Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing Adoption of the 2012 International Residential Code, Minnesota Rules, Chapter 1309; Revisor's ID Number R-04144.

INTRODUCTION

The Commissioner of the Department of Labor and Industry proposes to adopt amendments to rules governing the Minnesota Residential Code, Minnesota Rules, chapter 1309. The proposed rules will incorporate by reference the 2012 International Residential Code ("IRC") with amendments.

In July 2007, the 2006 edition of the IRC became effective in Minnesota. The Department chose to skip the adoption of the 2009 edition of the IRC because of the drastic slowdown of the construction economy and the lack of technical experts available to assist the Department with the adoption. Accordingly, the Department currently administers and enforces the 2006 edition of the IRC with amendments, as contained in Minnesota Rules, chapter 1309.

The International Code Council ("ICC") publishes the IRC.[1] The ICC reviews and modifies the ICC model codes every three years to incorporate the most current construction code criteria and to provide the construction industry with the most current code provisions for use throughout the nation. The IRC is the residential code that establishes minimum regulations for one-family dwellings, two-family dwellings, and townhouses using both performance and prescriptive provisions. 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 Department utilized a Chapter 1309 Advisory Committee ("Advisory Committee") composed of residential construction stakeholders to provide the Commissioner with recommended changes to the 2012 edition of the IRC.[2] Requirements for fire sprinkler systems were the most contentious subject discussed. Current rule requires that two-family dwellings and townhouses having floor areas exceeding 9250 square feet (859.35 m^2) have automatic fire sprinkler systems installed. The 9250 square-foot threshold includes the floor area of all floors, including the basement and garage. The 2012 IRC model code requires that all one-family dwellings, two-family dwellings, and all townhouses have fire sprinkler systems installed. In this

[1] The 2012 edition of the International Residential Code is available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance. Portions of the proposed rule reproduce excerpts from the 2012 IRC, International Code Council, Inc., Washington, D.C., copyright 2012, reproduced with permission, all rights reserved.

[2] A complete listing of the participating members of the Chapter 1309 Advisory Committee is attached as Exhibit A.

rulemaking, the Department accepts that all two-family dwellings and townhouses should have fire sprinkler systems installed as required in the model code. However, the Department proposes to amend the 2012 IRC model code so that single family dwellings have a fire sprinkler system installed only when they reach a threshold of 4,500 square feet. This was decided upon by the Commissioner based on research, committee, and stakeholder input, including approximately forty publications submitted to the Advisory Committee that were posted on the Department's rulemaking website.[3] The 4500 square-foot threshold includes all floors and basement, but excludes garage floor area. Automatic fire sprinkler system requirements under the 2012 IRC and its amendments are more fully discussed in the Rule-By-Rule Analysis section that follows.

ALTERNATIVE FORMAT

Upon request, this information can be made available in an alternative format, such as large print, braille, or audio. To make a request, contact Colleen Clayton at the Department of Labor and Industry, 443 Lafayette Road N., St. Paul, Minnesota 55155, phone: 651-284-5867, and fax: 651-284-5749. TTY users may call the Department at 651-297-4198.

STATUTORY AUTHORITY

The Department's statutory authority to adopt the rules is stated in the following Minnesota Statutes:

> **326B.02, Subdivision 5. General rulemaking authority.** The commissioner may, under the rulemaking provisions of chapter 14 and as otherwise provided by this chapter, adopt, amend, suspend, and repeal rules relating to the commissioner's responsibilities under this chapter, except for rules for which the rulemaking authority is expressly transferred to the Plumbing Board, the Board of Electricity, or the Board of High Pressure Piping Systems.
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> **326B.101, Policy and purpose.** The State Building Code governs the construction, reconstruction, alteration, and repair of buildings and other structures to which the code is applicable. The commissioner shall administer and amend a state code of building construction which will provide basic and uniform performance standards, establish reasonable safeguards for health, safety, welfare, comfort, and security of the residents of this state and provide for the use of modern methods, devices, materials, and techniques which will in part tend to lower construction costs. The construction of buildings should be permitted at the least possible cost consistent with recognized standards of health and safety.
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> **326B.106, Subdivision 1. Adoption of code.** Subject to sections 326B.101 to 326B.194, the commissioner shall by rule and in consultation with the Construction Codes Advisory Council establish a code of standards for the construction, reconstruction, alteration, and repair of buildings, governing matters of structural materials, design and construction, fire

[3] Copies of the publications submitted to the 1309 Advisory Committee during its deliberations are reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of these publications are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

protection, health, sanitation, and safety, including design and construction standards regarding heat loss control, illumination, and climate control. The code must also include duties and responsibilities for code administration, including procedures for administrative action, penalties, and suspension and revocation of certification. The code must conform insofar as practicable to model building codes generally accepted and in use throughout the United States, including a code for building conservation. In the preparation of the code, consideration must be given to the existing statewide specialty codes presently in use in the state. Model codes with necessary modifications and statewide specialty codes may be adopted by reference. The code must be based on the application of scientific principles, approved tests, and professional judgment. 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. To that end the code must encourage the use of new methods and new materials. Except as otherwise provided in sections 326B.101 to 326B.194, the commissioner shall administer and enforce the provisions of those sections.

Under these statutes, the Department has the necessary statutory authority to adopt the proposed rules.

REGULATORY ANALYSIS

Minnesota Statutes, section 14.131, sets out eight factors for a regulatory analysis that must be included in the SONAR. Paragraphs (1) through (8) below quote these factors and then give the agency's response.

"(1) a description of the classes of persons who probably will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule"

The classes of affected persons who probably will be affected by the proposed rule include residential building contractors and builders, designers, certified building officials, materials manufacturers, fire service personnel, and homeowners.

Those that will bear the costs of the proposed rule include residential building contractors and builders, and homeowners to whom they will ultimately pass on the costs.

Those that will likely benefit from the proposed rule include residential building contractors and builders, designers, certified building officials, materials manufacturers, fire service personnel, and homeowners.

"(2) the probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues"

The probable costs to the agency for the implementation and enforcement of the proposed rule include costs to purchase code books for agency staff.

The probable costs to any other agency for implementation and enforcement include costs for code books for building officials and other entities involved with enforcement of the code, and any educational expenses necessary for training on the proposed rule.

There is no anticipated effect on state revenues as a result of the implementation and enforcement of the proposed rule.

"(3) a determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule"

There are no less costly or intrusive methods for achieving the purpose of the proposed rule. The adoption of this code will provide uniform application and enforcement of construction standards. The uniform application and enforcement of this code will result in more predictable code application and enforcement, which will tend to lower costs by reducing the need for review by local and state boards and other entities responsible for code interpretation and review.

"(4) a description of any alternative methods for achieving the purpose of the proposed rule that were seriously considered by the agency and the reasons why they were rejected in favor of the proposed rule"

Because the IRC serves as the base document for the Minnesota Residential Code and it is currently the only model residential building code that is generally accepted and in use in the United States, no alternative model code was considered.

"(5) the probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals"

The proposed rule does not require compliance for existing buildings, unless the buildings undergo certain modifications. The proposed rule will only apply to new construction or any addition, alteration, or repair. It is difficult to identify actual compliance costs associated with the construction or remodeling of a new or existing building because these costs are dependent upon a building's design, use, age, and condition.

Although it is difficult to quantify actual costs, the Department anticipates that the global costs associated with this proposed rule will be minimal for one-family dwellings having less than 4,500 square feet of floor area from the rule it is replacing. Newly constructed one-family dwellings having a floor area of 4,500 square feet or more will incur a cost increase based on the required installation of automatic fire sprinkler systems. Estimations of that cost vary widely. As will be seen in the Rule-By-Rule Analysis section that follows, cost estimations received from various interested parties during the rule development stage range from $1.61 per square foot to $3.95 per square foot, depending on who was submitting the estimations. Based on numerous factors, including existing costs for sprinkler installations in multi-occupancy buildings under Minnesota's current Building Code, the Department believes that the estimated cost per square foot for automatic sprinkler installations in one-family dwellings required to be sprinklered is closer to the $1.61 per square foot estimated costs as provided to it by the parties. Finally, while a newly constructed one-family dwelling having less than 4,500 square feet floor area will not be

required to be sprinklered under the proposed rule, those dwellings will incur a cost of $0.27 to $0.30 per square foot to install ½-inch gypsum board for fire protection of floors, unless the dwelling complies with an exception in the 2012 IRC, section R501.3. Additional information and detail concerning probable compliance costs of this rule part can be found in proposed Minnesota Rule 1309.0313's Rule-By-Rule Analysis section, below.

There may be negligible costs to a municipal building department associated with a need for building officials to implement and update procedures, such as training, the purchase of new code books, or to revise certain documents, such as building permits. Most of the procedures and documentation are currently in place, so the changes would likely be revisions to current practices and would not create a need for new procedures or documents.

While some specific requirements of this rule may be considered more restrictive than the current rule, others will be less restrictive. For most affected parties, any increase in costs will be passed along to the building owner.

"(6) the probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals"

The Department anticipates that the probable costs of not adopting the proposed rule could include an increase in costs to obtain outdated equipment and materials. The Department anticipates the probable consequences of not adopting the proposed rule include confusion with application and enforcement of an older code when a newer code is available. The family of ICC Codes is designed to work together as they reference each other within the body of each individual model code provision. The Department intends to adopt several of the 2012 ICC Codes at the same time. Therefore, if this proposed rule were not adopted, it could create confusion in other rule chapters that adopt and incorporate the 2012 ICC model codes when they reference the IRC.

Another consequence of not adopting the proposed rule would be using outdated materials and methods because the Department currently administers and enforces the 2006 IRC. As stated in the introduction, the Department chose to skip the adoption of the 2009 ICC codes because of a slowdown in the economy. The existing rule chapter 1309 is therefore based on the 2006 version of the IRC. Older methods may prove to be less efficient and outdated materials will be more difficult to obtain. Additionally, the model code book publisher may discontinue the publication of older code book editions because it is no longer cost-effective to keep in print. Therefore, failure to update the residential code by not adopting the proposed rule would have a negative impact on the administration, safety, application and enforcement of Minnesota's residential building code provisions.

"(7) an assessment of any differences between the proposed rule and existing federal regulations and a specific analysis of the need for and reasonableness of each difference"

There are no applicable federal regulations that address residential construction.

"(8) an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule."

The Minnesota State Building Code is a single set of coordinated building construction regulations that apply throughout the state of Minnesota. There are no other building codes that can be used or enforced in this state. When the Department adopts the individual rules that make up the State Building Codes, it works with other state agencies that may also have an effect on certain buildings to ensure that the requirements that are parallel or that cover the same building type, are not cumulative.

For example, portions of Minnesota Rules, chapter 1305, Adoption of the International Building Code, regulate the planning and construction of care facilities in Minnesota. The Department utilized an advisory committee to review the 2012 International Building Code. The committee members included technical expertise from other state agency personnel to ensure the rule would coordinate with any other state regulations that may be affected by the rule.

The Department also develops the Minnesota Accessibility Code so that it incorporates the federal accessibility requirements to the extent they are applicable. When certain accessibility features are not required in Minnesota, our accessibility experts inform code users that although something is not required by the Minnesota Code, it may still be required federally and must be complied with.

The adoption cycle for the Minnesota State Building Code generally occurs every three years so it reflects the most recent changes that occur federally and with other state agencies. For example, the Department of Energy implements federal requirements for energy in construction by working through the international model code process. By adopting and incorporating international model codes into the Minnesota State Building Code by reference, the cumulative effect is greatly reduced or eliminated. Department staff also monitors any regulatory changes that occur federally and on a state level. The Department also has staff that monitors code changes being proposed to the model building codes at the national level to ensure that the Minnesota State Building Code will not conflict with other building code regulations.

PERFORMANCE-BASED RULES

Minnesota Statutes, section 326B.106, subdivision 1, authorizes the Department to establish by rule a code of standards for construction. This statute requires the code to "conform insofar as practicable to model building codes generally accepted and in use throughout the United States." At the same time, this statute mandates that, "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."

The 2012 IRC establishes minimum regulations for building systems using prescriptive and performance-based provisions, with emphasis on performance. The proposed rules that contain amendments to the 2012 IRC incorporate the philosophy required by Minnesota Statutes, section 326B.106, subdivision 1.

ADDITIONAL NOTICE

This Additional Notice Plan was reviewed by the Office of Administrative Hearings and approved in a [date] letter by Administrative Law Judge [name].

Our Notice Plan also includes giving notice required by statute. We will mail the Notice of Hearing, which will contain an easily readable and understandable description of the nature and effect of the proposed rule, to everyone who has registered to be on the Department's rulemaking mailing list under Minnesota Statutes, section 14.14, subdivision 1a. We will also give notice to the Legislature per Minnesota Statutes, section 14.116.

The Department will mail the Notice of Hearing to the following interested parties:

1. All certified building officials involved in code administration. This list includes all municipal building officials responsible for administration of the state building code;
2. Builders Association of Minnesota;
3. Association of Builders and Contractors;
4. Builders Association of the Twin Cities;
5. Minnesota Association of Building Officials;
6. Fire Marshals Association of Minnesota;
7. Minnesota State Fire Chiefs Association;
8. Minnesota Professional Fire Fighters Association;
9. Insurance Federation of Minnesota;
10. League of Minnesota Cities;
11. American Institute of Architects Minnesota; and
12. Association of Minnesota Counties.

Our Notice Plan did not include notifying the Commissioner of Agriculture because the rules do not affect farming operations per Minnesota Statutes, section 14.111.

CONSULTATION WITH MMB ON LOCAL GOVERNMENT IMPACT

As required by Minnesota Statutes, section 14.131, the Department consulted with the Commissioner of Minnesota Management and Budget ("MMB") concerning the fiscal impact and benefits the proposed rules may have on units of local government. This was done on September 16, 2013, by providing MMB with copies of the Governor's Office Proposed Rule and SONAR Form, the proposed rules, and the near-final SONAR. On October 3, 2013, the Department received a memorandum dated the same day from MMB Executive Budget Officer Elisabeth Hammer which provided general comments and concluded that:

> [b]ased upon the information provided to me by the Department of Labor and Industry, there does not appear to be significant costs to local units of government that are not recoverable through local fees as a result of this proposed rule.

The Department will submit a copy of its correspondence with MMB and the October 13, 2013 response received from that agency to OAH at the hearing or with the documents it submits for ALJ review.

DETERMINATION ABOUT RULES REQUIRING LOCAL IMPLEMENTATION

As required by Minnesota Statutes, section 14.128, subdivision 1, the agency has considered whether these proposed rules require a local government to adopt or amend any ordinance or other regulation in order to comply with these rules. Pursuant to Minnesota Statutes, section 14.128, the Department has determined that a local government will not be required to adopt or amend an ordinance or other regulation to comply with these proposed rules. The State Building Code is the standard that applies statewide. Minnesota Statutes, section 326B.121, subdivision 1, mandates compliance with the State Building Code whether or not a local government adopts or amends an ordinance. As a result, an ordinance or other regulation is not required for compliance. If a city wishes that its ordinances accurately reflect legal requirements in a situation in which the State Building Code has superseded the ordinances, then the city may want to amend or update its ordinances.

COST OF COMPLYING FOR SMALL BUSINESS OR CITY

Agency Determination of Cost

As required by Minnesota Statutes, section 14.127, the Department has considered whether the cost of complying with the proposed rules in the first year after the rules take effect will exceed $25,000 for any small business or small city. The Department has determined that the cost of complying with the proposed rules in the first year after the rules take effect will not exceed $25,000 for any small business or small city because the proposed rules do not require any construction to occur within the first year after the rules take effect. Any small business or city contemplating new construction or remodeling will decide whether or not to undertake the construction or remodeling project and when that construction or remodeling will occur. Because no new construction or remodeling is required by the proposed rules within the first year after the rules take effect, no new construction or remodeling need be undertaken within the first year.

Additionally, any small business in the construction industry will likely pass through any additional costs that occur resulting from code changes, so the costs would not be borne by the small business, but by the building owner. A small city would likely need to purchase new code books and attend training to learn about new code changes, but this cost would not exceed $25,000 for the small city.

The costs of construction are subject to many variables, including the current construction economy, material costs, and local labor costs. The cost of life-safety provisions that change in the rule are part of the base costs upon which the cost of the other features are added. Other features may be reduced to adjust the cost.

Small businesses and cities will never build the exact same building under the existing code and under the proposed rules. The number of variables and the fact that the new rule will provide for cost savings as well as costs, makes it unlikely the specific set of provisions that apply to a specific building on a specific site will increase the cost by more than $25,000.

LIST OF WITNESSES

If these rules go to a public hearing, the Department anticipates having the following witnesses testify in support of the need for and reasonableness of the rules:

1. Construction Codes and Licensing Division Staff, if necessary;
2. 1309 Advisory Committee Members, if necessary; and
3. Minnesota State Fire Marshal's Office Staff, if necessary.

RULE-BY-RULE ANALYSIS

GENERAL

Throughout this rule in its entirety, references to the 2006 edition of the IRC are changed to 2012 because the Department is incorporating by reference the 2012 edition of the IRC.

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

Subpart 1. Generally. This rule subpart is modified by updating and replacing copyright information and permission that was provided by the International Code Council to the Department for incorporation of the 2012 IRC into this rule.

Subp. 2. Mandatory chapters.

Chapter 43, Referenced standards. This chapter is deleted and renumbered to Chapter 44 because the publisher added a new chapter to the code book, causing the Referenced Standards chapter to be renumbered.

P2904, Dwelling unit fire sprinkler systems. 2012 IRC, Section P2904 of Chapter 29, will become a mandatory section with the adoption of this rule. This section of the 2012 IRC is identified as one of the prescriptive fire sprinkler design methods for fire sprinklers required in IRC sections R302, R313 and R309. The content in this section did not exist in the 2006 IRC. Section P2904 is being required as a mandatory chapter in this rule to ensure proper design and enforcement of the code requirements for dwelling unit fire sprinkler systems. It is necessary and reasonable to include section P2904 as a mandatory chapter to provide effective and efficient use of fire sprinkler system designs.

IRC Appendix K, Sound transmission. This appendix is required as a mandatory appendix in Minnesota Rules, chapter 1309, because it will ensure proper design and will help enforce sound transmission requirements between two-family dwellings and townhouses. In the adoption of the 2006 IRC, Appendix K text was incorporated into section R317 in its entirety by amendment to prevent possible oversights by the design and enforcement industries. With the adoption of the 2012 IRC, the sound transmission requirements are incorporated by adding amendments to 2012 IRC, sections R302.3.2 and R302.5, which direct the user to Appendix K. Appendix K requires that two-family dwellings and townhouses comply with the sound transmission requirements. It is reasonable and necessary to include Appendix K as a mandatory

appendix chapter because the requirements are being carried forward and the amendment will continue to provide sound transmission protection between attached dwellings and townhouses.

Subp. 3. Subitems B, D and E. The reference to Minnesota Statutes, section 326B.115, in subitem B is deleted and replaced with a reference to the Minnesota Rule chapters that contain the residential and commercial energy codes. This amendment is necessary to ensure that the user is directed to the correct citation for the energy codes. Chapter references in subitems D and E are amended to reflect chapter and section renumbering that occurred in the 2012 IRC.

Subp. 4. Seismic or earthquake provisions. The existing rule deleted international model code requirements for seismic provisions in Minnesota with the 2006 IRC adoption. The current rule amendment is proposed for repeal. By repealing Minnesota Rules, part 1309.0010, subpart 4, Minnesota is subject to the seismic provisions in the IRC, which are incorporated by reference in Minnesota Rules, part 1309.0010, subpart 1. The Structural Advisory Committee recommended that the seismic provisions in the 2012 IRC model code document should apply in Minnesota because seismic provisions are necessary for practical application of all code provisions in the IRC. Adopting the 2012 IRC model code seismic provisions will impact current construction practices that were previously exempt from addressing IRC model code seismic concerns. However, Minnesota is located in Seismic Design Category "A," as identified in 2012 IRC Table R301.2(1). Seismic Design Category "A" is the category that contains the least restrictive construction requirements. Adopting the 2012 IRC seismic provisions and allowing Minnesota code users to apply the least restrictive Seismic Design Category "A" provisions will have little, if any, effect on current residential construction practices because those provisions are so basic as applied to residential construction that they do not require the additional expenditure of construction resources. Moreover, as noted by the Structural Advisory Committee, adoption of the 2012 IRC seismic provisions will encourage uniform enforcement and further practical application of all the IRC code provisions.

Adoption of the 2012 IRC seismic provisions in this rulemaking will result in little to no cost increase for residential builders and designers. This amendment clarifies application of seismic code provisions and, when properly applied, will effectively maintain the status quo regarding residential construction practices in Minnesota.

1309.0020 REFERENCES TO OTHER ICC CODES.

Subpart 9. Energy conservation code. A reference to the Minnesota Rule chapters that contain the residential and commercial energy codes is added in place of the reference to Minnesota Statutes, section 326B.115, to direct the user to the correct citations for the energy codes.

1309.0030 ADMINISTRATIVE PROCEDURE CRITERIA.

The reference to Minnesota Statutes, section 16B.57, in this existing rule is deleted and replaced with section 326B.101 because the statute was renumbered by the Minnesota legislature during the 2007 Regular Session.

1309.0040 VIOLATION.

This existing rule is being repealed because Minnesota Rules, part 1300.0150, already establishes that violation of any part of the Minnesota State Building Code is a misdemeanor pursuant to Minnesota Statutes, section 326B.082. It is reasonable to repeal a rule that is repetitive and whose subject matter is more appropriately found in another more general rule chapter that already addresses administrative aspects of the State Building Code.

1309.0202 SECTION R202, DEFINITIONS.

Subpart 2. Additional definitions.

The definitions for the terms "connector" and "fastener" are deleted because of changes in the 2012 IRC. Minnesota Rules, part 1309.0802, Wood roof framing, amended 2006 IRC, section R802.10.5, by adding language that used the terms "connector" and "fastener." As a result, the definitions for "connector" and "fastener" were added to the definition section in Minnesota Rules, part 1309.0202, during the previous code adoption to support the amendment located in Minnesota Rules, part 1309.0802. The 2012 IRC no longer contains section R802.10.5, but the language in that section is incorporated into 2012 IRC, section R802.11. Because section R802.10.5 no longer exists in the 2012 IRC, the definitions for "connector" and "fastener" located in Minnesota Rules, part 1309.0802, subpart 2, are being deleted since the definitions to support the previous rule part are no longer necessary.

The definition for "code" is added to clarify that "the code" means the Minnesota Residential Code as adopted by Minnesota Rules, chapter 1309. It is reasonable to add the definition for clarity and effective use of the 2012 IRC.

The definition for "crawl space" is modified to coordinate with other code changes that reduce the minimum ceiling height for basements to 6 feet 4 inches (1931 mm). The existing definition identifies a crawl space as a "room" or "area" having a ceiling height of less than 7'-0". The IRC does not provide a definition for "crawl space." However, there are several rule amendments that use the phrase "crawl space," including exemptions for stairs and smoke alarms. Therefore, it is necessary to define the term "crawl space." The proposed definition is a modification to an existing Minnesota Rule that changes the minimum ceiling height of the space. It is necessary and reasonable to include a definition for "crawl space" to clarify the intent of other amended code sections involving these types of spaces.

The definition for "dampproofing" is deleted from subpart 2. The definition is no longer applicable for use in the 2012 IRC because section R406.1, Concrete and masonry foundation dampproofing, is being deleted in its entirety. Proposed Minnesota Rules, part 1322.0402, subpart 2, will require that all concrete and masonry foundations be waterproofed in accordance with 2012 IRC, section R406.2, regarding waterproofing. It is necessary and reasonable to delete the definition of "dampproofing" for consistency with the amendment to 2012 IRC, section R406.1.

The definition for "floor area" is added to subpart 2 because that term is not defined by the 2012 IRC and it is necessary to establish uniform application of the State Building Code as it applies to fire sprinkler system installation requirements. The proposed rule language for IRC section R313 requires that fire sprinkler systems are required for all two-family dwellings,

townhouses, and one-family dwellings of 4,500 square feet or more in floor area (excluding the garage). The proposed definition of "floor area" clarifies that only the floor area within the perimeter exterior walls is the area used to determine whether fire sprinkler systems are required for one-family dwellings. This definition will eliminate confusion with the definition of "floor area" as used in the 2012 IBC. The 2012 IBC definition includes floor areas under a roof or projection not provided within surrounding walls. It is therefore reasonable to add the definition of "floor area" to the proposed rules to alleviate confusion between definitions and requirements under the IRC and IBC, as well as to encourage uniform enforcement of the code.

The definition for "pan flashing" is deleted from subpart 2 because the definition and requirements for "pan flashing" are now included in the 2012 IRC. Section R703.8 of the 2012 IRC addresses and defines "pan flashing," so the amendment containing the definition is no longer required. It is reasonable to delete a definition that is incorporated into the 2012 IRC document.

The definition for "stair" is deleted from subpart 2 because the definition for "stair" is now included the 2012 IRC, section 202. It is reasonable to delete the current definition for "stair" from subpart 2 and use the definition in the IRC code book to provide consistency and ease of use.

The definition for "story above-grade plane" is deleted from subpart 2 because it is included in the 2012 International Building Code ("IBC") and the IRC. Therefore, this definition is no longer necessary. It is reasonable to delete the current definition from subpart 2 and use the definition in the IRC code book to provide consistency and ease of use.

The definition of "sill height" is added to subpart 2 to define how and where the sill height is measured as referenced in the 2012 IRC, section R310.1, Emergency escape and rescue required. The definition is necessary to clarify confusion about how and where the sill height is actually measured. This concept is also discussed in the 2012 IRC, section R312.2, Window fall protection, however, the term "sill height" is not actually used. The incorporation of this definition into the code is necessary to provide uniformity because the concept is referenced in two different ways. It is therefore reasonable to add the definition to the Minnesota State Building Code for clarity and effective use of the 2012 IRC.

1309.0301 DESIGN CRITERIA.

Subpart 1. R301.1.4. This subpart amends 2012 IRC, section R301.1.4, Automatic sprinkler systems (general). The subpart, which includes subsections R301.1.4, R301.1.4.1, and R301.1.4.2, is being repealed. The Advisory Committee recommended deleting this amendment and using the 2012 IRC for sprinkler provisions and installation requirements instead, which are located and addressed in section R313 in the 2012 IRC.

The current amendment to section R301.1.4.1 contained in subpart 1 regarding state licensed facilities for IRC-1, IRC-2, and IRC-3 occupancy classifications is being moved to Minnesota Rule, part 1309.0313. The amendment to 2012 IRC, section R313.3, is needed to prevent possible conflicts between the IRC and state licensed facilities, and their licensing requirements regarding fire sprinkler system installations. The amendment requires that the most restrictive provisions of the IRC or state licensing agency apply. It is reasonable to delete the current amendment for section R301.1.4.1 and to relocate the current requirements to 2012 IRC,

section R313.3, to provide effective and efficient use of the code and to prevent possible confusion with code interpretations. It is reasonable to repeal the current amendment language regarding automatic sprinkler systems because these requirements are now incorporated in the 2012 IRC, section R313, and are no longer necessary.

Subp. 2. Table R301.2(1). This subpart is modified by deleting Table R301.2 (1), Climatic and Geographic Design Criteria, including its footnotes, and replacing it with a new Table 301.2(1) and footnotes.

This table was previously amended by deleting certain information with the 2006 IRC adoption. However, that amended table failed to include the column titled "Ice Barrier Underlayment Required." This omission created a code tracking problem for the ice barrier installation being required. Most code enforcement personnel understood that, historically, Minnesota had the potential for ice damming issues and enforced it accordingly. Nevertheless, some industry personnel failed to enforce the requirements for ice barriers because of the tracking problem.

To address this problem, the Advisory Committee recommended that the entire 2012 IRC Table R301.2(1), as amended, be adopted in Minnesota rule, thus offering more clarity to industry personnel when using the code. The amended table contained in this proposed rule identifies as many column conditions as possible for the user. Some column headings, however, will not be applicable throughout the entire state. Additionally, some Minnesota jurisdictions will need to specifically address column headings for Flood Hazards and Termites, if applicable to their local conditions. It is reasonable to amend the existing rule for Table R301.2 (1) to provide for more ease of use and uniform code enforcement.

Subp. 4. Table R301.5. This table is repealed because it is no longer needed. The existing rule amendment for Table R301.5 adds language to footnote "g" of Table 301.5 (Minimum Uniformly Distributed Live Loads) to include additional requirements for uninhabitable attics. These requirements were not included in the 2006 IRC table. The 2012 IRC has a revised Table R301.5 and now includes the requirements under footnote "g" for uninhabitable attics. Therefore, the existing rule amendment is no longer needed and it is therefore reasonable to repeal the same.

1309.0302 SECTION R302, FIRE-RESISTANT CONSTRUCTION (new title).

Section R302, Exterior wall location, in the 2006 IRC has been revised and re-titled in its entirety in the 2012 IRC to become "Section R302, Fire-resistant construction." This section now contains all of the fire-resistant construction requirements located in one section. The title of this rule part is therefore changed to "1309.0302 Section R302, Fire-resistant construction" to more accurately reflect the revisions and title change of section R302 in the 2012 IRC.

The existing amendment to section R302.1, Exterior walls, is being deleted because the requirements in this section are revised in the 2012 IRC. The Advisory Committee recommended that 2012 IRC, section R302.1, was acceptable as revised by the ICC and that there was no longer a reason to amend section R302.1 with the adoption of the 2012 IRC. It is reasonable to delete the

existing amendment to section R302.1 and use the 2012 IRC, section R302.1, because the updated language of section R302.1 no longer needs to be revised by rule.

Subpart 1. R302.2, Townhouses. This subpart contains the 2012 IRC requirements for townhouses, but incorporates some modifications to the language for clarity and carries forward some existing rule language for townhouses. The current language is deleted and replaced with new amendments to Section R302.2.

In section R302.2, Townhouses, the language in the exception is modified to delete the reference to "Chapters 34 through 43." These chapters pertain to electrical requirements. Minnesota's Electrical Code is located in Minnesota Rules, chapter 1315, and is mandatory in Minnesota. To coordinate this requirement with Minnesota's Electrical Code, the reference to chapters 34 through 43 are deleted and replaced with a reference to Minnesota Rules, chapter 1315. This modification is necessary to ensure that this amendment is consistent with the Minnesota's Electrical Code and prevents possible conflict between the rules.

In subsection R302.2.1, Continuity, the IRC language is amended by adding the word "roof" before the reference to "deck" and "slab" to provide clarity. Section R302.2.1 is further amended by adding a sentence at the end that states, "[t]he separation shall extend through enclosed soffits, overhangs, and similar projections." This sentence defines the extent of the fire-resistant rating required at these construction features. These changes are in the existing IRC amendments and are being carried forward because they better specify the termination point of the fire resistive walls and projections to ensure uniform enforcement. Section R317.2.1 of the 2006 IRC was renumbered and relocated in the 2012 IRC to section 302.2.1. It is necessary to carry forward the existing amendment to provide more uniform code enforcement.

In subsection R302.2.2, Parapets, the language is unchanged from the 2012 IRC, but the subsection is included in the proposed rule to provide context to the entire amendment. Including this language will clarify to the user that the subsection applies and is not deleted from the code.

Table R302.1 (1) Exterior Walls. The 2006 IRC included Table R302.1.1 for exterior walls. The 2012 IRC now incorporates two tables: Table R302.1 (1) Exterior Walls; and Table R302.1 (2) Exterior Walls-Dwellings with Fire Sprinklers. These tables identify specific construction requirements for exterior wall elements as they relate to their location to the lot line.

Table R302.1 (1) Exterior Walls, is amended by adding footnote "a," which requires "1 hour on the underside equates to one layer of 5/8" type X gypsum sheathing. Openings are not permitted." This footnote was included by amendment in Table R302.1 of the 2006 IRC to coordinate the requirement for a one-hour fire-resistance on the underside of projections with the same requirement in other parts of the Minnesota State Building Code. The footnote provided a reasonable and acceptable method of compliance without having to obtain a listed one-hour assembly. Footnote "a" is therefore added to Table R302.1 (1) to carry forward that existing requirement.

Table R302.1 (2) Exterior Walls- Dwellings with Fire Sprinklers. Table R302.1 (2) Exterior Walls-Dwellings with Fire Sprinklers, is amended by deleting the 2012 IRC footnote "a" text and replacing it with the same amended footnote for Table R302.1(1). The 2012 IRC footnote

"a" reads: "For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler systems [*sic*] installed in accordance with section P2904, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard of 6 feet or more in width on the opposite side of the property line." The Advisory Committee recommended that Table R302.1 (2)'s footnote "a" be deleted due to the lack of a definition for the term "subdivision" used in the 2012 IRC Table's footnote. The proposed footnote "a" states "1 hour on the underside equates to one layer of 5/8" type X gypsum sheathing. Openings are not permitted." This footnote was part of Table R302.1 in the 2006 IRC. The footnote is added to coordinate the requirement for a one-hour fire-resistance on the underside of projections with the same requirement in other parts of the Minnesota State Building Code. The proposed footnote provides an acceptable method of compliance without having to obtain a listed one-hour assembly. The footnote to Table R302.1 (2) is therefore added to carry forward the current requirement.

For subsections R302.2.3, Parapet construction and R302.2.4, Structural independence, the 2012 IRC language is unchanged, but the subsections are included in the amendment to provide context to the entire amendment. Including this language will clarify to the user that the subsection applies and is not deleted from the code.

R302.2.5 Sound transmission. The Department amended section R317 of the 2006 IRC to incorporate the sound transmission text from Appendix K into section R317. This amendment provided easier access to the information and acted as a reminder to the user about sound transmission requirements. Both the 2006 and 2012 IRC editions failed to include tracking to the requirements in Appendix K for two-family and townhouse structures, so it is still necessary to include an amendment to direct the user to Appendix K for sound transmission requirements. The 2012 IRC renumbered and retitled the 2006 IRC, section R317, Dwelling unit separation, which is now R302 Fire-retardant construction. The amendment to section R302.2.5, Sound transmission, is needed and reasonable because it will provide uniform code enforcement and design for users of the 2012 IRC.

Subp. 2. R302.3, Two-family dwellings.

R302.3.2 Sound transmission. Section R317.1 of the 2006 IRC was amended to add the sound transmission requirements from Appendix K into section R317 by adding a new section R317.4, Sound transmission. This amendment provided easier access to the information and served as a reminder about sound transmission requirements. Neither the 2006 nor the 2012 IRC documents included tracking to Appendix K for two-family and townhouse structures, therefore, it is still necessary to include an amendment to direct the user to Appendix K for sound transmission requirements for two-family and townhouse structures.

The 2012 IRC renumbered and retitled the 2006 IRC, section R317, Dwelling unit separation, which is now numbered section R302 Fire-retardant construction. The proposed new amendment is reasonable and necessary because it will provide uniform code enforcement and design for all users of the 2012 IRC.

Subp. 3. R302.5.1, Opening protection. 2012 IRC, Section R302.5.1, is amended by deleting the text "equipped with a self-closing device" from the last sentence of the section. The code language pertains to openings between the garage and residence and applies to a door opening or other openings between a garage and the residence. The requirement for self- closing devices was previously included in the 2000 IRC, but omitted from the 2006 IRC model code requirements, then reappeared in the 2012 IRC code.

This amendment is necessary because it eliminates a potential for injury to small children. There has been no indication in Minnesota of a need for self-closing devices. The amendment is reasonable because it does not impose unnecessary and unjustified requirements on the public.

Subp. 4. R302.6, Dwelling/garage fire separation. Table R302.6, Dwelling/garage fire separation, in the 2012 IRC is amended to provide additional clarity to the model code text.

The "Material" column is amended by adding a sentence that states, "Vertical separation between the garage and the residence attic shall extend to the roof sheathing or rafter blocking" following "Not less than ½-inch gypsum board or equivalent." This additional sentence helps clarify that the wall-separation material on the garage side of the residence between the garage and the attic shall extend up to the roof sheathing or to the rafter blocking to provide a fire separation wall between the garage and residence. This amendment is necessary and reasonable because it will not require sheet rock to be installed around the rafter block, but instead can stop at the rafter block, which will save time, expense and extra materials. This language is not contained in the IRC and is necessary to ensure uniform enforcement.

TABLE R302.6 DWELLING/GARAGE SEPARATION

SEPARATION	MATERIAL
From the residence and attics	Not less than $^1/_2$-inch gypsum board or equivalent applied to the garage side. Vertical separation between the garage and the residence attic shall extend to the roof sheathing or rafter blocking.
From all habitable rooms above the garage	Not less than $^5/_8$-inch Type X gypsum board or equivalent
Structural members supporting floor/ceiling assemblies or garage ceiling used for separation required by this section	Not less than $^1/_2$-inch gypsum board or equivalent applied to the garage side of structural members supporting the floor/ceiling assemblies or garage ceiling. Structural members include, but not limited to: walls, columns, beams, girders, and trusses.
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than $^1/_2$-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area. This provision does not apply to garage walls that are perpendicular to the adjacent dwelling unit wall.

Table R302.6 is further modified by amending the third row under the "Separation" column. The language currently reads "Structure(s) supporting floor/ceiling assemblies used for separation required by this section." This language is amended to read, "Structural members supporting floor/ceiling or garage ceiling used for separation required by this section." This modification will now permit designers and contractors to use the garage floor/ceiling assembly above the garage space as a horizontal "fire wall" between the residence and garage instead of requiring a vertical "fire wall." This provides the designer or contractor with an alternate method of fire separation between the residence and garage. Having an alternate (horizontal) method for the installation of fire separation is needed and reasonable because it will provide a more practical installation method if vertical framing conditions may make installation too difficult and unreasonable. Adding the text "structural members" identifies what must be fire protected and is further explained in the "Material" column where the structural members are identified as walls, columns, beams, girders, and trusses. Adding the phrase "or garage ceiling" will provide clarity because the code, as written, has confused code users who have interpreted that requirement to apply only to garage ceilings that have floor systems above.

Table R302.6 is further modified by amending the third row under "Material" that currently reads, "Not less than ½-half inch gypsum board or equivalent." The amended language reads, "Not less than ½-inch gypsum board or equivalent applied to the garage side of structural members supporting the floor/ceiling assemblies or garage ceiling. Structural members include, but are not limited to: walls, columns, beams, girders, and trusses." This modification expands the requirements that identify which structural members are required to be covered by ½-inch gypsum board or equivalent material, which will, in turn, permit the use of the garage ceiling or garage floor/ceiling as a horizontal fire separation between the residence and garage when the installation of vertical separation would be too difficult. This amended language is intended to clarify that any structural member that supports the garage ceiling or garage floor/ceiling when used as a horizontal fire separation must be protected with ½-inch gypsum board or equivalent material. This modification will help provide uniform application and enforcement.

Table R302.6 is also amended by modifying the fourth row in the "Material" column that currently reads, "Not less than ½-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area." This language is amended by adding a sentence that reads "This provision does not apply to garage walls that are perpendicular to the adjacent dwelling unit walls." The added text clarifies that only garage walls that are parallel and less than 3 feet from the dwelling require the fire separation material to be installed. The requirement does not apply to garage walls that are perpendicular to the dwelling even if they are within 3 feet. Without this amendment, small portions of garage walls that are perpendicular to the dwelling would require protection. The small portion of perpendicular garage wall that would require protection would not significantly alter the fire protection already provided by the walls that are parallel to the dwelling and protected. This amended language is reasonable and necessary to ensure uniform application and enforcement.

1309.0305 SECTION R305, CEILING HEIGHT.

R305.1, Minimum height, new buildings (new section title). This section is amended by using the base language from 2012 IRC, section R305.1, Minimum height, and by expanding the ceiling height requirements to specifically address new buildings, basements of new buildings, and

alterations to existing building basements. The proposed language is a combination of the amended language for this section and the amended definition for "crawl space," located in 2012 IRC, section R202.

This modification is necessary because conflicts exist for jurisdictions throughout Minnesota related to requests to finish a basement space that has less than a seven-foot ceiling height and is technically a "crawl space," by definition. Jurisdictions often refuse to issue a building permit to finish a space that is technically defined as a crawl space. In many cases, the homeowner ultimately finishes the space without permits or inspections. Other jurisdictions issue permits for a space that is technically defined as a crawl space. Those jurisdictions justify their actions as being more important to inspect the work to verify code and life safety compliance than it is to adhere to the definitional limitation. The amendments to this section are therefore intended to create more uniform enforcement throughout Minnesota in the future.

Amendments to IRC section R305.1 mirror the text in section R305.1 of the 2012 IRC, but a sentence is added concerning the measurement of the floor to ceiling height and the title of the section is changed. The title change is necessary to better describe that the section pertains to ceiling heights for new buildings, basements of new buildings, and alterations to existing building basements. This rule part also amends the section so that the text will mirror the 2012 IRC section text. The last sentence of the current amendment stating "[a]reas or rooms with ceiling heights less than 7 feet (2134mm) are considered crawl spaces" is being deleted because it conflicts with the new "crawl space" definition located in section R202. The amendment adds the second sentence to clarify how the ceiling height is determined.

The exceptions in this section are amended to reflect changes made to the 2012 IRC and other modifications for clarity. Exception 1, pertaining to beams and girders with respect to ceiling height, is deleted and replaced with the ceiling height requirements for sloped ceilings as written in the 2012 IRC. The requirements for beams and girders is relocated as an exception to basements of new buildings (R305.1.1) and included in the text for alterations to existing building basements (R305.2) to encourage uniform enforcement.

Exception 2 addresses minimum ceiling heights in front of water closets, bidets, or sinks and specifically includes the phrase "water closets, bidets, or sinks," which replaces the 2012 IRC text "fixtures as shown in Figure R307.1." The Advisory Committee recommended that "bidets and sinks" be included with the water closet clearance requirements since these fixtures require an adequate ceiling clearance space for use. Moreover, the illustrations in Figure R307.1 do not comply with the Minnesota State Plumbing Code requirements and are also removed for that reason. The deleted text regarding sloped ceiling heights is relocated to exception 1 to maintain consistency with the 2012 IRC format.

R305.1.1, Basements, new buildings (new section title). Section R305.1.1 is added based on the changes to the 2012 IRC. The code language is the same as the 2012 text with the exception of adding the phrase "new buildings" following the term "basements" located in the section title. The title change is necessary to better describe that this section pertains to basement ceiling heights for new buildings only.

This section is specific to basements of new buildings and establishes a minimum ceiling

height permitted for these basements and accommodates the space needed for beams, girders, ducts, and other obstructions by exception. The Advisory Committee's recommendation was to recognize specific ceiling height requirements for new buildings, basements of new buildings, and alterations made to existing building basements to provide more uniform enforcement.

R305.2, Alterations to existing building basements. The amendment to this section adds a new section R305.2 to the model code to address issues associated with finishing basements in existing buildings. Code officials have been put in a difficult position when the finished ceiling of a remodeled basement does not meet the minimum ceiling height of 7 feet required by the amendment to R305.1 in the 2006 IRC. Even with the exception for beams, girders, ducts, or other obstructions in the current R305.1, many remodeled basements in Minnesota do not meet the minimum requirements in the code. The modification to this section will provide code officials with requirements that will permit homeowners to convert basements into a habitable space if the space does not meet the minimum ceiling height requirements in the 2012 IRC. This amendment is necessary and reasonable because there are a significant number of homes in Minnesota that contain unfinished basements that may have a mechanical room, laundry room, or storage space. Homeowners often finish their basements to convert it to more habitable space. This is one of the most cost effective ways for a homeowner to add a bathroom, bedroom, playroom, or den.

R305.2.1, Minimum ceiling height, existing buildings. This is a new amendment added to provide ceiling height requirements for basement ceilings less than 7 feet in height. Section R305.1 requires a minimum ceiling height of 7 feet for new buildings. This new amendment permits a ceiling height of not less than 6 feet 8 inches, but also provides an exception for ceilings with beams, girders, ducts, and other protrusions. The exception states that the protrusions must not extend beyond a 6 foot 4-inch ceiling height and does not permit any exceptions to that ceiling height. This amendment is necessary to address existing buildings that have basement ceiling heights less than 7 feet. Similar language exists in the current code, however this amendment permits a 6 foot 8-inch ceiling height and a 6 foot 4-inch ceiling height with projections, which are specific to existing buildings, rather than new construction.

R305.2.1.1, Bathroom plumbing fixture clearance. This is a new amendment that provides a minimum ceiling height requirement of 6 feet 4 inches for bathrooms. The amendment also provides a minimum ceiling height of 6 feet 4 inches for tubs and showers equipped with a showerhead. This amendment is needed to clarify that accommodations are needed to address ceiling heights at plumbing fixtures when the minimum ceiling height is reduced to 6 feet 4 inches in lieu of that for new buildings and it also addresses minimum ceiling heights for water closets, bidets, or sinks. Similar language exists in the current code, however, this amendment permits a 6 foot 4-inch minimum ceiling height at plumbing fixtures, which are specific to existing buildings rather than new construction.

R305.2.2, Minimum stairway headroom, existing buildings. This is a new amendment that provides minimum headroom in all parts of the stairway of not less than 6 feet 4 inches when altering an existing basement stairway. The amendment also provides an exception for stairways where stair tread nosings at the side of the flight extend under the edge of the floor opening. This amendment is necessary to clarify minimum headroom requirements for stairways. Specifically, the amendment provides accommodations to address minimum stairway headroom when the minimum ceiling height for existing buildings is reduced to 6 feet 4 inches in lieu of the

requirement for new buildings. The amendment is also needed to clarify how the headroom should be measured from the adjoining tread nosing at landings or platforms and also addresses a permitted horizontal projection into the headroom area to accommodate conditions that may be present in existing buildings. Similar language exists in the current code, however, this amendment permits a 6 foot 4-inch minimum clearance for stairway headroom, which is specific to existing buildings rather than new construction.

The amendments to Section R305 are needed and reasonable because it aligns the realities of Minnesota's new buildings, new basements, and existing buildings for acceptable ceiling heights. These amendments merge market realities and encourage life and safety minimums to basements previously recognized as crawl spaces. There will be no cost increase to residential builders and designers. Costs for owners should decrease because the costs to update basement ceilings to meet the minimum height requirements are reduced or eliminated.

1309.0307 SECTION R307, TOILET, BATH AND SHOWER SPACES.

R307.1, Space required. Section R307.1 of the 2012 IRC pertains to the minimum clearances for plumbing fixture installations. The amendment deletes the text in section R307.1, Space required, and replaces it with the following language: "Fixtures shall be installed in accordance with Minnesota Rules, chapter 4715, the Minnesota Plumbing Code." The illustrations in figure R307.1 conflict with the provisions of the Minnesota Plumbing Code. The reference to the 2012 IRC, section P2705.1, is also deleted since this section is not incorporated into this rule. Further, the International Plumbing Code is not adopted in Minnesota.

The amendment is necessary and reasonable because it eliminates the conflict between this code and the Minnesota Plumbing Code, and it continues to provide a standard for the industry and homeowners to follow, which has been in the code for decades.

1309.0309 SECTION R309, GARAGES AND CARPORTS.

Subpart 1. R309.1, Floor surface. This subpart is amended to change the code section reference number only. The section was renumbered from R309.3 in the 2006 IRC to R309.1 in the 2012 IRC. The content of the subpart remains the same. It is reasonable to amend section references to ensure consistency with the 2012 IRC.

Subp. 2. R309.2, Carports. This subpart is amended to change the code section reference number only. The section was renumbered from R309.4 in the 2006 IRC to R309.2 in the 2012 IRC. The content of the subpart remains the same. It is reasonable to amend section references to ensure consistency with the 2012 IRC.

Subp. 3. R309.4, Automatic garage door opening systems. This subpart is amended to change the code section reference number only. The section was renumbered from R309.6 in the 2006 IRC to R309.4 in the 2012 IRC. The content of the subpart remains the same. It is reasonable to amend section references to ensure consistency with the 2012 IRC.

Subp. 4. R309.5, Fire sprinklers. This subpart is amended to delete section R309.5, Fire sprinklers, in its entirety and to replace it with new language that addresses fire sprinkler

requirements in attached garages. In the 2012 IRC requirements, as written for attached garages, fire sprinklers only apply when footnote "(a)" of Table R302.1(2) is used. The recommendation of the Advisory Committee was to delete footnote "(a)" because the footnote does not contain a definition for the term "subdivision" used in the footnote. By deleting the footnote, the section became irrelevant for the purpose of this requirement. Therefore, the entire section is deleted and replaced with new language.

2012 IRC, section R309.5, Fire sprinklers, is amended to require that when a garage is attached to a townhouse, two-family dwelling, or a 4,500 square feet or more single-family dwelling , the garage must be protected by fire sprinklers. The garage fire sprinkler system requirements for two-family dwellings and townhouses are based on the amended 2006 IRC, section R301.1.4, requirements. The garage fire sprinkler system requirements for one-family dwellings with 4,500 square feet or more are based on determinations made by the Commissioner in accordance with the 2012 IRC, section R313, as amended. The Commissioner's rationale pertaining to the 4500 square-foot requirement is located below in the SONAR for proposed Minnesota Rules, part 1309.0313, which amends 2012 IRC, section R313.2.

The amendment to section R309.5 is necessary and reasonable because it carries forward the current requirements regarding fire sprinkler protection for garages attached to townhouses and two-family dwellings, and clarifies the requirements for garages attached to one-family dwellings with a floor area of 4,500 square feet or more. These requirements will help protect attached garages at the common door between the house and garage, since attached garages are exempted from sprinkler requirements in section P2904, Dwelling Unit Fire Sprinkler Systems, of the 2012 IRC.

There will be no cost increase to residential builders and designers for two-family dwellings and townhouses that already require fire sprinklers due to the threshold of 9250 square feet in the current rule. However, there will be a cost associated with fire sprinklers for two-family dwellings and townhouses that were previously exempt from the current 9250 square feet threshold. There also will be a cost associated with fire sprinklers for one-family dwellings with a floor area of 4500 square feet or more under the proposed rule. Costs associated with fire sprinklers are explained and discussed further below in the SONAR for proposed Minnesota Rules, part 1309.0313.

1309.0310 SECTION R310, EMERGENCY ESCAPE AND RESCUE OPENINGS.

R310.1, Emergency escape and rescue required. This section is amended by adding new language to the second sentence of the main code book section and by adding two new exceptions. The second sentence in 2012 IRC, section R310.1, currently reads, "Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room." This sentence is being modified by adding language to the end of the sentence that reads, "but not be required in adjoining areas of the basement." This language was in the 2006 IRC but was removed from the 2012 IRC model code. The proposed language does not require an additional emergency escape and rescue opening in an adjacent area such as a family room, storage area, or an unfinished basement area. This change will maintain the current code requirements while providing uniform enforcement of the emergency escape and rescue opening requirements regarding basements.

Exception 1 of section R310.1 remains the same as written in both the 2006 and 2012 IRC. Exception 2 of section R310.1 is added to provide an option for new or existing basements or basement bedrooms if the building is protected with an automatic sprinkler system. In some cases, it may be more practical financially to install a fire sprinkler system in lieu of emergency escape and rescue openings due to the building's foundation design, soil type, or water table. This modification is necessary and reasonable because it will allow buildings to omit emergency escape and rescue openings when the building has a fire sprinkler system installed throughout. This option may be a cost savings in cases where an emergency escape and rescue opening would be more expensive to install than the fire sprinkler system. The current code permitted this exception only for apartment buildings, but with this modification, the option will extend to all basements or basement bedrooms.

Exception #3 of section R310.1 is added in the amendment to provide another option for emergency escape and rescue opening requirements in basements or basement bedrooms that must comply with all the conditions listed in the exception. The first condition applies to buildings constructed prior to August 1, 2008, when the Minnesota State Building Code was recognized as the standard of construction for the State of Minnesota. Buildings constructed prior to that date were not mandated to comply with the Minnesota State Building Code requirements. Therefore, buildings with basements or basement bedrooms constructed prior to that date would be exempt. The second condition requires that the building must be undergoing an alteration or repair. The third conditon identifies specific requirements under which a fire sprinkler system may be utilized in lieu of the required emergency escape and rescue opening. This condition requires that an automatic fire sprinkler system be installed throughout the entire basement area when all portions of the means of egress to the level of exit discharge, and all the areas on the level of exit discharge that are open to the means of egress, are protected with an automatic sprinkler system in accordance with Section P2904 of the IRC or NFPA 13D. Exceptions #2 and #3 present reasonable options in lieu of installing emergency escape and rescue openings for basements or basement bedrooms when fire sprinkler systems are installed. The amended exceptions are also reasonable because they offer alternate methods of life safety by installing fire sprinkler coverage instead of constructing and installing emergency escape and rescue openings. Fire sprinklers have been shown to be effective and permit building occupants sufficient time to escape a potential fire hazard.

Costs associated with this proposed rule could potentially decrease by providing an alternative to the installation of an emergency escape and rescue opening and opting to instead install a fire sprinkler system. The installation of an emergency escape and rescue opening can be very expensive and complex and can involve an alteration to the foundation and soils surrounding the home.

R310.1.1, Minimum opening area; R310.1.2, Minimum opening height; and R310.1.3, Minimum opening width. Sections R310.1.1 to R301.1.3 mirror the 2012 IRC code sections and have no changes, but are included in the rule text to provide context to section R310.1.

R310.1.4, Operational constraints. Section R310.1.4 adds an exception regarding windows that have installed window opening control devices. This exception is intended to permit the installation of window opening control devices on window units to provide window fall

protection. The Department learned that some jurisdictions have prohibited the installation of window control devices, citing IRC section R310.1.4, Operational constraints, which states, "Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools, or special knowledge." Those jurisdictions that have prohibited the installation of the devices believed that the window control devices required special knowledge for occupant use. The Department determined, however, that the window opening devices require no more special knowledge than opening the window unit itself and encourage homeowners to install such devices to protect their children. This amendment is consistent with the current DLI Division Opinion #2011-01 that was requested by Bryan Horton of Renewal by Andersen and uses the same language as in the division opinion.

The exception in section R310.1.4 requires that the window opening control devices be approved and installed in accordance with ASTM F 2090, provided the devices do not require the use of keys, tools to operate, or special knowledge. An approved ASTM F 2090 device installed in accordance with the manufacturers' installation instructions is not considered to be an installation requiring "special knowledge." The amended language is reasonable because it will provide uniform enforcement throughout Minnesota and allow homeowners to protect their children from window falls.

R310.1.5, Replacement windows. Several amendments have been made to this section to clarify existing language and to coordinate certain requirements for replacement windows in licensed facilities that are used for daycare and foster care.

The first sentence is modified to provide plain language for the benefit of the user by replacing "meeting the scope of" with "regulated by." Additionally, the first sentence is modified by deleting the word "requirements" and adding the phrase "maximum sill height requirements." This change clarifies that replacement windows are exempt from the sill height requirements only, and not all of the requirements in section R310.1. This sentence is also amended by adding "including subsections" preceding "R310.1.1, R310.1.2, and R310.1.3." These sections pertain specifically to the minimum opening area, minimum opening height, and minimum opening. These changes are necessary to clarify that replacement windows are exempt from the maximum sill height, minimum opening area, minimum opening width, and minimum opening height requirements if they meet the conditions listed in the rule. A new definition for "sill height" is proposed in Minnesota Rule, part 1309.0202, to provide additional clarity to the amendment in this section.

The current amendment deletes conditions #1, #2 and #3. The language in condition #1 has been amended and added to the body of section R310.1.5. Condition #1, as added to the body of R310.1.5, deletes "The replacement window," which is already in the text of the section, so it is not necessary. The current text is further amended by deleting the word "a" immediately preceding the phrase "greater window opening than the existing window," and replacing it with the phrase "an equal or." These changes will allow the replacement window to be the same style (i.e. double hung, casement) as the original window or a different style, as long as the area of the window opening is the same size or larger than that of the original window. The existing language requires a replacement window of a different style to have a larger window opening than the original window. This change will offer more flexibility with replacement windows, but still maintain life safety.

Condition #2 regarding replacement windows for state licensed or registered buildings is deleted and relocated to section R310.1.5.1 (new subsection).

Condition #3 is deleted in its entirety. Municipal rental housing ordinances can and do vary from municipality to municipality in Minnesota. However, one main purpose of the Minnesota State Building Code is to provide "basic and *uniform* performance standards." *See* Minnesota Statutes, section 326B.101, Policy and Purpose (emphasis supplied). The current amendment which permits variations from municipality to municipality in addressing replacement windows for rental housing units is contrary to section 326B.101's stated purpose. Therefore, it is necessary and reasonable to delete the existing amendment in its entirety.

R310.1.5.1, Licensed facilities (new). This amended section includes a new subsection R310.1.5.1, titled "Licensed facilities." The amended language states that rooms used for fostercare or daycare which are licensed or registered with the State of Minnesota must comply with conditions "a" through "d" or section R310.1.5, whichever is more restrictive. This amended language was based on a current policy enforced by the Minnesota State Fire Marshal Division. The State Fire Marshal Division has had problems concerning replacement windows based on the current IRC, section R310.1.5. Individuals have replaced windows, sought foster care or daycare licensing or registration, and subsequently learned that some windows were non-compliant with the requirements for that licensing or registration agency. This amended language will inform code users and stakeholders that foster care or licensed or registered daycare in the State of Minnesota must comply with sections R310.1.5 or R310.1.5.1, whichever is more restrictive. This proposed amendment is reasonable and necessary because it clarifies window replacement requirements for rooms used for licensed foster care or daycare and will provide uniform enforcement of the code for both building officials and between state agencies.

1309.0311 SECTION R311, MEANS OF EGRESS.

This rule part is modified by deleting the existing language pertaining to landings at doors and is replaced with new language about similar subject matter. The proposed rule part is being divided into subparts to more clearly identify separate code book subsections within section R311. The existing amendment is deleted because the 2006 IRC sections were renumbered and revised in the 2012 IRC.

Subpart 1. R311.3.2, Floor elevations for other exterior doors. This section was previously section R311.4.3.2 in the 2006 IRC. The Advisory Committee recommended keeping the 2012 IRC text as written, but modified the exception in Section R311.3.2. The amended exception reads, "A landing is not required if a stairway less than 30 inches (762 mm) in height is located on the exterior side of the door, provided the door does not swing over the stairway. The stairway height shall be measured vertically from the interior floor surface to the finished grade." This language is necessary to maintain the requirements of the 2006 IRC, as amended. This change is reasonable because it clarifies current requirements and provides more uniform enforcement by carrying forward existing requirements in the rule.

Subp. 2. R311.7.1, Stairways. This section is amended by adding language to the main requirement to provide scoping provisions, which was inadvertently missed in the previous rule

adoption. This section in the 2012 IRC does not contain scoping language to clearly identify the types of stairways that are intended to be regulated by this section. These changes are necessary because there has been confusion about which stairs are regulated by these requirements. This section is intended to regulate stairs that serve as a means of egress from a dwelling. The exceptions in this section provide exclusions for stairs serving attics, crawl spaces, and access to plumbing, mechanical, or electrical equipment. These types of stairs are excluded because these stairs are not intended to serve as a means of egress from a dwelling. This amendment is necessary to eliminate the confusion and inconsistency that exists in the enforcement of stair requirements. This amendment is reasonable because it clarifies which stairs are regulated by code and will provide more uniform enforcement.

Subp. 3. R311.7.2, Headroom. Section R311.7.2 is amended by adding a second exception to allow stairway headroom to be reduced to 6 feet 4 inches for stairs leading to a basement alteration, in accordance with section R305.2.2, as amended. This amendment is needed and reasonable so that unfinished basements in existing buildings can be more easily finished. This amendment is also necessary to coordinate with the amended ceiling height requirements in section R305. Costs pertaining to this rule change may decrease because costs associated with updating stairway headroom heights will be reduced or eliminated.

1309.0312 SECTION R312, GUARDS AND WINDOW FALL PROTECTION.

Subpart 1. R312.1.1, Where required (guards). Section R312.1.1 is amended by modifying the first sentence to define the architectural features that require a guard and by deleting the horizontal method of measuring sill height above the grade or floor.

The first sentence of 2012 IRC, section R312.1.1, is revised by deleting the phrase "walking surfaces" and replacing it with the word "floors." As amended, guards are required along open- sided floors, stairs, ramps, and landings when they are located more than 30 inches vertically to the floor or grade below. This change is necessary because the term "walking surfaces" is too broad and can be misinterpreted to apply to almost any surface on or in a building or a lot. This requirement could be interpreted to mean that guards are required to be installed around window wells, on the top of retaining walls, along driveways and sidewalks, on landings near window wells, at the edge of swimming pools, and even at the edge of flat roofs. It is reasonable to use terms that are currently defined and that will best convey the intent of the requirement.

The first sentence is also amended by deleting the phrase "at any point within 36 inches (914 mm) horizontally to the edge of the open side." This text is new to the 2012 IRC and did not exist in the 2006 IRC. The method of measurement in the existing rule has been in the IRC since its inception and has been in previous model codes. It is reasonable to carry forward language that has been in the Minnesota State Building Code because it provides consistency of application and enforcement. Costs associated with this rule change may decrease because the installation of guards, when or where they are not needed, will be eliminated.

Subp. 2. R312.2, Window fall protection. This amendment is based on 2012 IRC, section R312.2, with modifications to exception #1 and adds a new exception #4 regarding replacement windows. To successfully incorporate this amendment, Minnesota Rules, part 1303.2300, must be repealed. 2012 IBC, section 1013.8, must also apply to address window fall

protection, which will replace the requirement in current Minnesota Rules, part 1303.2300,which only addresses window fall protection for apartments, hotels, motels, and condominiums, excluding single-family dwellings, two-family dwellings and townhouses. Minnesota Rules, part 1303.2300, is proposed for repeal and an amendment to section 1013.8 of the 2012 IBC is proposed to address window fall protection in Minnesota.

The first sentence of 2012 IRC, section R312.2.1, deletes the 2006 IRC language "the lowest part of the clear opening of the window" and replaces it with the phrase "the lowest part of the window opening." The Advisory Committee determined that "the lowest part of the window opening" meant the same thing as "lowest part of the clear opening." The proposed text "lowest part of the window opening" is also consistent with the proposed definition for "sill height" in part 1309.0202, which clarifies the meaning of sill height pertaining to emergency escape and rescue openings. The first sentence also replaces the phrase "24 inch above finished floor" with "36 inches above the floor." The 24- and 36-inch dimensions are heights that establish a threshold at which the window fall protection requirements are required. The threshold dimension in the current rule is set at 24 inches. The 2012 IRC sets this dimension at 24 inches, while the 2012 IBC sets this dimension at 36 inches. This threshold dimension must be coordinated between the two codes to provide consistent application and enforcement in residential construction. Windows installed having the lowest part of the window opening below this threshold will require window fall protection compliance. The Department determined that the 36-inch dimension is reasonable because it will provide increased life safety for occupants since raising the threshold dimension from 24 to 36 inches will require more windows to be fall protection compliant. Requiring more windows to have fall protection devices installed will provide increased life safety to more occupants, especially children. Additionally, these more restrictive requirements are consistent with the intent of Minnesota Statutes, section 326B.106, subdivision 7, which directs the Commissioner of Labor and Industry to adopt window fall protection rules which require compliance with the standards for window fall protection devices established in the IBC.

The proposed exception #4 is added to exempt replacement windows from the window fall protection requirements. The Advisory Committee determined that requiring window fall protection devices in replacement windows would mandate retroactive code compliance for existing structures. Typically, the code is not retroactive for existing structures, with the exception of smoke alarms and safety glazing. If homeowners of existing homes are required to add safety devices that must comply with ASTM F 2090, they may not be as likely to replace windows that trigger this requirement. It is not reasonable to require window fall protection safety devices that may discourage homeowners from replacing old windows that are broken or painted shut.

There will be an increase to the overall cost of windows in a comparable residential unit. Double-hung windows are currently dominant in the market in sizes that would be most likely affected and adding a window fall protection device would cost about $30.00 per window. On casement windows, which currently have a smaller share of the market, adding a window fall protection device would increase the cost by approximately $100.00 per window. However, these more restrictive requirements are being incorporated into the proposed rule to provide for increased life safety of occupants, to coordinate the provisions of the IBC and IRC, and to provide more consistent application and enforcement between the Codes in residential construction and Minnesota Statutes, section 326B.106, subdivision 7.

1309.0313 SECTION R313, AUTOMATIC FIRE SPRINKLER SYSTEMS (new title)

This rule part entitled "Smoke Alarms" is re-titled to "Automatic Fire Sprinkler Systems" to accommodate chapter and section reorganization that occurred between the 2006 and 2012 editions of the IRC.

R313.1, Townhouse automatic fire sprinkler systems. Section R313.1, Townhouse automatic fire sprinkler systems, is not amended from the language in the IRC, but is included in the rule text for context.

R313.1.1, Design and installation. IRC Section R313.1.1, Design and installation, is amended to add NFPA 13D as an approved standard of design and installation, which can be used in lieu of section P2904. This section in the 2012 IRC requires compliance with section P2904 only. However, the 1309 Advisory Committee determined that NFPA 13D is the basis of the 2012 IRC P2904 requirements and is an equivalent requirement. The committee recommended to the Commissioner that NFPA 13D be added as an approved standard and the Commissioner accepted this recommendation, resulting in the amendment proposed here.

R313.2, One-family and two-family dwellings automatic fire systems. Section R313.2 in the 2012 IRC, requires the installation of an automatic fire sprinkler system in all one- and two-family dwellings. The 2012 IRC, section R313.2, provides an exception to the requirement for additions and alterations to existing buildings where an automatic sprinkler system has not previously been installed. The proposed amendment to this section creates an additional exception for one-family dwellings with less than 4,500 square feet of floor area.[4] Under the proposed amendment, newly constructed one-family homes meeting this size criterion would not be required to install an automatic fire sprinkler system.

The requirement to include automatic fire sprinklers in one-family homes has been discussed by the Department, stakeholders, and at the Legislature since it was first included in the IRC in 2009. Over the last three years, the Department has held 9 meetings with building industry trade officials, fire prevention officials, and other interested parties. The 1309 Advisory Committee also discussed this issue at length and has made recommendations to the Commissioner. In both 2011 and 2012, bills were introduced and legislation passed in the Minnesota Legislature which prohibited any code requirement to install automatic fire sprinkler systems in single-family homes.[5] However, both bills were vetoed by the Governor. The focus of these discussions has been the life-safety benefits of automatic fire sprinkler systems as compared to the cost of system installation. Based on these discussions, the Commissioner considered several factors in developing amendments to this section: 1) the life-safety concerns that are mitigated by automatic fire sprinkler systems; 2) the cost to install automatic fire sprinkler systems; and 3) how to adequately address both of these two factors in rule.

In its analysis of the life-safety concerns related to fire sprinklers, the Department received

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[4] "Floor area" is defined in proposed Minnesota Rules, part 1309.0202, subpart 2, as "[t]he calculated square footage of the floor within the inside perimeter of the exterior walls of the building under consideration without deduction for stairways, closets, the thickness of interior walls, columns, or other features."

[5] *See* 2011 HF 460, 2012 SF 717.

information from the Minnesota Fire Chiefs Association of Minnesota ("MSFCA") and the Minnesota Fire Marshals Association ("FMAM"). MSFCA and FMAM state that automatic fire sprinkler systems are critical to providing protection for occupants, fire fighters and property in the event of a fire. These organizations provided numerous reports and publications, all of which have been posted on the 1309 Advisory Committee's publication website at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. Representatives from the fire service associations have stated that light-weight construction in one- and two-family dwellings without automatic sprinkler systems make floors and roofs susceptible to collapse earlier in a fire, which puts both residents and first responders at risk, that larger homes pose an additional risk to occupants because it takes a longer time to exit, and that larger homes are more difficult to deal with from a rescue and firefighting perspective.

MSFCA and FMAM submitted a report entitled "Structural Stability of Engineered Lumber in Fire Conditions," written and researched by Underwriters Laboratories, dated September of 2008, that describes the fire resistive performance of nine assemblies tested as part of a research and education grant sponsored by the Fire Prevention and Safety Grants and under the direction of the Department of Home Land Security and the Federal Emergency Management Agency.[6] Each test assembly was tested to ASTM Standard E119 and established a fire resistance rating in minutes for each assembly. This data describes load bearing capacity performance which is the time period before structural collapse of the floor or roof assembly. The research findings are as follows:

- Test Assembly No. 1: 2 x 10 assembly without a ceiling containment had an 18 minute load bearing capacity performance.
- Test Assembly No. 2: I-joist assembly without a ceiling containment had a 4 minute load bearing capacity performance.
- Test Assembly No. 4: I-joist assembly with ½-inch thick regular gypsum board ceiling had a 25 minute load bearing capacity performance.
- Test Assemblies No. 4 and 5: I-joist and parallel chord truss (metal gussets) assemblies with ½-inch thick regular gypsum board ceiling were approximately equal (24-25 minute) to the 2 x10 assembly with ½-inch thick regular gypsum board ceiling.

[6] A copy of the report entitled "Structural Stability of Engineered Lumber in Fire Conditions," is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of this publication are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

Table E-3 - Summary of Significant Events in Addition to ASTM E119 Conditions of Acceptance

Test Assembly No.	Initial falling of ceiling material (More than 1 ft^2) (min:sec)	Average temperature on unexposed surface of ceiling at initial falling (°F)	Finish rating (min:sec)	Load bearing capacity (min)
1	No ceiling	No ceiling	00:45	18
2	No ceiling	No ceiling	00:30	4
3	23:30	605	15:30	45
4	17:15	531	7:45	25
5	16:30	519	10:45	24
6	16:00	559	12:15	25
7	15:45	253	15:15	40
8	74:00**	1109	74:00**	80
9	13:45	730	14:45	24

Notes:
** - plaster ceiling in contact with furnace thermocouples at 51 minutes

This report is important because it establishes that floors and roofs in houses built under the current code can fail so quickly from fire that the life and safety of residents and responding fire fighters are at risk of falling through floors or roofs before they can affect rescue or retreat from a burning building. In response to this research, the Department is also proposing to retain the provisions contained in IRC section R501.3, Fire protection of floors.

The Department also notes that some single-family homes are already required to install automatic fire sprinkler systems. For example, the Minnesota Department of Human Services ("DHS") and Minnesota Department of Health ("MDH") require automatic fire sprinkler systems for one-and two-family dwellings used for purposes that require either a license or to be registered with an agency. Some of these uses include child and adult day care, supervised living facilities, hospice and foster care facilities, assisted living and housing with services, boarding care and lodging facilities, and senior housing.

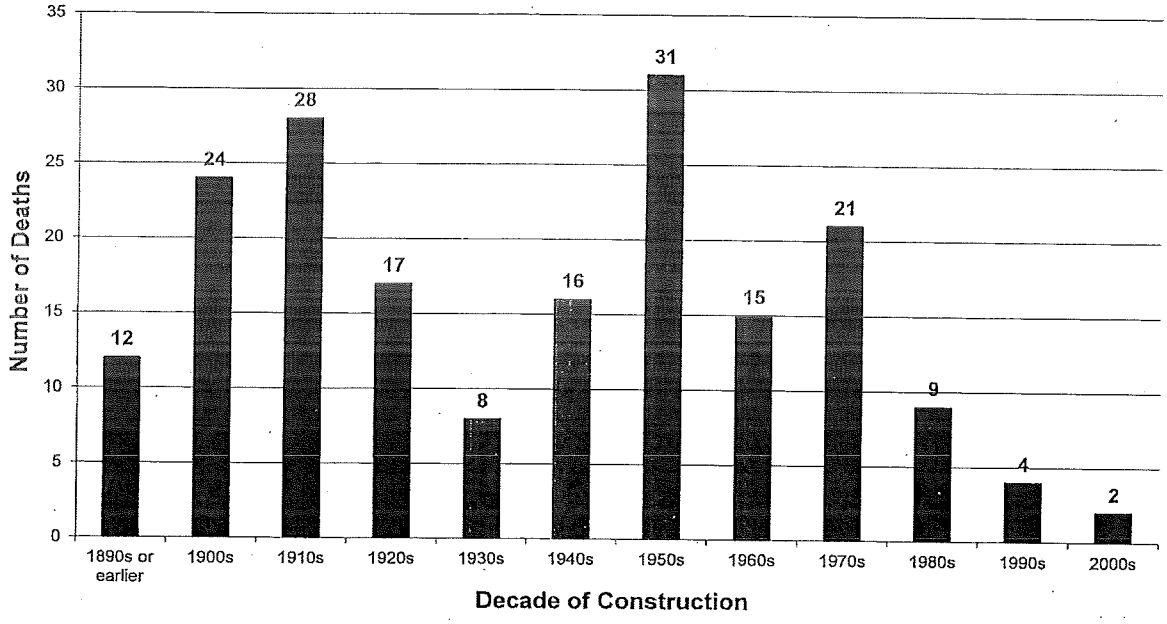
The Department also received information from the Builders Association of Minnesota ("BAM"), a trade organization of home builders, stating that automatic fire sprinkler systems are not needed to adequately protect occupants in the case of a fire.[7] BAM indicated that smoke alarm

[7] *See* BAM's Code Change Proposal IRC-87, R313.2, and its attachments, which is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of this publication are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email:

requirements have substantially reduced Minnesota civilian fire deaths from double digits to single digits in the past twenty years and only two civilian fire deaths in the 2000's. Current codes require smoke alarms on each level of a dwelling and in each individual sleeping room. These smoke alarms are also required to be hardwired into the dwelling's electrical system and include battery backup power. BAM states that smoke alarms have proven to be effective in alerting some occupants to exit structures in the event of smoke and in reducing fatalities. BAM submitted a report entitled "1998-2010 Minnesota Civilian Fire Deaths in Single Family Homes," based on data from the Minnesota State Fire Marshal's office.[8] The bar chart below identifies the number of civilian fire deaths by decade and indicates 21 fire deaths in the 1970's, 9 fire deaths in the 1980's, 4 fire deaths in the 1990's, and 2 fire deaths so far in this decade.

ATTACHMENT A

1998-2010 Minnesota Civilian Fire Deaths in Single Family Homes by Decade of Construction (187 total*)



[*BAM was unable to determine year of construction for 38 SF homes (and 42 additional deaths) due to insufficient addresses from State Fire Marshal data. see 2nd page for details]. Data do not include fire deaths caused by explosions, arson/homocide or suicide in single family homes; or those in mobile homes , duplexes, multi-family, apartments, commercial, and other residential uses such as motels, hotels, and nursing homes.

Builders Association of Minnesota

Pam Perri, Executive Vice President, C: 651-492-0904, E: pamp@bamn.org
Karen Linner, Director of Codes and Research, C: 651-269-0944, E: karenl@bamn.org

The Commissioner considered all of the information submitted regarding the protection of life-safety and property, and acknowledges that properly located, hard-wired smoke detectors are

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richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

[8] A copy of the report entitled "1998-2010 Minnesota Civilian Fire Deaths in Single Family Homes," is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of this publication are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

effective in saving the lives of some occupants, but do not further the protection of property. The Commissioner has further determined that there is increased life-safety and property protection with automatic fire spinkler systems as demonstrated by occupants having sufficient time to escape, by providing additional structural protection for first responders, and by limiting the extent of structural damage.

In evaluating the cost of installing automatic fire sprinkler systems under the 2012 IRC requirements, the Commissioner reviewed information submitted by MSFCA and FMAM, including the "Home Fire Sprinkler Cost Assessment" final report prepared by the Fire Protection Research Foundation, dated September 2008.[9] This report was also referenced in BAM's Code Change Proposal IRC-87, R313.2; Attachment "C" entitled "Minnesota State Fire Chiefs Association – White paper on Residential Sprinkler Systems." This report indicates that the average automatic fire sprinkler installation cost for residential dwellings is $1.61 per square foot.[10] There were several other reports regarding fire sprinkler costs prepared prior to the publication of the 2009 IRC. The 2009 IRC was the first model code document that required fire sprinklers for one-and two-family dwellings. However, Minnesota did not adopt the 2009 IRC.

In response to the concern about cost of installation, the MSFCA recommended phasing in the automatic fire sprinkler system requirement beginning at 4,000 square feet in area. The FMAM submitted a code change proposal to the 1309 Advisory Committee phasing in the requirement beginning at 5,000 square feet as follows:

> Upon adoption of this code, all two family and single family dwellings exceeding 5000 square feet;
> On or after January 1, 2014, all two family and single family dwellings exceeding 4000 square feet;
> On or after January 1, 2015, all two family and single family dwellings exceeding 3000 square feet;
> On or after January 1, 2016, all two family and single family dwellings exceeding 2000 square feet; and

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[9] A copy of the 2008 report entitled "Home Fire Sprinkler Cost Assessment," is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of this publication are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

[10] The 2008 Home Fire Sprinkler Cost Assessment was recently updated by the Fire Protection Research Foundation in September of 2013. While the 2008 report was based on a sampling of 30 homes in 10 communities, the 2013 update studied sprinkler cost assessment samples from 51 homes in 17 communities. In the original 2008 report, the 30 homes analyzed had an average price per square foot of $1.61. In the 2013 study, the average cost per square foot decreased to $1.35. The 2013 study concluded that this decrease in average installation cost over the past 5 years was attributable to improved installation methods, standardized practices, and increased market competition among contactors and others in the building trade industry. A copy of the Fire Protection Research Foundation's "Home Fire Sprinkler Cost Assessment- 2013" is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of these publications are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

On or after January 1, 2017, all two family and single family dwellings shall be protected with automatic residential fire sprinklers in accordance with R313.2.1.[11]

In addition to BAM's IRC-87, R313.2 Code Change Proposal, BAM also submitted a May 31, 2012 letter to the Commissioner indicating that it received installation information from home builders where the installation of automatic sprinkler systems cost was between $2.93 and $3.95 per square foot when the builder markup is included in the price.[12] BAM stated that 29% of Minnesotans receive their water from private wells and that the cost of installing sprinklers on a private well system can add from $2,500-$4,000 to the cost of the sprinkler system. BAM further stated that a homeowner may not be able to afford a new home if they are required to include automatic fire sprinklers due to their installation cost. BAM therefore urged, and the 1309 committee recommended, that the Department amend out all one-family dwellings from the proposed automatic fire sprinkler requirement.

In evaluating the cost of the installation of automatic fire sprinklers systems in one-family homes, the Department considered the relative cost of installing an automatic sprinkler system in a newly constructed home. The Department utilized the figure of $95.73 per square foot for construction costs of a new home as found in the 2013 Building Valuation Data Table, (http://www.dli.mn.gov/CCLD/PDF/2013_bldg_valuation.pdf). This is the same square foot value that is provided for use by all 450 code-enforced municipalities in the state of Minnesota when comparing building value for calculating permit fees.

In reaching its balance between the benefits of the life-safety/property protections offered by automatic fire sprinkler systems and the costs of installing these systems in newly constructed one-family homes, the Department determined that larger homes have the same challenges for occupants and first responders as other two-family and townhouse structures, but that the relative cost of installing sprinkler systems in smaller homes may be too expensive. Therefore, the Department is proposing to amend IRC Rule 313.2 to exclude homes under 4,500 square feet from the automatic sprinkler requirement.

The Department chose the threshold of 4,500 square feet in response to the case made by the fire service that homes between 4,000 and 5,000 square feet and larger provide the greatest initial life-safety risk to the public. The Department of Public Safety notes that most fire departments are equipped and staffed to handle typical single-family dwelling fires. However,

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[11] A copy of the FMAM's IRC-125 Code Change Proposal, as well as other documentation submitted to the 1309 Advisory Committee, is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of these publications are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

[12] A copy of BAM's May 31, 2012 letter to Commissioner Peterson, and its attachments, is reproduced on the Department's website and can be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of these publications are available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

many departments are simply not equipped to safely handle fires involving larger buildings such as townhouse complexes or even larger single-family homes – greater than 4,500 square feet.

According to the Department's calculations and the 2013 Building Valuation Data Table referenced above, a 4,500 square foot dwelling has an approximate value of $430,785.00. Homes valued at $430,785.00 do not represent the typical entry level home value in Minnesota. A 4,500 square foot home with a fire sprinkler system based on the fire service's average of $1.61 per square foot, would add $7,245 or 1.68% to the cost. BAM's estimation of what some builders will charge to install automatic fire sprinklers of $2.93 per square foot would result in an added cost of $13,185 or 3.06% to build a 4,500 square foot home. Construction costs would change from an estimated $430,785 to $438,030 under the fire service estimate or $443,785 according to BAM's figures. However, homes with fire sprinklers installed would not incur the additional cost of installing ½-inch gypsum board for fire protection of floors as required in the 2012 IRC, section R501.3.

Automatic Fire Sprinklers have been acknowledged for years by the Department, the building industry, and the fire service to be important life-saving equipment in commercial and multi-family structures, including townhouses. The average cost of installation of an automatic sprinkler system for these types of occupancies in Minnesota currently ranges from $1.50 to $2.00 per square foot or 1 to 2% of the average construction costs of these types of structures.[13] While recognizing that differences exist between single-family automatic sprinkler system installations and installations for these other occupancies, the Department believes that the projected costs per square foot for sprinkler installation in single-family dwellings of 4500 square feet or more will be more similar to those installation costs of multiple occupancy dwellings than the installation costs for single-family dwellings as projected by the building trade industry. The proposed rule will clearly increase construction costs for some larger homes in Minnesota, but the Department believes that these additional costs will decrease over time and result in increased life-safety and property protection for homeowners and firefighters.

R313.2.1, Design and installation. Section R313.2.1, Design and installation, is not amended from the language contained in the 2012 IRC, but is included for context. Similar requirements are currently located in the amendments to section 301 of the 2006 IRC.

R313.3, Installation requirements. IRC section R313 is being amended by adding a new section R313.3 pertaining to installation requirements. The content in section R313 of the 2012 IRC was previously located in section R301 of the 2006 IRC. During the last rule adoption, the Department amended section R301 by adding a new section R301.1.4.2 that incorporated requirements similar to the requirements proposed in this rule part. The proposed content for section R313.3 is being carried forward from Minnesota Rules, part 1309.0301, subpart 1, with two modifications. First, the existing language in the subpart requires sprinkler systems to be

[13] Sprinkler costs vary widely based on numerous factors including building use, design, materials, climate control, number of stories, etc. The Department selected a commercial retail building where the sprinkler design would be considered to be fairly "typical" with suspended ceilings. Costs were arrived at by telephone quotes CCLD received in September 2013 by 3 major metropolitan sprinkler contractors: Summit Fire Protection, Viking Automatic Sprinkler and Brothers Fire Protection. The range of these quotes was also directly in-line with an on-line construction estimating resource at http://www.BuildingJournal.com. The median costs for each were $1.67, $1.38, $2.02, and $1.86 (BuildingJournal.com), respectively. Parameters used in the quotes included: Occupancy - Retail; Size - 4,500 square feet; Other - 18-20 foot high suspended ceiling; and Location - St. Paul or Minneapolis.

installed in accordance with NFPA 13D. This language is modified by requiring sprinkler systems to be installed in accordance with either NFPA 13D or IRC Section P2904. This change is necessary because it acknowledges that requirements contained in either NFPA 13D or IRC Section P2904 are considered equivalent. Section 2904.1 of the 2012 IRC states that, "the design and installation of residential fire sprinkler systems shall be in accordance with NFPA 13D or section P2904, which shall be considered equivalent to NFPA 13D." Second, the requirement is also modified by deleting the existing language that states "for the purposes of this section, fire-resistance-rated floors, walls, or ceiling assemblies separating dwelling units of IRC-2 and IRC-3 buildings shall not constitute separate buildings." This language is no longer necessary because the 2012 IRC requires that all two-family dwellings and townhouses (IRC-2 and IRC-3 occupancies) shall have fire sprinkler systems installed, regardless of how the structures are separated.

R313.4, State licensed facilities. IRC section R313 is also being amended by adding a new section R313.4 pertaining to state licensed facilities. The content in section R313 of the 2012 IRC was previously located in section R301 of the 2006 IRC amendments. During the last rule adoption, the Department amended section R301 by adding a new section R301.1.4.1 that incorporated requirements similar to the requirements proposed in this rule part. The current language in the amendment is being revised by replacing references to "IRC-1, IRC-2, and IRC-3" to read "one- and two-family dwellings and townhouse buildings" to coordinate with the 2012 IRC code book language. The current amendment establishing occupancy classifications IRC-1, IRC-2, IRC-3, and IRC-4 will be carried forward from the 2006 IRC amended language, which is currently located in Minnesota Rules, part 1309.0202. The 2006 and 2012 IRC's do not contain occupancy classifications for IRC structures. These occupancy classifications were established to provide a means for building officials to classify IRC structures, similar to both the 2006 and 2012 IBC structure classifications for the different types or building uses. The remaining existing amended language for section R301 is being carried forward into this proposed amendment.

1309.0314 SECTION R314, SMOKE ALARMS (new title).

The 2006 IRC, section R313, Smoke alarms, has been renumbered to section R314, Smoke alarms, in the 2012 IRC. The existing 2006 IRC, section R314, Foam Plastic, has been renumbered to Section R316 in the 2012 IRC. The instant rule part has been re-titled to "1309.0314, Section R314, Smoke Alarms" to accommodate this 2012 IRC section reorganization. The current amendment to R314.5.11, Sill plates and headers, pertaining to foam plastic is being deleted from the rule part because the language in the 2012 IRC is similar to the existing amendment, therefore the amended language is no longer necessary.

R314.3.1, Alterations, repairs, and additions. This amendment revises the smoke alarm requirements for alterations, repairs, and additions from that of the 2006 and 2012 editions of the IRC. The amended content is based on the 2012 IRC and the current rule amendment to the 2006 IRC, with some additional language included for clarity. The proposed amendment clarifies this code section and will provide more uniform enforcement.

The first sentence of R314.3.1 contains revised language that clarifies conditions under which existing dwellings will require smoke alarms located in the same areas as for new dwellings. The section also provides two exceptions for work that does not require compliance with this

section. The revised language is necessary to clarify conditions under which smoke alarms will need to comply with the same requirements as those for new dwellings, to clarify the code section content, and to help provide more uniform enforcement.

The first condition states that smoke alarms are required to be installed for alterations, repairs, or additions that require a permit. This condition includes the installation or replacement of windows or doors. The reference to windows and doors clarifies that the installation of these items is considered an alteration or repair and will require a permit. The installation of replacement windows or doors is not exempt from a permit, in accordance with Minnesota Rules, part 1300.0120, subpart 4. The second condition mirrors the language in the 2012 IRC code section.

Exception #1 is based on the 2012 IRC text, but deletes the phrase "or the addition or replacement of windows or doors," which carries forward the current amendment for the 2006 IRC section. The word "open" preceding "porch or deck" and "or chimney repairs" preceding "are exempt" are added to the exception to clarify that these conditions do not warrant updating the smoke alarms for existing dwellings.

Exception #2 amends the 2012 IRC text to add the word "electrical" to system installations, alterations, or repairs, which are exempt from required smoke alarm installations for existing dwellings. This revision will prevent mandatory updating of smoke alarm systems in a dwelling when the work being completed is just light fixture replacement or similar work. Adding the word "electrical" to the text is necessary to make this proposed language consistent with the existing amendment for the 2006 IRC section. This change is also necessary to provide consistent and uniform enforcement.

1309.0315 SECTION R315, CARBON MONOXIDE ALARMS.

R315.1, Carbon monoxide alarms. The carbon monoxide alarm requirements located in 2012 IRC, section R315, are new to the IRC model code document and did not exist in the 2006 IRC.

The 2012 IRC, section R315.1, is amended to incorporate language from Minnesota Statutes, section 299F.51 (requirements for carbon monoxide alarms), into the rule. The amended text specifically identifies one-family, two-family, and townhouse dwellings as the types of dwellings that require carbon monoxide alarms. The amended language requires that an "approved and operational" carbon monoxide alarm be installed. The 2012 IRC, section R315.4, requires that carbon monoxide alarms be listed as complying with Underwriters Laboratories Standards Number 2034 (UL2034) and installed in accordance with the manufacturer's installation instructions to be approved by the building official. The amended language also requires that carbon monoxide alarms be installed within ten feet of each sleeping room, as required by Minnesota Statutes, section 299F.51, subdivision 2 (1).

These changes are necessary to convey specific requirements of Minnesota Statutes, section 299F.51, which are not contained in the 2012 IRC, section R315. The text in the remaining subsections of section 315 is not amended and will apply as written. This proposed amendment is reasonable and necessary because it combines the 2012 IRC requirements with statutory

requirements to provide uniform design, installation, and enforcement.

1309.0317 SECTION R317, DWELLING UNIT SEPARATION.

This rule part is being repealed. The 2006 IRC Section R317 requirements have been relocated in the 2012 IRC to section R302, Fire-resistant construction. It is reasonable and necessary to repeal this amendment because it no longer applies in this location with the adoption of the 2012 edition of the IRC.

1309.0318 SECTION R318, MOISTURE VAPOR RETARDERS.

This rule part is being repealed. The 2006 IRC Section R318 requirements have been relocated in the 2012 IRC to section R702.7, Vapor retarders. It is reasonable and necessary to repeal this amendment because it no longer applies in this location with the adoption of the 2012 edition of the IRC.

1309.0323 SECTION R323, STORM SHELTERS.

R323, Storm shelters. The proposed amendment deletes the requirements for storm shelters from the code. Storm shelter requirements are new to 2012 IRC and did not exist in the 2006 IRC. This new section states that if a storm shelter or safe room is built, it must provide "safe refuge from storms that produce high winds, such as tornadoes and hurricanes." Storm shelters are commonly separate, detached buildings; safe rooms are commonly rooms inside a dwelling, usually a bath room, walk-in closet, or utility room that is reinforced to withstand high winds and wind borne debris. Section R323.1 of the 2012 IRC does not mandate that IRC dwellings include storm shelters or safe rooms, but if a homeowner or builder decides to build a storm shelter or safe room, it must be constructed in accordance with the specifications of ICC/NSSA 500.

The proposal to delete this section is necessary because it eliminates the requirement to construct storm shelters and safe rooms to certain specifications, allowing homeowners flexibility in construction of a storm shelter or safe room, if they decide to build one. Deleting the requirements for storm shelters and safe rooms is reasonable because Minnesota homeowners infrequently install these shelters and if they are installed, the shelters are often constructed to requirements that are different from those in the ICC/NSSA 500 Standard.

1309.0402 SECTION R402, MATERIALS.

Table R402.2, Minimum specified compressive strength of concrete. This table is being modified by adding a new row to the table for footing specifications and a new footnote "g" relating to the footing specifications. The new footing specifications are necessary to incorporate requirements for a minimum comprehensive strength in concrete for footings pursuant to Minnesota Statutes, section 326B.118. This statute states, in part, that "[t]he commissioner may not adopt all or part of a model energy code relating to the construction of residential buildings without research and analysis that addresses, at a minimum, air quality, building durability, moisture, enforcement, enforceability cost benefit, and liability."

The new footing specifications require the use of concrete that can withstand 5,000 pounds of force per square inch ("5000 psi"). This type of concrete must be used for footings made of concrete pertaining to dwellings regulated by the IRC. These new specifications will create a water separation plane ("WSP") between the adjacent foundation soil and the building foundation to prevent moisture in both bulk and vapor forms from passing through the porous concrete material of the footing. The current language requires a 2500 psi concrete mixture for footings, which permitted water and water vapor forms to pass through the footing's porous concrete material and add moisture in the basement's foundation area. Footnote "g" permits a concrete mixture that is 2500 psi with an approved admixture (chemicals that can be added to concrete to change its moisture permeability), which provides a water- and vapor resistance equivalent to that of 5000 psi concrete. Footnote "g" includes language stating a minimum 3,000 psi concrete strength is required when Tables R404.1.1(5), R404.1.1(6), or R404.1.1(7) are applicable regarding cantilevered concrete and masonry foundation walls. The 3,000 psi concrete will require an admixture that provides water and vapor resistance at least equivalent to 5,000 psi concrete. This language was necessary to eliminate possible confusion between 2,500 psi concrete strength with an admixture and the 3,000 psi concrete strength with an admixture required for cantilevered foundations. These requirements utilize building science research and reports from Dr. Louise Goldberg, Building Scientist from the University of Minnesota. The research and proposed amendment will prevent capillary water flow through the building foundation creating a healthier and more durable structure.

There will be a cost increase of approximately ten to fifteen dollars per cubic yard of concrete to use a 5000 psi concrete mixture compared to a 2500 psi concrete mixture. However, it is necessary and reasonable to amend the language pertaining to concrete footing mixture strength to address moisture and durability issues for the building envelope and for the building structure as identified in Dr. Goldberg's research.

1309.0403 SECTION R403, FOOTINGS.

Subpart 1. R403.1.4.1, Frost protection. The subpart, which amends section R403.1.4.1 of the 2006 IRC, is being carried forward but is being modified grammatically and organizationally for clarity. Section R403.1.4.1 in the 2006 IRC is the same in the 2012 IRC. These changes are necessary and reasonable because they will clarify the requirements in section R403.1.4.1 while carrying forward the requirements in the current amendment to this section.

Subp. 2. R403.1.6, Foundation anchorage. This subpart is modified by incorporating changes made in the 2012 IRC but carries forward the existing rule amendment language. These changes are needed to update the language to be consistent with changes made to the IRC, but the changes do not affect the original intent of the amendment.

1309.0404 SECTION R404, FOUNDATION AND RETAINING WALLS.

Subpart 1. R404.1, Concrete and masonry foundation walls. The Structural Advisory Committee recommended revising this subpart in its entirety to incorporate the 2006 IRC, section R404.1 requirements and current amended language. The 2012 IRC does not contain the prescriptive foundation lateral support requirements as written in the 2006 IRC. These prescriptive requirements are essential to foundation design and durability. The prescriptive requirements in

this proposed rule identify methods to provide lateral support for the foundation system at the basement floor and at the top of the foundation to resist soil pressures on the foundation. These prescriptive methods utilize floor systems to help transfer and resist soil pressures imposed on the foundation by providing support at the top and base of the foundation walls. This proposed amendment is necessary to maintain the current lateral supported foundation requirements for durability in Minnesota and to ensure uniform enforcement. Since the amendment carries forward the current code requirements, there will be no cost increase associated with this amendment.

Subp. 2. Table R404.1(1). Table R404.1(2) in the 2006 IRC has been renumbered to Table R404.1(1) in the 2012 IRC. The table title is also amended to read "Maximum Anchor Bolt and Blocking Spacing for Supported Foundation Wall." The words "and blocking" are added to the title to incorporate a new column titled "Spacing of Blocking Perpendicular To Floor Joists." This new column is added to the table to provide clarity, uniform enforcement, and ease of use.

Subp. 3. Table R404.1(3). The existing subpart contains language that deletes Table R404.1(3) from the 2006 IRC. This subpart is now being repealed because the table has been removed from the 2012 IRC so the current amendment is no longer needed.

Subp. 4. R404.1.1. This section has been renumbered in the 2012 IRC to section R404.1.1.1, so the subpart is being repealed because it no longer coordinates with the 2012 IRC. This subpart also contains requirements for cantilever foundations, but the language is not necessary and is being deleted because cantilever foundation requirements are already addressed in subparts 6 through 8 of this rule part.

Subp. 5. R404.1.2. This subpart is being repealed because the language in the 2012 IRC is similar, so the amendment is no longer necessary. This subpart also contains requirements for cantilever foundations, but the language is not necessary and is being deleted because cantilever foundation requirements are already addressed in subparts 6 through 8 of this rule part.

Subps. 6 through 8. Tables R404.1.1(5), R404.1.1(6), R404.1.1(7) (renumbered). These subparts are amended by changing the table numbers and section references to coordinate with changes made to the 2012 IRC, but the content remains unchanged.

Subp. 9. R404.1.3. This subpart is amended by changing the referenced table numbers to coordinate with changes made to the 2012 IRC, but the content remains unchanged.

1309.0406 SECTION R406, FOUNDATION WATERPROOFING AND DAMPPROOFING.

Subpart 1. R406.1, Concrete and masonry foundation dampproofing. The existing rule amendment regarding dampproofing of concrete and masonry foundations is repealed. The amended rule deletes section R406.1 of the 2012 IRC in its entirety. IRC Section R406.1 is deleted because proposed Minnesota Rules, part 1322.0402, subpart 2, will require that all concrete and masonry basement foundation walls be waterproofed, not just dampproofed. The required waterproofing for masonry and concrete foundations is based on building science research and reports requested from Dr. Louise Goldberg, Building Scientist from the University of Minnesota,

pursuant to Minnesota Statutes, section 326B.118.[14] The research and proposed amendment will prevent capillary water flow through the building foundation, creating a healthier and more durable structure.

The modifications to Minnesota Rules, part 1309.0406, are necessary to provide uniform application and enforcement and will ensure that all the applicable requirements in the Minnesota State Building Code are coordinated.

Subp. 2. R406.2, Concrete and masonry foundation waterproofing. The existing rule amendment for section R406.2 of the 2006 IRC is being modified to coordinate with changes made to the 2012 IRC. The first sentence is amended to delete the phrase "In all soils groups other than Group I soils in accordance with Table R405.1." Soil Group I are soils that have good drainage characteristics and a percolation rate over 4-inches per hour, as compared to a Group IV soils which have poor drainage characteristics and a percolation rate of less than 2-inches per hour. The percolation rate is the rate at which water moves through the soil. This text and referenced table are no longer necessary because proposed Minnesota Rules, part 1322.0402, subpart 2, will require all concrete and masonry foundations to be waterproofed, regardless of the soil classification type. This proposed amendment will prevent capillary water flow through the building foundation, creating a healthier and more durable structure.

The first sentence also adds the phrases "below grade" and "and crawl spaces" to the rule to clarify that foundations with below grade interior spaces, floors, and crawl spaces must be waterproofed. The beginning of the second sentence is modified by adding the phrase "Waterproofing shall be installed" to clarify that waterproofing shall be installed from the top of the footing to the finished grade or that it must be installed in accordance with the manufacturer's installation instructions. This modification recognizes that some manufacturers specifically require that their product be installed from the top of the footing to the top of the foundation, instead of to the finished grade. The language in the exception to section R406.2 of the 2006 IRC is being carried forward, but is amended to coordinate with changes made to the 2012 IRC.

The amendments to sections R406.1 and R406.2 may create a cost increase for residential builders depending on the products of choice for waterproofing. Builders that have customarily built in Group I soils have not been required to waterproof their foundations because the current amendment exempted them from waterproofing the foundations. These builders will now be required to waterproof foundations, as explained above, because proposed Minnesota Rules, part 1322.0402, subpart2, will require all concrete and masonry foundations to be waterproofed, regardless of the soil type classification. Those builders that have been able to dampproof foundations using the current rule amendment will also be required to waterproof foundations, as explained above. However, most builders already install waterproofing to their foundations, even in Group I soils, in the course of their standard construction methods and will not be affected by the proposed amendments. A local insulation contractor offers a full line of foundation

[14] A copy of Dr. Goldberg's research and report is reproduced on the Department's website and may be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of this publications is available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

dampproofing and waterproofing and explained their typical installation process for foundations without exterior foundation insulation. The contractor installs a Perma Guard 2000 polymer asphalt waterproofing membrane from the top of the footing to finished grade height elevation. Then they install a Poly Wall dampproofing product from the finished grade elevation to the top of the foundation wall. This contractor charges between $0.95 cents to $1.00 per square foot for either the dampproofing or waterproofing installations.

1309.0602 SECTION R602, WOOD WALL FRAMING.

Subpart 1. Table R602.3.1, Maximum allowable length of wood wall studs exposed to wind speeds of 90 MPH or less. Table R602.3.1 is amended by revising footnotes c, d, h, and i in the table, which address windows or other opening in tall walls. This amended table provides requirements for tall wall construction for wind speeds of 100 mph or less and snow loads not to exceed 25 psf. This table was amended for the 2006 IRC to address the snow load design for Minnesota, but it did not include information for windows or other openings in a tall wall design. Table R602.3.1 is being amended by adding text to footnotes "c" and "d." The amended footnotes provide additional prescriptive requirements regarding sheathing, fastening, bracing, and tall wall openings. The proposed changes to this subpart also delete the current amended footnotes "h" and "i" pertaining to exposure categories "B" and "C." These footnotes are deleted because they are redundant code information and not necessary for use with the 2012 IRC.

Subp. 2. R602.10.11, Cripple wall bracing. The changes made to 2012 IRC, section R602.10.11, deletes the last sentence in the section regarding a reduction in the spacing between the adjacent edges of braced wall panels. Braced wall panels are full height wall sections constructed to resist loads through the interaction of framing members, sheathing material, and anchors. A code change at the national level to the 2012 IRC reduced the spacing for cripple wall bracing from the requirements in the 2006 IRC. Without this amendment, the spacing requirements for cripple wall bracing will be overly restrictive for Minnesota's low seismic zone because it requires more wall bracing than is necessary. The amendment removes the statement requiring the reduction of spacing between braced wall panels. This change is reasonable and necessary because the requirement in the 2012 IRC, without amendment, would increase the cost of construction in Minnesota without providing a life safety benefit in Minnesota's seismic zone.

1309.0612 SECTION R612, EXTERIOR WINDOWS AND DOORS.

This amendment deletes the phrase "and flashed" from the second sentence in section R612.1 of 2012 IRC to prevent a possible conflict between the requirements in sections R612.1 and R703.8. Section R612.1 states that windows and doors must be installed and flashed according to the manufacturer's instructions. That section also states that windows and doors must be flashed in accordance with section R703.8. However, the requirements in section R703.8 conflict with the requirements in section R612.1. Section R703.8, subitem 1, as amended, contains requirements for window and door flashing that are more specific than the general requirements in section R612.1, which require flashing in accordance with the manufacturer's instructions. Section R703.8 as amended, however, identifies that windows and doors shall be flashed in accordance with the window or door manufacturer's installation and flashing instructions, the flashing manufacturer's instructions, a registered design professional's design, or in accordance with other approved methods. The intent of section R612.1, as amended, is that designers and

builders must refer to section R703.8 for flashing requirements and to section R612.1 for the installations requirements. This amendment is therefore reasonable and necessary to eliminate the potential conflict and confusion between code requirements of sections R612.1 and R703.8 and to clarify the installation and flashing requirements for windows and doors.

1309.0613 SECTION R613, EXTERIOR WINDOWS AND GLASS DOORS.

This existing rule part that amends 2006 IRC, section R613, is being repealed. Section R613 was renumbered to R612 in the 2012 IRC. Section 612 is amended as described in the rationale for Minnesota Rules, part 1309.0612, above. It is reasonable to delete this amendment because it is no longer applicable to the 2012 IRC.

1309.0702 SECTION R702, INTERIOR COVERING.

Subpart 1. Table R702.1 (3). This subpart is added to correct an error in the 2012 IRC Table R702.1 (3), regarding cement plaster proportions for interior plaster. The correction identifies that one part masonry cement of Type M, S, or N shall be used instead of one part lime, as shown in the 2012 IRC model code table for the first coat proportioning. To support the corrected information, 2012 IRC, section R702.2.2, Cement plaster, indicates that cement plaster materials shall conform to ASTM C 926 and other standards listed in that section. ASTM C 926 is specifically referenced because this standard addresses the application of portland cement based plaster. This standard includes the plaster proportions and mixing requirements in ASTM C 926, Table 3, which is why IRC Table R702.1(3) is being corrected for continuity. The other ASTM standards referenced in Section R702.2.2 are specific to other components of the plaster material and installation (i.e., masonry cement, portland cement, blended hydraulic cements, metal lath, aggregate, woven wire, accessories, and installation of lath). The proportion shown in IRC Table R702.1 (3) does not coordinate with the proportioning in ASTM C 926, Table 3. This correction is necessary to coordinate the proportions in the table with the requirements in section R702.2.2. It is reasonable to amend Table R702.1 (3) of the 2012 IRC to conform to the requirements in section R702.2.2 and ASTM C 926.

Subp. 2. R702.7, Vapor retarders. This subpart amends 2012 IRC, section R703.7, Vapor retarders, to clarify the use of Class I or II vapor retarders. The first sentence deletes references to Climate Zones 5, 6, and Marine 4 from the section in the model code. It is reasonable to delete these climate zones from Section R702.7 because these climate zones are not applicable in Minnesota, as shown by 2012 IRC, Table N1101.10 (R301), and Figure N1101.10 (R301). The 2012 IRC language states that Class I or II vapor retarders are required. The modification to section R702.7 deletes "or Class II" from the first sentence and adds a second sentence to the section that permits a Class II vapor retarder only when specified by the designer on the construction documents. The text "or Class II" is therefore deleted from the first sentence to clarify that only a Class I vapor retarder is required on the interior side of frame walls in Climate Zones 6 and 7. The second sentence further clarifies that Class II vapor retarders are permitted only if the designer requires them on the construction documents.

There will be no financial impact on project costs due to this amended language. Most Minnesota contractors are installing a sheet polyethylene vapor retarder material complying as a Class I vapor retarder over batt insulation. A contractor can also choose to install insulation

having a kraft paper facing, which is considered a Class II vapor retarder. This amendment identifies that either Class I or Class II vapor retarders are permitted and that the choice of product is mandated by the contractor or design professional through the construction document preparation, instead of by the building official.

This subpart also amends the section by deleting all of the exceptions that are included in 2012 IRC, section R702.7. Exceptions #1 and #2, pertaining to basement walls and below grade portions of a wall, respectively, are not necessary because foundation walls and below grade portions of walls are regulated by the prescriptive design and installation requirements in the Minnesota Residential Energy Code, Minnesota Rules, chapter 1322. Exception #3, pertaining to construction where moisture or its freezing will not damage materials, is deleted because it has no applicability in Minnesota. Construction practices and designs in Minnesota must address moisture and freezing for sustainability, as required by chapter 1322 and Minnesota Statutes, section 326B.118. It is therefore reasonable to amend section R703.7 to provide for uniform enforcement and to clarify the requirements for use of a Class II vapor retarder in Minnesota.

1309.0703 SECTION R703, EXTERIOR COVERING.

Subp. 2a. R703.2, Water-resistive barrier. Section R703.2 of the 2012 IRC is amended to clarify the installation requirements for the water-resistive barrier at laps and flashing. The modification will provide clarity and encourage uniform enforcement by providing minimum lap requirements when approved ASTM D 226 Type 1 felt is used or, in the absence of specific installation instructions, if other approved water-resistive barrier materials are used. Forensic engineers Air Tamarack Inc. and the University of Minnesota's Dr. Louise Goldberg have researched and identified that improper lapping of water-resistive barriers and flashings contribute to water intrusion damage in residential construction.[15]

This subpart inserts a new third sentence in section R703.2 that reads, "The water-resistive barrier shall overlap the flashings required in Section R703.8 not less than 2 inches (51 mm)." This amended language requires a minimum 2-inch water-resistive barrier overlap of the flashing, and therefore requires that the flashing have a minimum 2-inch vertical leg to be overlapped. Typical flashing is constructed with a corrosion-resistant material bent to form a right angle. This right angle flashing is installed directly on top and parallel (horizontal) with the window unit brick molding with the leg of the right angle flashing extending beyond the projection of the brick molding. The other (vertical) leg of the right angle is installed against the exterior wall sheathing. For the purpose of this amendment, the vertical leg is required to be at least 2 inches in height. The forensic engineers who have studied improper lapping of water-resistive barriers and flashing have also determined that a 2-inch vertical flashing leg and water-resistive barrier overlap is necessary to protect or limit wind driven water intrusion for Minnesota. This code change proposal was submitted by Air Tamarack Inc., which provides forensic mold solutions, and identifies that the 2-inch water-resistive overlap installation is consistent with IRC section R703.2 requirements.

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[15] A copy of Dr. Goldberg's research and report is reproduced on the Department's website and may be viewed at: http://www.dli.mn.gov/CCLD/rm/1309pub.asp. In the alternative, copies of this publications is available for review at the Minnesota Department of Labor and Industry by contacting Richard Lockrem, Construction Codes and Licensing Division, 443 Lafayette Road N., St. Paul, MN 55155-4341; Email: richard.lockrem@state.mn.us; telephone: (651) 284-5868. TTY users may call the department of Labor and Industry at (651) 297-4198 for assistance.

That section requires water-resistive barriers to be installed with a minimum overlap.

Dr. Louise Goldberg has also conducted research regarding the minimum overlap of water-resistive barriers based on specific wind speeds. The following Table was prepared by Dr. Goldberg and indicates that a wind speed of 64 miles per hour will push rain water up vertically 2-inches. This is the bench mark used for the requirement that building paper be overlapped a minimum of 2-inches. Wind speeds over 65 miles per hour will push rain behind building paper and cause the wall sheathing to get wet. This same logic applies to cap flashings over windows and doors and other locations around a house. With most rain storms the wind speed is normally less than 64 miles per hour. Minnesota rarely experiences wind speeds over 65 miles per hour during a typical rain storm, so under most conditions a 2-inch overlap will protect the wall sheathing. The wall sheathing occasionally getting wet is not likely to be a problem as long as this does not occur frequently.

Ability of Wind to Push Water Up Vertically		
Wind Speed, mph	**Height Water Pushed up Vertical in inches**	
45	1	
64	2	
80	3	
90	4	
101	5	

This Table was prepared by Dr. Louise Goldberg at the U of Minnesota.

According to Air Tamarack Inc., requiring a 2-inch cap flashing will not increase costs because most building contractors are presently using cap flashings with back legs longer than 2-inches. Indeed, Scherrer Bros. Lumber, one of the largest lumber yards in Minnesota, does not sell a cap flashing with a back leg less than 2 1/2 inches. Air Tamarack Inc., also interviewed several local building contractors concerning their use of cap flashings. All contractors interviewed indicated that they only use cap flashings that have a minimum of a 2 inch back leg.

Air Tamarack Inc., inspects 30-50 homes per year that have water penetration problems. Air Tamarack Inc.'s estimated repair cost on homes that suffer from water intrusion due to improper installation or missing cap flashings averages over $50,000. Indeed, the most common water penetration problem identified is improper installation or missing cap flashings, which includes using cap flashings with back legs less than 2 inches high. The cap flashings with less than 2 inch back legs are more difficult to fasten to the wall sheathing and frequently will be distorted by the fasteners, and are more likely to leak. However, cap flashings with a back leg of at least 2 inches long can be more easily fastened with sealant behind the flashing and is less likely to leak than smaller fasteners.

This subpart also modifies the fourth sentence in section R703.2 by adding the phrase "in the water-resistive barrier or flashing" after the phrase "Where joints occur." Additionally, the word "felt" is deleted and replaced with "the joints" before the phrase "shall be lapped." The above modification are reasonable and necessary because the 2012 IRC requires that water-resistive barrier joints be lapped 6 inches, but fails to address joints in the flashing. These changes will ensure that flashings and water-resistive barriers are installed with proper lapping to protect or limit water intrusion for Minnesota residential construction.

The rest of the text in section R703.2, including the exceptions, has not been amended from that of the model code. Based on Dr. Goldberg's research and Air Tamarack Inc.'s experience, it is reasonable and necessary to amend section R703.2 to provide greater protection in Minnesota from water intrusion at the flashing locations.

The amendments to Section R703.2 may create a cost increase only for residential builders that are currently using a flashing with less than a two-inch vertical leg. However, as indicated above, most residential builders in Minnesota are already installing flashings having a vertical leg of at least two inches or more as part of their standard method of construction. A local lumber supplier was contacted with regards to the drip cap flashing available and cost for installation above windows, doors, and other required locations. The supplier stocks 1 ¼" x 10', 1 3/8" x 10', and 2" x 10" aluminum flashings. There is only a $0.03 additional cost per linear foot to use 2" flashing in lieu of 1 ¼" or 1 3/8" flashings. Air Tamarack Inc., states that a typical 2500 square foot home in Minnesota requires about 70 feet of cap flashings for the windows and doors (this assumes 16 windows 4 feet wide and two doors of average size). For this 2500 square foot home example, the additional cost to increase the flashing width to 2" is approximately $2.10.

Subp. 3. R703.6, Exterior plaster. This section is amended by deleting the references to the editions of the standards cited therein. The 2012 IRC, chapter 44, Referenced standards, references both ASTM C 926-06 and ASTM C 1063-08, which identifies the year of the applicable standard. Therefore, references to the editions of those standards in this amendment are no longer necessary. It is reasonable to delete these references since it is no longer necessary and is identified in chapter 44 in the 2012 IRC.

R703.6.1, Lath. section R703.6.1, Lath, is not modified but included for context.

R703.6.1.1, Control joints and expansion joints. During the adoption of the 2006 IRC, code language regarding control joints and expansion joints were added by amendment. This language is being carried over to the 2012 IRC and amended to correct minor issues with the current text. The modification to this section corrects minor issues by deleting the edition of the referenced standard "03" that follows the reference to ASTM C 1063. Chapter 44 of the 2012 IRC, Referenced standards, references the ASTM C 1063 – 08 edition. Therefore, the reference to the edition for this standard contained in this rule part is no longer necessary. The amendment is also modified by adding missing decimal points to the section references "7.11.4-7.11.4.4" contained in the second sentence of section R703.6.1.3, as amended. This change is reasonable and necessary to correct typographical errors in the rule.

R703.6.2, Plaster. The modification to section R703.6.2 of the 2012 IRC is added to provide context to the rule amendment and make the amendment complete. If this language is not included in the amendment, the amendment will appear to have deleted this text from section 703.2. It is reasonable to add section R703.6.2 to the rule language for accuracy, ease of use, and uniform enforcement.

R703.6.2.1, Weep screeds. This section is amended by incorporating the metric equivalent, which was inadvertently left out during the previous rulemaking. This section is also amended by deleting the edition of the referenced standard "03" that follows the reference to

ASTM C 1063. Chapter 44 of the 2012 IRC, Referenced standards, references the ASTM C 1063 - 08 edition, so this part, which identifies the edition, is no longer necessary.

R703.6.1.3, Control joints and expansion joints. This section has been renumbered from R703.6.1.3 to R703.6.1.1 to correct the current rule as written. The current rule lists the section references numerically as R703.6, R703.6.1, R703.6.2.1, R703.6.1.3, and R703.6.3. As written, Section R703.6.1.3 should have followed R703.6.1for proper numerical order. To correct this item Section R703.6.1.3 is renumbered to R703.6.1.1.

R703.6.3, Water-resistive barriers. The amendment to this section is modified by adding the word "of" to both subitems 1 and 2 to correct a grammatical error. This section is also modified by changing the reference to the edition of the AATCC 127 standard from "1998" to "2008." This year of standard date is important and must be included in the amendment because this standard is not referenced in chapter 44 of the 2012 IRC code document.

R703.6.4, Application. This code section was not contained in the 2006 IRC and is new to the 2012 IRC. The modification to this new section adds a second sentence to the exception about when the second coat of stucco can be applied. The new text is consistent with the text in section 2512.8 of the 2012 IBC and is similar to the requirements in ASTM C 926, which is referenced in the exception contained in Section R703.6.4. 2012 IRC, section R703.6, Exterior plaster, requires that the installation of exterior plaster materials shall comply with ASTM C 926, ASTM C 1063, and the provisions of the code. ASTM C 926 is specifically referenced here because this standard addresses the application of portland cement based plaster. ASTM C 1063 is specifically referenced here because this standard addresses the application of lathing and furring to receive interior and exterior portland cement based plaster.

This second coat application practice has been recognized by ASTM C 926. Following are the sections from the ASTM C 926 regarding the second coat of stucco, which reads as follows:

> "7.2.1.2 The first (scratch) coat shall become sufficiently rigid to support the application of the second (brown) coat without damage to the monolithic continuity of the first (scratch) coat or its key.
>
> 7.2.2. The second (brown) coat shall be applied with sufficient material and pressure to ensure tight contact with the first (scratch) coat and to bring the combined thickness of the base coat to the nominal thickness shown in Table 1."

The Minnesota Lath and Plaster Bureau and the Northwest Wall and Ceiling Bureau recommend this procedure, sometimes called the "double-back" method, because it ensures a more intimate bond between the successive applications of the plaster and provides for a more uniform and better curing of the basecoat (the combined application of the first and second coat). The added exception is reasonable because it acknowledges a procedure already in practice by the plastering industry and it eliminates ambiguity with the reference to the ASTM C 926 Standard.

There will be no cost increase to residential builders and designers. The amendment merely adds an industry accepted practice to the Minnesota Building Code, which is also recognized in the ASTM C 926 standard.

R703.6.5, Curing. Section R703.6.5 is amended to add the phrase "except as noted in section R703.6.4" at the end of the second sentence. The modification to the section clarifies an ambiguity related to the amendment in Section R703.6.4. The new sentence added to the exception contained in section R703.6.4 states: "the second coat is permitted to be applied as soon as the first coat has attained sufficient rigidity to receive the second coat." This installation method, sometimes called the "double-back" method, ensures a more intimate bond between the successive applications of the plaster and provides for a more uniform basecoat and better curing of the coats (the combined application of the first and second coat). The requirement that the second coat be applied no sooner than 48 hours after the application of the first coat would contradict current industry practice. While it is acceptable to install the second coat 48 hours after the first coat, the plastering industry recognizes that the first coat attains sufficient rigidity oftentimes within hours of its initial installation. Therefore, the requirement to wait 48 hours after the first coat is not necessary if the double-back method is used. The new language is reasonable because it acknowledges a procedure that is already being practiced by the plastering industry and eliminates any confusion. Moreover, there is no cost increase to residential builders and designers because the amendment adds an industry accepted practice already in use in the state of Minnesota.

Subp. 3a. R703.7, Stone and masonry veneer, general. This subpart is being repealed. The current amendment to this 2006 IRC section permits stone and masonry veneers to be installed on more than the first story above grade by applying exceptions for Seismic Design Category A to be used in Minnesota. This practice is already permitted in Minnesota Rules, part 1309.0301, subpart 2, Table R301.2 (1). Therefore, this amendment is redundant and is no longer necessary.

Subp. 9. R703.8, Flashing. The modifications to the 2006 IRC, section R703.8 amendment, are a result of 1309 Advisory Committee recommendations and DLI staff discussions. The modifications include text from the 2012 IRC and revisions to location number one requirements by reformatting the text. Location number nine is modified by deleting the phrase "kick out" and adding a reference to section R903.2.1. A new location number ten is added to the list of locations.

A new sentence is added to the general provision in R703.8 that states when self-adhered membranes are used for flashing, the flashing shall comply with the American Architectural Manufacturers Association standard 711 ("AAMA 711"), which is an option for self-adhered flashing when used with fenestration products. The text is added to this section because it was added to the 2012 IRC. The change is necessary to coordinate this amendment with the 2012 IRC.

The following changes are made to the flashing locations as identified in section R703.8:

Amendments to location number 1 include changes made to the 2012 IRC with additional modifications included for clarity. The first sentence is amended by deleting the word "at" and replacing it with the phrase "shall be installed at the head and sides of" after the word "flashing." This modification is necessary because it incorporates new text that was added to the 2012 IRC model code document and is necessary for consistency and clarity. The first sentence is also modified by adding "and" following "door openings" to clarify that the flashing must also extend to the exterior wall finish or to the water-resistive barrier for subsequent drainage. A new second sentence requiring exterior windows and doors to comply with at least one of the new sub items (a),

(b), or (c) is added because they were added to the 2012 IRC, with the exception for pan flashing requirements, which are addressed in section R703.8.1. These modifications will provide additional clarity to the requirements. Subitems (b) and (c) are added to coordinate with changes made to the 2012 IRC.

Locations 2 through 8 are unchanged from the existing rule.

Location 9 is amended by deleting the phrase "or kick out" because the phrase is not used in this section of the 2012 IRC. However, the requirement known as "kick out flashing" is still addressed in section R903.2.1 of the 2012 IRC, as amended. The definition for "kick out flashing" in still included in the amendments to section R202 because the phrase is used in another location in this rule chapter.

Location 10 is added to address flashing requirements where the foundation intersects with the rim joist framing. This flashing provision acknowledges that some exterior foundation insulations can range between one-inch to three or more inches in thickness when installed. The proposed Minnesota Rules, chapter 1322, will require R-15 exterior foundation insulation as a prescriptive requirement with other options for compliance. The R-15 foundation insulation requirement is based on the 2009 IECC. The 2009 IECC is the minimum standard that Minnesota must meet or exceed to comply with a federal mandate as part of the American Recovery and Reinvestment Act of 2009 ("ARRA"). This federal mandate requires that minimum standards be met or exceeded using cost effective products which are commonly available. *See* Minnesota Rules, chapter 1322, for further detail and explanation.

The sill plate cannot be cantilevered to be flush with the exterior foundation insulation, so a flashing is necessary to flash the offset at the sill plate and exterior face of the foundation insulation. Contractors often want to cantilever the foundation sill plate to align it with the foundation insulation. This cantilever is not recommended from a structural standpoint. An R-15 foundation insulation installed on the exterior of the foundation could be up to three or more inches in thickness, depending on the product manufacturer. A typical sill plate is a 2 by 6-inch treated plate, which actually measures 5 ½ inches in width. A sill plate cantilevered to align with a 3-inch foundation insulation leaves only 2 ½ inches of sill plate to bear on the foundation. Wall framing studs need to be supported by the foundation, not the insulation. This amendment acknowledges that there may be a misalignment between the exterior surface of the foundation insulation and the exterior surface of the wall framing (including the sill plate). In this case, the location must be properly flashed.

It is necessary and reasonable to coordinate the amendments to section R703 with changes made to the 2012 IRC to provide consistency to the rule. It is also necessary to incorporate the new language to clarify the requirements for flashing and to provide uniform enforcement of these requirements.

There will be no cost increase to residential builders and designers related to locations one through nine, which simply clarify existing rule language. There will be a cost increase for residential builders that do not currently install the flashing required in location number ten of this section. Many residential builders are currently installing some form of flashing with respect to this condition because they have already been placing the foundation insulation on the exterior of

the foundation. The practice of installing the foundation insulation on the exterior of the foundation has been encouraged for several years by energy and sustainability experts, even though the current Energy Code permits interior and exterior foundation insulation installation.

R703.8.1, Pan flashing of windows and doors. Pan flashing requirements are now included in the 2012 IRC, but were not previously included in the 2006 IRC. The current amendment for section R703.8.1 regarding "pan flashing" will be carried forward. However, the language will also incorporate 2012 IRC language while maintaining the current exceptions. The modification to the existing amendment to section R703.8.1 requires pan flashing to be installed according to the fenestration manufacturer's installation and flashing instructions or in according to the requirements of this section when manufacturer's installation instructions are not provided. This amendment is necessary to require that door and window installations must still comply with this section when manufacturer instructions are not available. The content of this section with the listed exceptions is necessary because it provides better clarity for uniform enforcement than do the requirements of the 2012 IRC. The content of the existing exceptions remains unchanged.

1309.0802 SECTION R802, WOOD ROOF FRAMING.

R802.10.5, Truss to wall connection. This rule part is being repealed because the 2012 IRC no longer contains section R802.10.5 and that information is now renumbered in the 2012 IRC to R802.11, Roof tie down. Therefore, this amendment is no longer required.

1309.0806 SECTION R806, ROOF VENTILATION

R806.4, Conditioned attic assemblies. The current amendment that deletes "conditioned attic assemblies" is being repealed. 2006 IRC, Section 806.4 was deleted because the language was unclear, conflicted with conventional Minnesota attic ventilation requirements, and improperly required an ASTM Standard. This section, renumbered R806.5 in the 2012 IRC, has been rewritten.

The changes made in the 2012 IRC Section R806.5 address Minnesota's climactic conditions and concerns. It is reasonable to delete the existing amendment to Section R806.4 because it is no longer needed.

1309.0903 SECTION R903, WEATHER PROTECTION.

R903.2.1, Locations. This proposed amendment modifies section R903.2.1 of the 2012 IRC. The amendment adds the phrase, "A kick out" preceding the word "flashing" at the beginning of the second sentence of the 2012 IRC section. A new third sentence is added to specifically name the flashing as "kick out flashing" and to identify a minimum dimension for the flashing length. A definition for "kick out flashing" exists in Minnesota Rules, part 1309.0202, subpart 2. Although the term "kick out flashing" is not used in the 2012 IRC, the industry is familiar with the term, its requirements, and its benefits. Members of the forensic community have determined that "kick out flashing" should be a minimum of two and one-half inches long to properly divert rain water beyond the surface of the adjoining exterior wall. It is reasonable to add this language and the minimum dimension requirement for kick out flashing to provide clarity and

to coordinate with other code sections. The last sentence of 2012 IRC, section R903.2.1, remains unchanged.

R903.2.2, Kick out flashing/diverter. The current amendment regarding "kick out flashing/diverter" is being repealed because the requirements for "kick out flashing" are now included in the 2012 IRC. Although the term "kick out flashing" is not used in the 2012 IRC language, the requirements pertaining to kick out flashing are covered in section R903.2.1, Locations. It is reasonable to delete the existing amendment because the concepts and requirements are incorporated into the 2012 IRC model code.

R903.2.1.1, Existing buildings and structures. This is a new amendment intended to encourage uniform enforcement regarding kick out flashing installed in existing buildings and structures. The amendment requires that kick out flashing shall be installed when simultaneously re-siding and re-roofing an existing building or structure. The exception clarifies that kick out flashing is not required when only re-roofing an existing building or structure. This amendment will help clarify the requirements for kick-out flashing, including when and where it applies.

1309.0905 SECTION R905, REQUIREMENTS FOR ROOF COVERINGS.

Subp. 2. R905.2.8.5, Drip edge. This proposed amendment deletes 2012 IRC, section R905.2.8.5, Drip edge, in its entirety. As written in the 2012 IRC, drip edge material would be required as part of the roof covering installation requirements. A code requirement for drip edge has never been required in Minnesota's code history, unless specifically required by the roof covering manufacturer's installation instructions. Most roof covering manufacturers' installation instructions recommend a drip edge, but do not mandate its installation. The installation of a drip edge has always been the choice of builders or designers and the inclusion or exclusion of a drip edge has not created an issue in Minnesota. It is reasonable to delete this section from the model code because it was not shown to be necessary or to serve any useful purpose, and would increase the cost of construction.

1309.4300 REFERENCED STANDARDS.

This amendment deletes chapter 43, References standards, in its entirety. This chapter is has been renumbered to chapter 44 in the 2012 IRC. The existing amendments to the NFPA Standards referenced in the existing amendment are now incorporated in chapter 44 of the 2012 edition of the IRC, so the amendments to these standards are also no longer necessary.

CONCLUSION

Based on the foregoing, the proposed rules are both needed and reasonable.

10/22/13
Date

Ken B. Peterson, Commissioner
Department of Labor and Industry

EXHIBIT A

MEMBERS OF 1309 ADVISORY COMMITTEE

Chair - Richard Lockrem, DLI
Co-Chair - Herman Hauglid, DLI
Scott Dornfeld, Association of Minnesota Building Officials
Rick Davidson, Association of Minnesota Building Officials
Kathi Osmonson, Association of Minnesota Building Officials
Russell Thornburg, Association of Minnesota Building Officials (alternate)
Marlene Bach, Association of Minnesota Building Officials (alternate)
Jeremiah Anderson, Association of Minnesota Building Officials (alternate)
Karen Linner, Builders Association of Minnesota
Joe Ranweiler, Builders Association of Minnesota
Mike Paradise, Builders Association of Minnesota
Pam Perri, Builders Association of Minnesota (alternate)
Tom Lehrman, Builders Association of Minnesota (alternate)
Kevin Lee, Minnesota Concrete Masonry Association
Lloyd West, Minnesota Concrete Masonry Association (alternate)
Steve Pedracine, Minnesota Lath and Plaster Bureau
John Nesse, Minnesota Lath and Plaster Bureau (alternate)
Mike Swanson, Builders Association of the Twin Cities
Trace Mills, Builders Association of the Twin Cities (alternate)
Jack Rossbach, Air Tamarack
Paul Ellringer, Air Tamarack (alternate)
Dave Neisen, League of Minnesota Cities
Mike Wallen, League of Minnesota Cities (alternate)
Timothy Johnson, AIA Minnesota
Luke Stemmer, Minnesota State Fire Chiefs Association
Kip Lamotte, Minnesota State Fire Chiefs Association (alternate)
NARI of Minnesota - no response
Minnesota Masonry Institute - no response
Northwestern Lumberman's Association - chose not to participate