipes to be installed "12 inches below the average local frost depth." Some municipalities have been experiencing burst water service pipes in recent years as a result of freezing. Because proper protection for maximum local frost level at the time of installation is the best defense, the proposed amendment modifies the 2018 UPC to address Minnesota's consistently cold winters by installing 12 inches below the maximum local frost level rather than average local frost level. Providing multiple options to protect water pipes from freezing addresses Minnesota's climate and the variations experienced in northern Minnesota versus southern Minnesota.

This requirement is necessary to protect the water supply system from freezing while also providing multiple options since frost level varies throughout the state of Minnesota. The 12 inches below the maximum local frost level is a reasonable distance from freezing because 12 inches is far enough to protect the water supply from freezing. Other options in accordance with section 312.6 include heat insulation or approved methods, or other alternative methods approved by the administrative authority to protect the water pipe from freezing. The proposed amendment is needed and reasonable to protect the water supply by reducing the risk of possible contamination from pipe breakage, minimize repair costs from frozen, burst pipes, and provide multiple options to achieve compliance.

Subpart 2. Section 609.6. There is no substantive change; only renumbering.

Subpart 3. Section 609. 10. Water Hammer. Water hammer occurs when the flow of water to plumbing fixtures and appliances is suddenly stopped by a quick-acting valve(s) closing and resulting in a pressure spike in the water system and a "hammering" noise. The proposed amendment clarifies that where water hammer occurs, a water hammer arrestor must be provided to protect plumbing fixtures and appliances from water hammer damage. The proposed language allows options for plumbing engineers and contractors in accordance with the manufacturer's installation instructions to design and install one or more water arrestors to effectively absorb the spike in pressure as close as possible to the quick-acting valves that causes water hammer.

Subpart 4. Section 609.12. Water Meters. The proposed amendment renumbers section 609.11 to 609.12 for consistency with the 2018 UPC and renumbers it as subpart 4 to remain in numerical order in the rule. Substantively, the proposed amendment adds additional requirements for water meter installation. Water meter installation must be located as close as possible to the entrance point of a building to minimize the possibility of un-approved water supply connections upstream of the water meter. The proposed amendment is needed and reasonable to limit unauthorized (e.g., unmetered) uses or connections to the potable water supply system while also acknowledging and addressing the fact that some situations are unique and do not fit a prescriptive approach. If leakages exist in the water piping, having the water meter installed as close as possible to the entrance point of a building assists water utilities in water loss mitigation through early detection.

4714.0611 WATER CONDITIONING EQUIPMENT.

Subpart 1. Section 611. Subpart numbering is added because additional subsections have proposed amendments. The proposed rule amends section 611.1.1 by deleting the definition for water conditioning equipment here and moving it to section 225 in the definitions chapter.

The proposed rule renumbers subsection 611.1.2 to 611.1.1 and 611.1.3 to 611.1.2 since the current 611.1.1 has been deleted to maintain clear numbering. The proposed rule also updates reference to Table 1401.1 to

Table 1701.1 in sections 611.1.1 and 611.3 because it was renumbered in the 2018 UPC.

Subpart 2. Section 611.5 Isolation and Bypass. The proposed amendment adds requirements for valve installation arrangements to provide for maintenance and servicing of water conditioning equipment. This requirement is needed and reasonable so maintenance work on water conditioning equipment would not require the entire building water supply to be shut off and water conditioning contractors to be able to install water conditioning equipment where valves are installed.

4714.0701 MATERIALS.

The proposed rule updates references to section 701.1 to section 701.2, Table 1401.1 to Table 1701.1 in section 701.1, and Table 701.1 to Table 701.2 because the tables were renumbered in the 2018 UPC. There are no substantive changes.

4714.0707 CLEANOUTS.

Section 707.4 Location.

707.4.1 Back-to-Back. The proposed amendment deletes this requirement because the 2018 UPC, section 704.2, specifically addresses this type of installation and requires the use of a double fixture fitting, which allows drain cleaning equipment to have direct access into the drainage system without a cleanout. Therefore, the cleanout requirement is no longer needed and can be eliminated. This proposed amendment is consistent with other sections of the 2018 UPC and provides clarity for code officials, designers, and industry.

Section 707.4 Location. The 2018 UPC requires cleanouts on the main floor drainage system and none on the upper floors of a building. The proposed amendment adds cleanouts to kitchen sinks that are on the upper floors regardless of location or types of buildings. The proposed amendment only adds "kitchen sinks" to the third exception. The remainder of this section is taken from the 2018 UPC. This is necessary and reasonable because kitchen sinks are highly likely to accumulate a build-up of greasy and food wastes over time. Kitchen sinks often clog the drainage system and are problematic and unsanitary to clean without ready-access cleanouts installed. Requiring cleanouts for kitchen sinks on the first floor and not the second floor is not reasonable as these fixtures have build-ups of wastes that solidify regardless of floor level. Requiring cleanouts on all floors for high-clogging fixtures is better for public health and safety because it allows for ready and quick maintenance access to the drainage system without the need to cut the building drainage system in the upper floors or ceilings where kitchen sinks are installed.

4714.0710 DRAINAGE OF FIXTURES LOCATED BELOW THE NEXT UPSTREAM MANHOLE OR BELOW THE MAIN SEWER LEVEL.

The proposed rule amends UPC section 710.10 by adding an exception to allow the vents on pool and elevator sumps to terminate within the building. The proposed language further clarifies that vents for pool and elevator sumps need not vent through the roof and must not connect to other building vent pipe. The proposed amendment is reasonable since these types of sumps are required to discharge indirectly to the building drainage system (see sections 418.6 and 813.1), and fixtures discharging to these sumps are not trapped (see section 418.6 and 813.1), therefore the proposed exception to terminate within the building does not compromise the health and safety of the occupant. In limited cases where there are hazardous chemicals in a mechanical room where the elevator or pool sump is located, the designer may vent the sump through the roof independently to prevent any hazardous conditions from entering any spaces inside the building. This proposed amendment is reasonable and necessary as a safe and more cost- effective method to vent pool and elevator sumps.

The proposed rule amends the subpart numbering because the proposed amendment above is in precedes the existing subpart 1 amendment numerically. There are no substantive changes to the existing rule subparts.

4714.0712 TESTING.

Subpart 2. Section 712.4 Negative Test. There proposed amendment updates the outdated versions of two referenced recognized standards for negative pressure tests for concrete manholes and sewer lines to the most current available standards published. These are standards that the Minnesota code adds so the updated editions will not be referenced by the 2018 UPC or subsequent UPCs unless they also add these standards. There are not significant substantive differences between the two versions but updating to the most current available standard is necessary and reasonable to keep up with the latest and accurate information available for proper and safe testing. In addition, the proposed amendment updates the renumbered section for the Hydrostatic Test Method from section 1109.2.2 to section 1107.2.3(B) for consistency with the numbering of the 2018 UPC.

4714.0717 SIZE OF BUILDING SEWERS.

The proposed amendment replaces a footnote to Table 717.1 that allows the Administrative Authority to

approve drainage fixture unit loadings on building sewers 8 inches and larger to be less than the minimum prescribed under Table 717.1. “Fixture unit loading” is used to determine the minimum size of building sewers based on the total number of fixture units. In situations where there is a lot of new development and anticipated future growth, the minimum loading requirements under Table 717.1 might be overly restrictive and burdensome; the proposed amendment alleviates the burden by allowing designers to plan for future development. The table as presented is appropriate for established developments with minimal future growth anticipated. This proposed amendment is necessary and reasonable because allowing case-by-case determinations adds an option for the administrative authority to approve arrangements that would allow building sites with anticipated future expansion to be accommodated. As a result, pumping equipment and related costs may be eliminated. As currently required under Table 717.1, the minimum drainage fixture unit loadings are difficult to meet at lower slopes as most buildings do not contain a sufficient number of plumbing fixtures to provide these minimum loadings during the design and construction stage. The table does not provide for future provisions or other considerations. A 6-inch size sewer is often not large enough for most larger buildings, and an 8-inch size sewer often will not meet the required minimum fixture unit loading at the slope a building site permits in accordance with Table 717.1. Under current requirements, most 8-inch sewers require either the sewer to be an alternative engineered design under Section 301.5, or a pump system to be installed when gravity drainage can be utilized and is feasible per the minimum required slope under Table 717.1. Using a pump system should be avoided whenever possible.

Mathematically, using Manning’s Equation with a coefficient of n=0.015 that pipe velocity greater than two feet per second will be achieved at the slopes listed in the Table 717.1. Two feet per second is a nationally-recognized minimum velocity that provides scouring of the waste pipe in plumbing waste system that prevents deposition of solid waste and clogging, and therefore is reasonable to allow for less loading and yet maintained the minimum 2 feet per second scouring velocity to move solids.

4714.0719 CLEANOUTS.

The proposed amendment adds an additional option for making watertight connections to manholes and similar types of structures. Resilient rubber joints at connections to manholes, catch basins, and similar structures are added as an option because these types of joints are the prevalent and industry preferred method used in Minnesota to join pipes to manholes and are recommended by concrete pipe manufacturers. Including resilient rubber joints as approved manhole connections is necessary and reasonable because they provide an additional design option, reduce costs, and reduce administrative processing of alternate installation method requests, and increase uniform statewide administration.

4714.0724 RECREATIONAL VEHICLE

724.1 Construction. The proposed rule amends section 724.1 to clarify that the private sewers serving the recreational vehicle must be designed to the same requirements as building sewers. Specifically, the sewers must meet the same requirements for materials, fittings, cleanouts, slope, and installation requirements.

724.2 Flushing Device. The proposed rule amends section 724.2 to clarify proper backflow prevention types where continuous line pressure exists. Installing a shut-off valve downstream of the backflow device creates a continuous line pressure; therefore, a pressure-type vacuum breaker is necessary to protect the potable water line. For example, some facilities prefer to install a shutoff valve on the end of a hose. In those cases, the installation will need to use a pressure-type vacuum breaker. While typical installations have the backflow prevention device downstream from the last shutoff valve, there are some installations in which a shutoff valve will be used on the end of a hose. It is necessary and reasonable to address situations in which there is a shutoff valve downstream from the backflow prevention device while also allowing as much flexibility as possible when there is no shutoff valve downstream. New language is added to state at no time any water piping be connected to a sewer-connected wastes such as directly connecting to a sewage holding tank of a recreational vehicle. This proposed amendment provides increased protection of the potable supply water lines at recreational vehicle sites and is consistent with the requirements of section 603.4.4. There are public health concerns associated with the use of disposal station flushing devices and therefore the added backflow requirements are necessary to prevent human contact with, and disease transmission from, feces and other sewage components and to prevent backflow of sewage into the water supply system.

724.3 Drainage Pipe Sizes. The proposed rule adds a section 724.3 and Table 724.3 because the Plumbing Code does not currently have specific drainage pipe size requirements for recreational vehicle sites. As a result, designers and officials are left guessing and this results in varied and inconsistent enforcement. The content of the proposed Table 724.3 is from Appendix E of the 2018 UPC for recreational vehicles. It is reasonable to use the table here because it is for the same application as Appendix E. The proposed table is necessary for predictable and consistent design and administration.

4714.0801 INDIRECT WASTES.

The proposed rule updates references to UPC section 801.2.2 to section 801.3.2 because it was renumbered in the 2018 UPC. Section 801.2.3 was renumbered to section 801.3.3. Section 801.3 was renumbered to section 801.4. There are no substantive changes.

4714.0807 APPLIANCES.

807.3 Domestic Dishwashing Machine. The proposed amendment modifies section 807.3 by allowing the domestic dishwasher discharge pipe to be secured and routed as high as possible under the countertop and connecting to a tailpiece of a domestic kitchen sink or food waste grinder in addition to the listed air gap method. This additional method was in the previous Minnesota Plumbing Code and heavily favored by homeowners because an air gap requires drilling a new hole in the countertop. This was particularly undesirable for homeowners who install a new dishwasher but not new countertops. This code section applies only to residential use dishwashers which could also include residential style dishwashers in an employee break room or at locations that are not a licensed food or beverage establishments serving the public. The proposed amendment is necessary and reasonable to allow for an additional method to the currently approved air gap fitting installation method to reduce installation costs and allow installation flexibility, and yet protective of any possibility of unsanitary conditions from wastewater backups from the kitchen sink or sewage backups.

4714.0810 STEAM AND HOT WATER DRAINAGE CONDENSERS AND SUMPS.

The proposed rule amends section 810.1 to delete the language regulating boiler pipes and other pipes not involving a part of the plumbing system as it is outside the scope of this code. Those other requirements are regulated in the Mechanical and Fuel Gas Code in Chapter 1346 and the Chapter 5225. The proposed rule is necessary and reasonable to avoid conflict with other building codes and to stay within the scope of the Board's authority.

4714.0811 PLASTIC WASTE AND VENT PIPES.

All parts of the plumbing system must be properly supported including chemical waste and vent systems. The proposed rule amendment adds a new subsection 811.9 for proper support due to thermal expansion and contraction compensation of plastic pipe used for chemical waste systems. This is particularly important in Minnesota due to the extreme types of climate here. The proposed amendment clearly requires that where plastic pipe is utilized and installation is in excess of 30 feet horizontally or vertically, provision for thermal expansion and contraction compensation must be in accordance with Table 313.3.1. It is necessary and reasonable specify proper support for the use of plastic pipe in chemical waste and vent systems to prevent sagging of pipes from expansion and contraction.

4714.0813 SWIMMING POOLS.

Pool deck drains are required to be designed and installed as indirect waste piping. These drains receive only liquid wastewater from splashing on decks and wash down of deck areas. The proposed rule amendment exempts pool deck drains from trap and vent requirements in section 803.1 and requires waste piping at a minimum of 1/8-inch per foot pitch. Without the amendment, pool deck drains would be subject to a ¼-inch per foot pitch requirement for general indirect waste piping under Section 708.1 and traps and vents must be provided as required under 803.1. Section 708.1 is a general provision for all drainage piping including waste piping carrying solids. Because pool deck drains receive only liquid, a minimum 1/8-inch per foot pitch is adequate and reasonable because there is no solid waste.

4714.0814 CONDENSATE WASTES AND CONTROL.

Subpart 1. The proposed rule amendment deletes portions of subpart 1 because condensate from air washers, air-cooling coils, fuel-burning condensing appliances, the overflow from evaporative coolers, and similar water-supplied equipment or similar air-conditioning equipment, along with the equipment itself, are regulated by the Minnesota Mechanical Code Chapter 1346. The proposed amendment is necessary and reasonable to avoid conflicting requirements between two codes and for consistent and coordinated statewide code administration.

Subparts 2-4. The proposed rule updates references to Table 814.1, Section 814.2, and Section 814.3 to Table 814.3, Section 814.3, and Section 814.5, respectively, because they were renumbered in the 2018 UPC. There are no substantive changes.

4714.0903 MATERIALS.

The proposed rule udpates references to Table 701.1 to Table 701.2, and Table 1401.1 to Table 1701.1 because they were renumbered in the 2018 UPC. There are no substantive changes.

4714.1001 TRAPS REQUIRED.

The proposed rule updates references to section 1001.1 to section 1001.2 because it was renumbered in the 2018 UPC. There are no substantive changes.

4714.1002 TRAPS PROTECTED BY VENT PIPES.

The proposed rule amends UPC section 1002.2 to add an exception to individual venting requirements of each fixture trap for certain types of floor drains. Emergency floor drains, tell tale floor drains, and floor drains not used as waste receptors installed within 25 feet of a vented branch or main are exempted because they do not have a drainage fixture unit value or are not intended to receive indirect waste discharges. They are unlikely to siphon the trap seals and do not need to be individually vented because the quantity and frequency in which these drains would be used is small. The proposed amendment reduces the cost of installation of floor drains to plumbing projects and maintains health and safety.

4714.1006 FLOOR DRAIN TRAPS.

The proposed rule amends UPC section 1006.1 to clarify the language and add an exception for floor drains and trench drains connected to sand interceptors or oil and flammable liquid interceptors. The general rule is that all floor drains must be trapped. Trapping the floor drains and/or trench drains connected to sand and/or oil and flammable liquid interceptors is unsafe and defeats the purpose of the sand interceptor and oily and flammable liquid interceptor. That is, the sand/dirt/solids would fill the trap before entering the sand interceptor for proper separation and collection. Without the proposed exception, each floor drain and trench drain trap would have a vent located near a wall, which is difficult in an open space such as a garage. The proposed amendment reduces plumbing project costs and improves the overall functioning of the plumbing system.

4714.1009 INTERCEPTORS (CLARIFIERS) AND SEPARATORS.

The proposed rule amends the rule part title for consistency with the 2018 UPC. Subpart numbering is added because the proposed rule adds a second subsection that is amended.

Subpart 2. The proposed rule amends UPC section 1009.4 by adding the last sentence. The proposed rule specifies where interceptor and neutralization tank vent ports must be located to prevent blockage of vent ports that can occur over time when located below the highest liquid flow level where vent ports are submerged in wastewater or from back-ups of the building drainage system. Blockage of vent ports creates risks of unsafe conditions that can be detrimental to the public by releasing fumes from chemicals or gasoline vapors inside the building environment. It is reasonable and necessary to clarify the location of these vent ports for a safe and proper functioning plumbing system.

4714.1016 SAND INTERCEPTORS.

The proposed rule amends UPC section 1016.4 to clarify the language and add an exception for sand interceptors connected to oil and flammable liquid interceptors in compliance with section 1017 because having a water seal on sand interceptor designs creates an unsafe condition where flammable liquid wastes can be stored in the sand interceptors for a period of time before entering the oil and flammable liquid interceptor for collection of flammable liquid wastes. The purpose of the sand interceptor is to collect sand and debris, and not flammable liquid wastes. Therefore, it is reasonable and necessary to provide an exception to the general requirement that sand interceptors must be provided a water seal when sand interceptors are connected to flammable liquid interceptors. Since a water seal is no longer required, the exception also includes the vent. The purpose of a vent is to protect the water seal for proper circulation of air in the pipes to protect the water seal hence, the vent is no longer needed, it is also proposed in the exception. In addition to reducing the cost of installation, the proposed exception provides for a safer plumbing system, consistent design, and administration.

4714.1017 OIL AND FLAMMABLE LIQUID INTERCEPTORS.

Subpart 1. Section 1017.1. The proposed rule amends UPC section 1017.1 to coordinate with section 1009.1 and the proposed amendments to section 418.7. The proposed amendments clarify when an interceptor is required in parking garages and vehicle wash facilities. Currently, a flammable/oily waste interceptor must be provided in parking garages and vehicle wash facilities when required by the AHJ under sections 1009.1 and 418.7. The proposed amendment requires an oil and flammable liquid interceptor in a parking garage if a certain size threshold is met. Oil and flammable liquid interceptors protect the drainage and sewer systems by separating and retaining damaging liquids before they enter the sewer systems. Without the proposed language, these sections are not consistently administered among jurisdictions and is subject to approval project by project basis.

Subpart 2. Section 1017.2. The proposed amendment replaces the UPC sentence that reads, “Above 10 vehicles, the Authority Having Jurisdiction shall determine the size of the interceptor required” with “Above 10 vehicles, each interceptor shall have a holding

capacity of not less than 35 cubic feet." The UPC language does not provide any guidance to designers, building owners or building officials. Because it is completely up to the Authority Having Jurisdiction with no parameters or guidance, there has been unpredictable and inconsistent enforcement. Striking a balance between prescriptive and performance-based code is always the goal and the UPC language misses the target. While allowing flexibility, the proposed amendment offers guidance based on collective industry knowledge that 35 cubic feet will be adequate for most situations and can be emptied more frequently if necessary.

Subsection 1017.2.1. The proposed rule adds this subsection to require service and maintenance records to show regular removal of oil and flammable substances. Proper maintenance of the oil and flammable liquid interceptor prevents overflow of harmful substances into the sewer. Specifically, this requirement encourages regular removal of accumulated oily and flammable waste per the manufacturer's recommended maintenance instructions. The amendment to section 1017.2 above is proposed in concert with this additional requirement as they complement each other and together establish a necessary and reasonable standard that removes harmful accumulated waste for the proper functioning of the interceptor.

4714.1101 GENERAL.

Subparts 1-5. The proposed rule updates multiple references to sections and subsections because they have been renumbered in the 2018 UPC. There are no substantive changes to 1101.2, 1101.3, 1101.4, and 1101.12.1.

Subpart 4.

Section 1101.12.2.1 Location. The roof drainage system removes rainwater from roofs to prevent the roof collapsing. There are generally two roof drains – the primary and the secondary. When the primary roof drain clogs, the rainwater pools onto the roof if there is no secondary roof drainage system. Minnesota Rules, chapter 1305 requires primary and secondary roof drainage and the Plumbing Code regulates the design and function of the primary and secondary roof drainage. The proposed rule amendment clarifies there are two possible locations for the secondary roof drain. 1) The secondary roof drainage shall be located at the maximum possible depth of ponding a structural roof is designed to withstand per chapter 1305 as certified by a Minnesota licensed professional engineer; or 2) two inches above the lowest point of the roof surface. The proposed amendment to locate the secondary roof drain two inches above the lowest point reflects the 2018 UPC language and adds clarity for designers and installers where a roof is not required by law to be certified by a Minnesota licensed professional structural engineer. The proposed rule amendment is necessary and reasonable to ensure the roof is protected from water ponding that will lead to roof collapse and to provide clear options for compliance and consistent enforcement.

Section 1101.12.2.2 Engineered System. The proposed amendment adds language to prohibit engineered siphonic roof drainage systems in the design of a secondary roof drainage system. Unlike the conventional roof drainage system, an engineered siphonic drainage system has no slope in the pipe, the pipe sizes are much smaller, and uses the hydraulic principles in the adopted standard, ASPE 45, to operate under depressurized conditions (siphon) where the piping is flowing full-bore with little or no air to remove water from the roof. The system is a unique and complex engineering system and requires a higher level of understanding on the part of the designer and installer with precise details for successful functioning of the engineered system. All roof drains of the primary roof drainage system will simultaneously receive rainwater flow during any precipitation or rainfall event. Unlike the primary roof drainage system, the secondary roof drainage system might have only one roof drain receiving flow at any given time during a rainfall event. The secondary drainage system functions differently and independent of the primary system. Secondary siphonic roof drainage systems are not allowed because all primary roof drains would need to be simultaneously clogged in order for there to be sufficient full flow for a siphon to trigger a secondary siphonic roof drainage system with multiple roof drainages connected (manifolded). It is unlikely and rare that all primary roof drains would be simultaneously clogged. The required hydraulic head in sizing the piping system per ASPE 45 will not be achieved with only one secondary drain receiving full flow and other secondary drains not receiving full flow, and therefore would function like a conventional gravity system, and not an engineered siphonic roof drainage system. The proposed amendment is necessary to clarify that utilizing the engineered siphonic roof drainage system for the secondary roof drainage system is not within the scope or application of the nationally recognized standard ASPE 45. In addition, the proposed amendment is necessary because secondary roof drains are required by the Minnesota Building Code to discharge above grade to an approved visible location. Engineered siphonic roof drainage systems require siphonic break points with high velocity (over 15-20 feet per second) and can be problematic for secondary siphonic roof drainage systems, such as increased ponding of water at a faster speed around the building without proper site drainage evaluation, unsafe conditions shooting rainwater at discharge locations above grade or pavement on or near

public walkways. The proposed amendment is reasonable and adds reliability of the secondary roof drainage system as it is intended to be an overflow function and is critical in building safety by preventing building collapse and costly errors.

Subpart 5. ~~**Sections**~~ **Subsections** ~~**1101.12.2.1, 1101.12.2.2, 1101.12.2.2.1, and 110112.2.2.2**~~. UPC subsections 1101.12.2.1, 1101.12.2.2, 1101.12.2.2.1~~,~~ and 110112.2.2.2 are deleted in their entirety.

Statement of Need and Reasonableness for the modification the proposed rule:

Subpart 5. The proposed rule amended this subpart to reflect the renumbering that occurred between the 2012 UPC and the 2018 UPC. However, the proposed rules also amend subsections 1101.12.2.1 (Primary Roof Drainage) and 1101.12.2.2 (Secondary Drainage). As a result of renumbering and the proposed amendments, the reference to subsections 1101.12.2.1 and 1101.12.2.2 as deleted portions was not initially correct. This amendment corrects the unintended inclusion of these subsections that are newly amended in the proposed rule.

4714.1106 → 4714.1103 SIZE OF LEADERS, CONDUCTORS, AND STORM DRAINS.

UPC section 1106 has been renumbered to section 1103 in the 2018 UPC. The proposed amendments update the numbering and amends UPC sections 1103.1 and 1103.2 by adding, "For sizes not listed under Table [1103.1 / 1103.2], a minimum rainfall rate of 4 inches per hour must be used to size the rainwater piping" because some buildings have larger roofs and require larger pipe sizes than the two referenced tables address. The proposed amendment is not a significant change but provides clarification for larger pipe sizes not shown on the referenced Tables 1103.1 and 1103.2. The roof drainage system must be sized at a minimum rainfall rate of 4 inch per hour, which is consistent with the smaller pipe sizes shown on Table 1103.1 and Table 1103.2, and also the 4-inch rainfall rate shown under section 1101.12.1 for sizing of primary roof drainage systems. The proposed amendment is necessary and reasonable because it clarifies and is consistent with existing related requirements.

4714.1108 → 4714.1105 CONTROLLED-FLOW ROOF DRAINAGE.

The proposed rule updates references to UPC section 1108.1 to section 1105.1 and other referenced section numbers because they have been renumbered in the 2018 UPC. There are no substantive changes.

4714.1109 → 4714.1107 TESTING.

The proposed rule updates references to UPC section 1109.1 to section 1107.1 because it has been renumbered in the 2018 UPC. Other references to various 1109 sections and subsections have also been renumbered to reflect the 2018 UPC numbering and formatting. There are no substantive changes.

4714.1110 → 4714.1106 SIPHONIC ROOF DRAINAGE SYSTEM.

The proposed rule updates references to various UPC sections and section 1110 has been renumbered to section 1106 because they have been renumbered in the 2018 UPC. There are no substantive changes.

4714.1605 INSPECTION AND TESTING.

Section 1702.11 has been renumbered to 1605.3. There are no substantive changes to this Minnesota amendment but this shows up as new language because of the renumbering.

4714.1401 → 4714.1701 REFERENCED STANDARDS.

The proposed rule updates references to UPC Table 1401.1 to Table 1701.1 because it has been renumbered in the 2018 UPC. Other UPC section references contained in the amended portions of the table that have been renumbered in the 2018 UPC have also been updated. In the 2012 UPC, only one referenced standards table was used and regular and bold font was used to distinguish between standards that were referenced in a specific section versus standards that could be used for alternate materials and methods. The 2018 UPC created two tables (1701.1 and 1701.2) to distinguish standards that can be used for alternate materials and methods (Table 1701.2). In addition to the renumbering the formatting changes are reflected in the proposed rule.

The deleted standards on page 49 were moved into Table 1701 for formatting consistency (see below) as they are referenced standards in the Minnesota Plumbing Code.

Subpart 1. The proposed rule adds to Table 1701.1 the referenced standards in the proposed amendments above.

Subpart 2. The proposed rule amends referenced standards in Table 1701.1 that are in the 2018 UPC. The amendments generally align the list of referenced sections to reflect the Minnesota amendments above.

Subpart 3. The proposed rule deletes a standard from Table 1701.2 that is no longer referenced as a result of the Minnesota amendments.

Subpart 4. The proposed rule adds a referenced standard to Table 1701.2 that the Board has approved for use in section 301.2.2.

4714.1702 → 4714.1602 NONPOTABLE RAINWATER CATCHMENT SYSTEMS.

UPC section 1702 has been renumbered to section 1602 in the 2018 UPC. The proposed rule updates all section and subsection references. There are no substantive changes except as described below.

Subpart 8. Table 1702.9.4, renumbered Table 1602.9.6, is in the current Minnesota Rule and the 2018 UPC has its version of a Minimum Water Quality Table.The Minnesota table was previously vetted during the last Plumbing Code rulemaking and again this time. The Board is updating the Minnesota table to reflect current standards, available technology, and practices for water treatment of nonpotable rainwater catchment systems as presented to the Board by the Minnesota Department of Health. There are two proposed amendments to Table 1602.9.6 (as renumbered), Minimum Water Quality, establishing new minimum water quality requirements that are risk-based and performance-based and yet maintaining a safe and continuous operation of a nonpotable rainwater catchment system. The first proposed amendment modifies the filtration and disinfection water quality standard from a 5-micron absolute filter and a 0.5-log inactivation of viruses, to a minimum 100-micron or smaller filter, and a 3.5 log reduction of bacteria. Using the new minimum risk-based and performance-based water quality standards allows any type of water treatment technology to treat water to achieve a water treatment of 3.5 log reduction of bacteria, rather than 0.5-log inactivation of viruses as they are not a concern in rainwater from roofs. Continuous monitoring of the minimum of 3.5 log reduction of bacteria will ensure the water quality is safe for the intended use. The proposed minimum 100-micron or smaller filter will allow a wider range of water treatment technology available for treatment utilizing risk-based and performance-based technology and this filtration standard is consistent with the filtration requirements of the 2018 UPC.

The second proposed amendment deletes the minimum turbidity parameter (also known as water clarity) from the water quality Table 1602.9.6. Turbidity consists of suspended material/particles in water causing a cloudy appearance that must be treated to reduce the particles for water treatment and is no longer a significant factor in water quality treatment because the proposed risk-based and performance- based treatment of 3.5 log reduction of bacteria means 99.9 percent removal of pathogens. The design of the treatment system will address turbidity to meet the 3.5 log reduction of bacteria and therefore turbidity is not a concern from a regulatory standpoint. The proposed amendment is necessary and reasonable to update to current water treatment technologies that are available to achieve water quality that is safe and protects public health.

Repealed sections:

4714.0314 TRENCHING, EXCAVATION, AND BACKFILL.

The proposed amendment repeals Minn. R. part 4714.0314. Part 4714.0314 deletes code sections 314.0 to 314.4 because these sections replicate the 2018 UPC and are needed and necessary for proper installation of underground thermoplastic drainage pipe and fittings inside of buildings and outside sewers since installation standards in the appendixes addressing proper underground plastic pipe installations are no longer part of the 2018 UPC, and therefore, is not adopted by incorporation. It is necessary to re- introduce these sections back in the code since these sections under the 2018 UPC now have more specific and relevant regulations relating to requirements of trenching, excavation, and backfill that are necessary for proper installation of pipe. Trenching section 314.2 of 2018 UPC has provisions for tunneling and driving in yards and driveways with specific requirements outlined for proper installation using tunneling and driving with a maximum of eight feet without breaking up driveways and without comprising the installation. Section 314.3 clarifies that open trench excavation for a building drainage system within walls of a building must be utilized for proper installation. 2018 UPC Section 314.4 and 314.4.1 add specific requirements for underground thermoplastic pipe and fittings for sewers and gravity flow applications which previously did not. This proposed amendment will ensure underground thermoplastic pipe installation will be installed correctly.

4714.0421 FIXTURES AND FIXTURE FITTINGS FOR PERSONS WITH DISABILITIES.

The proposed rule repeals this rule part because the 2018 UPC language (renumbered to section 407.3) is similar to the Minnesota amendment. The Board prefers to use the 2018 UPC language when possible. There is one difference and that is the maximum temperature. In the current rule, the maximum temperature is 110° F while the 2018 UPC allows a maximum temperature of 120° F. The higher maximum temperature offers designers and building owners additional flexibility. Changing to the

higher temperature is necessary and reasonable for consistency with the 2018 UPC and assists in the prevention of legionella growth.

Statement of Need and Reasonableness for the modification of the proposed rule:

Adds rule part 4714.0421 to the list of repealed rule parts. The changes made to the UPC in part 4714.0421 are now in rule part 4714.0407, subp. 1, as a result of renumbering. It is included in the proposed rule at lines 8.6 through 8.11 of the 1/22/21 draft of the rule. Section 421 of the 2018 UPC addresses floor sinks and does not need amendment for Minnesota.

4714.0507 OTHER WATER HEATER INSTALLATION REQUIREMENTS.

Subpart 1. No proposed amendments.

Subpart 2. Section 507.5 Relief Valve Discharge. The proposed amendment repeals this subpart because the relief valve discharge requirements have been relocated to section 608.5 in the 2018 UPC and the (proposed for repeal) Minnesota rule is largely moved to and replicated there (see below). The proposed deletion reverts section 507.5 to the 2018 UPC language, which is consistent with section 504.6, which has proposed amendments to include the relevant 2018 UPC language (see above).

4714.0511 DIRECT-VENT APPLIANCES.

The proposed rule repeals this rule part because the Board does not have statutory authority to regulate venting of appliances. Venting of appliances is regulated under the Minnesota Mechanical Code in Minnesota Rules chapter 1346.

4714.0604 MATERIALS.

Section 604.11, Lead Content. The proposed rule repeals this rule part because the 2018 UPC has renumbered section 604.11 to 604.2 and section 604.2 incorporates equivalent lead-free standards such as the Safe Drinking Water Act that is referenced in part 4714.0604.

4714.0705 JOINTS AND CONNECTIONS.

Section 705.10.2 Expansion Joints. The proposed amendment repeals the Minnesota amendment to section 705.10.2 because 2018 UPC section 705.9.2 covers expansion joint provisions. The only difference is the 2018 UPC does not require expansion joints in vent piping or drainage stacks to be accessible where as part 4714.0705 does require expansion joints in vent piping and drainage stacks to be accessible. However, failures of expansion joints are rare and can be replaced or repaired by cutting the wall to access the joints. This proposed amendment is consistent with the requirements of the 2018 UPC and is reasonable as this is the national standard and it is not necessary to alter this for a Minnesota-specific purpose.

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