**Date:** January 8, 2015 (Revised)

**To:** Home Builders, Remodelers, Porch Builders, Sun Room Builders, and Deck Builders

**From:** City of Saint Peter Building Department

**Re:** New Code adoptions

The Minnesota Department of Labor and Industry has announced the following adoptions:

- Chapter 1309 2012 International Residential Code with Minnesota amendments and Chapter 1300 Administrative Provisions will become effective **January 24, 2015**.
- Chapter 1303 which includes new foundation and radon rules and Chapter 1322 Residential Energy Code will become effective **February 24, 2015**.

While the state will be adopting the 2012 International Residential Code, it will be called the 2015 Minnesota Residential Code.

Copies of the 2012 International Residential Code (IRC) with the Minnesota amendments and including the radon and energy codes can be obtained from ICC at http://shop.iccsafe.org/codes/state-and-local-codes/minnesota.html?code_cycle=916. Copies of the Minnesota amendments can be found on the Department of Labor and Industry website at http://www.dli.mn.gov/CCLD/Codes.asp. Also available on the DLI site is the Statement of Need and Reasonableness (SONAR) that attempts to explain why the Minnesota amendments occur.

Minnesota Rules state that ***applications*** received ***on or after*** the effective date of adoption must comply with the new code. So all applications received prior to the effective date will be processed in accordance with the 2007 Minnesota Residential Code. Those received on or after that date will be processed in accordance with the 2015 Minnesota Residential Code.

You are encouraged to contact DLI for interpretations of any of the code requirements. If you wish those interpretations to support an argument on the meaning of a code requirement, make sure you get the interpretation in writing and have it signed by the author.

***Please feel free to distribute copies of this memo to subcontractors, staff members, material suppliers, or any other persons or firms that you feel may benefit from the information.***

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***NOTICE: THE FOLLOWING IS PROVIDED AS A COURTESY AND NO GUARANTEES ARE MADE AS TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS. THE NUMBER OF AMENDMENTS AND THE BUILT IN CONFUSION IN THE TEXT IS UNPRECEDENTED. BECASUES OF THE NUMBER OF AMENDMENTS THIS MEMO IS OF NECESSITY ABREVIATED. COMPLIANCE WITH THE CODE IS A RESPONSIBILITY OF THE PERMIT APPLICANT. CONTACT US FOR CLARIFICATION OR IF YOU HAVE ANY QUESTIONS.***

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## CHANGES IN CHAPTER 1300 ADMINISTRATION

**MN Rules 1300.0110 Permits Required, Subp. 4 Work exempt from permits** – The size where permits are required for tool and storage sheds and similar structures has been increased to 200 square feet from 120 square feet. A deck not more than 30 inches above grade and not attached to a structure with a frost foundation is still exempt from permits.

**MN Rules 1300.0120 Permits, Subp. 13 Information and placement of permit –** This is new text in the code based on existing Minnesota Statutes, section 15.41, that requires that the permit specify the name and address of the applicant and the general contractor if one exists. It also more clearly directs that all construction permits must be posted in a conspicuous and accessible place at the premises or site of construction.

**MN Rules 1300.0130 Construction Documents, Subp. 2 Information on construction documents –** this is less of a code change and more of a policy change. This section of the code requires the plans to be of sufficient clarity to indicate the location, nature, and extent of the work proposed and show in detail that it will conform to the code… Some of the plans we receive have numerous alternates, often with many crossed out, that make determining what is or is not being built difficult to determine. The plans fail to pass the clarity test. Furthermore, this results in the plans becoming more voluminous which creates two additional problems. First, plans with numerous additional and unnecessary pages make use of the plans in the field by field inspection staff much more cumbersome. Second, emergency services scans these plans and the additional pages add significantly to the cost unless staff time is used to cull the unnecessary information. Again this comes with a cost. We ask your cooperation in reducing or eliminating any unnecessary details on the plans submitted to that which is largely specific to that project.

**MN Rules 1300.0130 Construction Documents, Subp. 6 Approval of construction documents** – Deficiencies identified on plans ***prepared by a design professional licensed in Minnesota*** must be communicated to such design professional in writing by the building official and may not be marked on the plans. Changes to plans as a result may be made by addendum or revised plans. Any changes made to the approved plans once a permit is issued must be made prior to doing the work.

**MN Rules 1300.0160 Fees, Subp. 6 Plan review of similar plans** – The types of variations in plans that can occur and still be considered a similar plan have been reduced. Plans considered to be similar must have (a) the same physical dimensions and (b) the same structural design. Differing foundation materials, roof truss design, and foundation configurations (walkout, lookout, and full basements) are permitted if addressed in the master plan. Adoption of the new code requires that any application for consideration of plans being similar must be refiled. If you take advantage of this section, you may wish to contact Building Department Staff to discuss your plans to determine if they meet the new rules.

**MN Rules 1300.0210 Inspections Subp. 6 Required Inspections** – Text has been added to make inspections of fire sprinklers and alarms mandatory. Depending on the system used, those inspections may be made by either Fire Department or Building Department staff.

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## CHANGES IN CHAPTER 1303 MINNESOTA RULES

**MN Rules 1303.1600 Footing Depth for Frost Protection, Subp. 2, Soil under slab on grade construction for buildings** – This section has been amended by reducing the size of a garage that can be constructed on a slab from 3000 square feet to 1000 square feet. While no studies were undertaken, there were assumptions made in the SONAR that there aren't many of the larger buildings built in Minnesota and that they are mostly pole structures anyway. It is also pointed out in the SONAR that plans for garages exceeding 1000 square feet must be prepared by a licensed design professional.

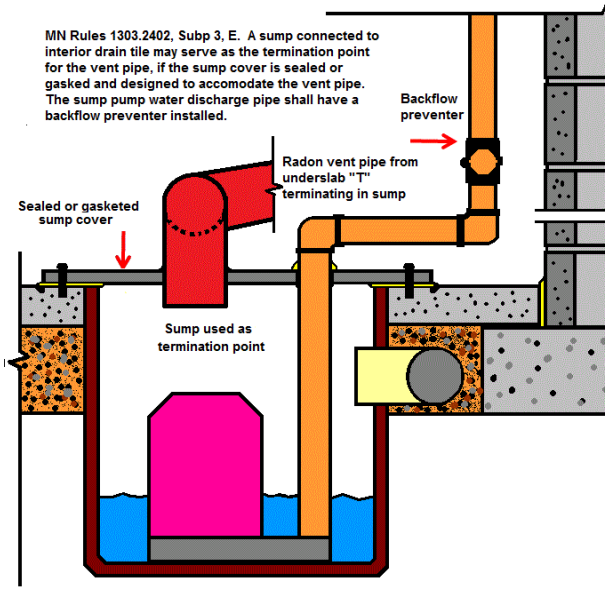
**MN Rules 1303.2200 Simplified Wind Loads, Subp. 2, Simplified design wind pressures** – The Horizontal and Vertical Pressure and the Overhang Pressure have been significantly increased. The SONAR states that "the cost of designing simple structures for wind loads is reduced".

**MN Rules 1303.2400, Subp. 1 Radon applicability –** The entire chapter on radon is revised so you will want to review these new amendments carefully. In this subpart, the rules are expanded to cover all single- and two-family dwellings, townhouses, apartment buildings, condominiums and mixed occupancy buildings that include residences. They apply regardless of the number of stories that exist in the building. The rules will only ***require*** a passive system (no fan) in new construction. But, active systems are now ***regulated*** when installed in ***either new or existing dwellings***.

**MN Rules 1303.2400, Subp. 2 Radon Design features –** This section spells out that a passive radon reduction system must be provided for any residential use if there is a basement slab in contact with earth, when any crawl space occurs, when there is a wood foundation floor, or for slab on grade construction. Ventilated crawl spaces, hotels, and motels are exempt.

**MN Rules 1303.2402 Requirements for Passive Radon Control Systems** – Some of the highlights of the new rules are:

- While the rules apply to townhouses, the state has opined that the new rules do not require a separate system per dwelling unit. Therefore only one "system" will be required. But, remember that MR 1303.2402, subpart 5, B, requires that each divided under slab area have a radon control system but all of those systems may be connected with horizontal vents to a single vertical vent.
- The term "sealed" is used throughout the radon rules. MR 1303.2401, subpart 2, defines "sealed" as "means to prevent the movement of air or airborne gases through a floor, wall, or ceiling assembly". As you read through the radon rules and see how the term is applied you may begin to wonder if DLI really meant "sealed" when they used the term "sealed". Does "sealed" = caulking = weather stripping = poly?
- A new prohibition of the installation of the power source for a future fan in any conditioned space, basement or crawl space (MR 1303.2402, subpart 6).
- All joints, cracks or penetrations in concrete floors must be sealed (MR 1303.2402, subpart 4, B). Where wood floors are used, only penetrations for pipes or wires that penetrate the soil gas membrane and the floor need be sealed (MR 1303.2402, subpart 4, A).
- Vents can now be installed in unconditioned space including exterior locations as long as the vent is insulated with insulation having a minimum of R-4 (MR 13032402, subpart 5, A). The insulation requirement also applies to that portion of the vent extending through an attic. Note: Although the radon rules permit a radon duct to be installed through a garage, the Minnesota Residential Code requires that these penetrations be treated as required in R302.11, item 4.
- Exterior vents must be maintained a minimum of ten feet from any door or window opening into the dwelling including the door between the dwelling and the garage (MR 1303.2402, subpart 5, A). Note: The model code says that the "vent termination" must be ten feet from any window or door opening. The Minnesota rule says the vent itself must be ten feet from a door or window opening. We don't know if this is an error or not.
- Sumps may be used as the "termination point" for radon vents as long as the water discharge from the sump has "a backflow preventer installed" (MR 1303.2402, subpart 4, E). Note: The model code says that a sump can be used as the suction point, not termination point for radon vents. But the Minnesota rule says you can route the radon vent into a sump.
- When a "T" fitting is used, the connections must be "tight fitting" (MR 1303.2402, subpart 3).
- Vent pipes must be ABS or PVC pipe and must be primed and glued at all fittings (MR 1303.2402, subpart 5, A).
- Vent pipes must extend at least 12 inches above the roof (MR 1303.2402, subpart 5, A) unless terminated in a sump (MR 1303.2402, subpart 4, E).
- Vent pipes must be identified on each story and in attics and crawl spaces. The label must read ***"Radon Gas Vent System"*** (MR 1303.2402, subpart 5, E). Because the Minnesota rules use different terminology than is found in the IRC (which uses "Radon Reduction System") and what you may have been taught at state sponsored seminars, you will not be able to use labeling that might be applicable in the rest of the country but will need to order special labels to meet the Minnesota requirements. DLI must want it enforced or otherwise they wouldn't have put it into the code. The SONAR indicated that plumbers didn't understand what "Radon Reduction System" meant and could result in plumbing being hooked up to the radon vent. Because



these vents must be insulated when they go through non-conditioned areas, the assumption is that the label may be covered by the insulation.

- If you are dealing with a residential occupancy ***other than*** a single-family dwelling, a two-family dwelling, or a townhouse that might involve a non-residential use such as a garage, offices, or memory care, you will want to arrange a meeting with us because it isn't clear what the rules are.

**MN Rules 1303.2403 Requirements for Active Radon Control Systems** – This is a new application of the rules for radon systems and covers those situations where a fan will be installed. These installations were not previously regulated. The first significant change is that these requirements apply to all buildings, not just new dwellings (MR1303.2400, subpart1). Previously, existing buildings were out of the scope of the requirements. The amendment provides specs for the radon fan. It requires an audible alarm or manometer to indicate if the fan is not operating. Vents and the fan are permitted to be located on the exterior of the dwelling or in a garage as well as the attic. Vents located in unconditioned locations must be insulated with a minimum of R-4 insulation. Fans located in attics at other than the attic access must be provided with a catwalk or floor that provides access to the fan location. Two rules apply here. The first is a mechanical code requirement that requires access to any appliance. DLI has indicated that they will delete that requirement to eliminate the need for a catwalk. However, DLI has added a provision in the energy code that requires an access be provided to any device without the need to compress or displace attic insulation. It appears that the catwalk requirement will apply one way or another. There is no limit to the length of a horizontal run so you may wish to consider locating the roof penetration of a radon vent adjacent an attic scuttle or route the vent through a garage, on the exterior of the dwelling, or terminate it in a sump. A switch-controlled light is required to be installed near the fan regardless the location of the fan (MR1303.2403, C). The light requirement is only applicable for ***active*** systems. ***If you are opting for an active system in a new home, you should note that prominently on your plans so they can be reviewed accordingly.***

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## CHANGES IN CHAPTER 1322 MINNESOTA RESIDENTIAL ENERGY CODE

There are significant changes to the Minnesota Residential Energy Code that are applicable to the building thermal envelope, foundation systems, electrical systems, mechanical systems, and plumbing systems. The best advice is to obtain copies of the 2012 International Energy Conservation Code and the state amendments and review them thoroughly. Seminars on the topic should be sought out. Notification to plumbing, electrical, mechanical, insulation, and foundation subcontractors is necessary.
A few of the high points are:

- Chapter 1322 applies to all detached one- and two-family dwellings, townhouses, and all IBC occupancies of R-2, R-3, and R-4 three stories in height or less above grade plane.
- An existing door, when replaced, separating conditioned from unconditioned space does not require the installation of a vestibule or revolving door provided that no existing vestibules may be removed (MR 1322.0100, subpart 3, exception 6).
- No requirements for basements and crawl spaces of homes built prior to June 1, 2009, continues (MR1322.0100, subpart 3, exception 9).
- Plan submittal information required (MR1322.0103):
  - Insulation materials and their R-values
  - Fenestration U-factors and SHGC's (while required to be provided, there are no regulations for SHGC's (solar heat gain coefficients)).
  - Mechanical system design criteria
  - Mechanical and service water heating system and equipment types, sizes and efficiencies
  - Equipment system controls
  - Fan motor horsepower and controls
  - Duct sealing and location and insulation on ducts and pipes
  - Lighting fixture schedule with wattage and control narrative
  - Air sealing details
- Building certificate info is expanded and must be posted near the electrical distribution panel (R401.3).
- More restrictive building thermal envelope requirements (Table R402.1.1):

| Southern Minnesota | Northern Minnesota |
|---|---|
| Ceiling – R-49<br>Wood frame wall – R-20, 13+5<br>Floor – R-30<br>Basement wall – R-15<br>Slab – R10 to depth of 3.5'<br>Fenestration U-factor - .32 | Ceiling – R-49<br>Wood frame wall – R-21<br>Floor – R-38<br>Basement wall – R-15<br>Slab – R10 to depth of 5'<br>Fenestration U-factor - .32 |

- Rim joists are required to be insulated and provided with an air barrier by Table R402.4.1.1 but there is no minimum R-value stated in the rules.
- 6-inch energy heel on roof/ceiling assemblies (Table R402.1.1, footnote j).
- The R-49 ceiling requirement can be reduced to R-38 if the uncompressed R-38 insulation extends over the wall top plate at the eaves (R402.2.1).
- The following must be "sealed" and/or insulated (Table R402.4.1.1):
  - Access openings, drop down stair or knee wall doors to unconditioned space must be sealed.
  - The space between window/door jambs and framing shall be sealed.
  - Corners and headers shall be insulated and the junction of the foundation and sill plate shall be sealed.
  - The junction of the top plate and top of exterior walls shall be sealed.
  - Knee walls shall be sealed.
  - Air sealing shall be provided between the garage and conditioned spaces.
  - Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.
  - When soffits occur, air barriers must align with the insulation and not the soffit.
- Insulation installers must provide a certification of insulation info posted conspicuously on the job site, not in the attic (R303.1.1 and R303.1.1.1).
- Any insulation that has a manufacturer's R-value mark must be installed so the mark is observable (R303.1.2).
- Foundation waterproofing to be installed across the top of the foundation wall and down exterior to top of footing (R402.1.1 (1)).
- Prescriptive requirements for the following:
  - Exterior draining foundation insulation (R402.1.1.2).
  - Exterior nondraining foundation insulation (R402.1.1.3)
    - Requires a 6-mil poly "slip sheet" over the insulation. "slip sheet" is not explained.
- Exterior exposed insulation to be protected (R402.1.1 (2).
- Interior foundation insulation requirements:
  - Masonry foundations must be drained through the masonry core to an interior drainage system (R402.1.1.4 (1)).
  - Frame walls cannot be in contact with foundation wall (R402.1.4 (2)).
  - Interior air barrier requirements apply (R402.1.4 (3)).
- Prescriptive requirements for interior foundation insulation:
  - Rigid interior foam insulation (R402.1.5).
    - All edges of rigid foam must be "sealed" including interior joints (R402.1.5).
  - Spray-applied interior foam insulation (R402.1.6).
  - Fiberglass batt insulation (R402.1.7).
    - Can only be used when the above grade foundation wall height does not exceed 1.5 feet (R402.1.7 (1)).
    - Top and bottom plates must be "air sealed" to the basement floor and the foundation wall (R402.1.7 (2)).
    - Vapor retarder required on the warm side of the wall (R402.1.7 (3)).
- Walls of conditioned basements must be insulated full height (R402.2.8).
- Access doors to unconditioned spaces to be weatherstripped and insulated to level of penetrated assembly (R402.1.4).
- Access (cat walk) to be provided to any attic equipment to prevent damaging or compressing insulation (R402.1.4).

- Replacement windows must have a maximum U-factor of .32 (R402.3.6).
- Special rules for recess lighting installed in the building thermal envelope (R404.1).
- Programmable thermostat required (R403.1.1).
- Thermostats must be initially programmed with heating set no higher than 70 degrees and cooling set no lower than 78 degrees (R403.1.1).
- Building framing cavities may not be used for ducts or plenums (R403.2.3).
- Prescriptive duct insulation requirements including vapor retarders when not located in conditioned space (Table R403.2.1).
- Balanced mechanical ventilation system required (R403.5).
- Ducts that are not completely located within the building thermal envelope must be leak tested (R403.2.2).
- Both a continuous and total mechanical ventilation requirement applies (R403.5).
- Significantly expanded rules on mechanical systems (R403).
- Documentation of proper operation and maintenance of mechanical ventilation systems must be provided in a conspicuous and readily accessible location (R403.5.16 and R303.3).
- Testing for air leakage shall be accomplished via a blower door test and limited to three air changes per hour (R402.4.1.2)
- All ventilation intake and exhaust outlets must have permanent, weather resistant identification labels on the building exterior (R403.5.15).
- All ducts, air handlers, and filter boxes must be sealed (R403.2.2).
- Hot water pipe insulation required (R-3):
  - Piping from water heater to kitchen
  - Piping located outside conditioned space
  - Piping from the water heater to a distribution manifold
  - Piping under a floor slab
  - ½" pipe runs longer than 20 feet
  - ¾" pipe runs longer than 10 feet
  - Includes PEX piping
- Heated pools must be provided with a vapor-retardant cover unless over 70 percent of the energy for heating is solar derived (R403.9.3).
- At least 75% of permanently installed lighting fixtures must have high-efficacy lamps (R404.1). High efficacy lamps are defined as: Compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of:
  - 60 lumens per watt for lamps over 40 watts
  - 50 lumens per watt for lamps over 15 watts to 40 watts
  - 40 lumens per watt for lamps 15 watts or less.

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## CHANGES IN CHAPTER 1309 MINNESOTA RESIDENTIAL CODE

**MN Rules 1309.0010 Adoption of the International Residential Code by Reference, Subp. 2 Mandatory Chapters** – This section adopts the 2012 International Residential Code and makes section P2904 of the IRC mandatory. P2904 is located in Chapter 29. Chapter 29 is in the plumbing code section of the IRC and P2904 provides one method of complying with fire sprinkler requirements. Subp. 3 of this subpart, under item D, then deletes Chapters 29 through 33 entirely and replaces them with the MN Plumbing Code. The legal impacts of adopting a code section and then deleting in its entirety the chapter in which it exists is unclear. There are no sprinkler requirements in the Minnesota Plumbing Code. This may cause some confusion and a lack of uniformity throughout the state. The use of P2904 will also be problematic because it references other sections of Chapter 29 that are not adopted and are not found in the ICC published MN Residential Code. You will want to proceed cautiously if you use P2904.

**MN Rules 1309.0010 Adoption of the International Residential Code by Reference, Subp. 2 Definitions** – DLI added a definition for "townhouse" that identifies a townhouse as having 2 or more dwelling units. The existing definition in the IRC that identified townhouses as having 3 or more units was not deleted. Under one definition two attached dwellings would require sprinklers. Under the other they would not be required. There are other conflicts as well. Designers should take note of the discrepancy.

This subdivision also creates a new definition for “crawl space” and defines a crawl space as having a ceiling height of less than 6 feet 4 inches. The implications of this definition will be explained later.

There is also a new definition for the term “floor area” that the SONAR says is necessary to appropriately apply the new sprinkler requirements. The definition includes the term “exterior wall” which is defined in the IRC as being an above grade wall. This definition clearly excludes most basements. In the sprinkler adoption text some commentary language is added that states floor area includes basements. But there are varying ceiling height requirements for basements that again could allow exclusion of some underfloor areas. You can expect some confusion and lack of uniformity based on which text you read and how it is applied.

**MN Rules 1309.0010, subpart 4 –** This amendment repeals the section of the Minnesota Residential Code that exempted all work from seismic requirements. So, seismic rules are now applicable in Minnesota. This is a puzzling amendment and here is why.

From the SONAR:

> *“By repealing Minnesota Rules 1309.0010, subpart 4, Minnesota is subject to the seismic provisions of the IRC… 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 applications 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…. 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.”*

So the seismic requirements are necessary and will impact work previously exempt but since they are minimum standards they do not require additional expenditures and the adoption will result in little to no cost and the proposal clarifies the seismic provisions and if properly applied will change nothing!

Now one would think if it were appropriate to engage the seismic requirements in the residential code that it would certainly be appropriate in the building code with taller and larger buildings and occupancies that put occupants at greater risk. However, seismic requirements remain deleted in the proposed adoption of the 2012 IBC!

**MN Rules 1309.0301 Design Criteria, Subp. 2 Climatic and Geographic Design Criteria** – The significance of this amendment is that it includes an ice barrier underlayment requirement for roofing. This was inadvertently omitted by DLI in the 2007 Residential Code. DLI stated in the SONAR that this created “a code tracking problem” and as a result some building departments didn’t enforce the non-existent rule. This amendment will make what is common practice a legal requirement again.

**MN Rules 1309.0302 Fire-resistant construction, Subp. 1** – This amendment contains numerous revisions to the fire resistant construction requirements of the code.

There is an exception that allows a dwellings and townhouses to be built closer to a property line without using fire resistant construction if the dwelling has a sprinkler system in compliance with IRC section P2904. P2904 is the section referenced earlier that was adopted and then the entire chapter in which the section was located was deleted. So the validity of the exception is questionable. This code section also doesn’t permit the use of NFPA 13D which is permitted in other code sections. Again it is not known if this was intentional or an oversight.

This amendment permits a common 1-hour wall to separate individual townhouse units if they do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. This applies to townhouses with or without sprinklers. A later amendment will exclude the requirements for structural independence if this 1-hour wall is used. Some confusion may occur with this section when applied to existing townhouses. The national model code language allowed the use of a 1-hour fire wall only when the townhouses had fire sprinkler systems. That sprinkler requirement didn't make it into the Minnesota amendment. It is unknown if this was an oversight or intentional.

This section also amends the alternate to parapet requirements for townhouses by prohibiting openings or penetrations of roofs when those openings or penetrations are within 4 feet of the common walls. The rule ***doesn't apply*** when there is an elevation difference of more than 30 inches for adjacent roofs.

**MN Rules 1309.0302 Fire-resistant construction, Subp. 1 and 2 -** The Sound Transmission requirements for townhouses and two-family dwellings are also found in this section. Because this section deals with fire-resistant construction it is important that the sound transmission requirements not be overlooked.

**MN Rules 1309.0305 Ceiling Height** – This amendment creates a myriad of requirements for ceiling heights with different requirements for "new" buildings versus "existing" buildings.

First, it specifies a minimum ceiling height of 7 feet in all ***new*** dwellings ***including*** basements and bathrooms.

Contrary to the definition for "ceiling height" in the IRC which defines ceiling height being from "finished floor to finished ceiling, this state amendment requires that the height shall be measured from the "floor to the lowest projection from the ceiling", such as a light fixture, duct, beam or girder. Depending on who reads what, you may find some confusion over this text. Also, it is important to note that the **state's method** of measuring ceiling heights, by rule, only applies to "new buildings", whatever that means, and the IRC definition will apply to "existing buildings" which are defined in the code.

A second part of this rule allows basements in new dwellings to have a ceiling height of 6'8" if the basement is ***only used for storage and service of the building***. There is an exception that allows beams, girders, and ducts to project within 6'4" of the floor. This exception doesn't apply to basements containing habitable rooms, bathrooms, hallways, and laundry rooms so **no** projections below 7 feet are permitted in new basements with habitable rooms. Earlier it was pointed out that there is a new definition for the term "crawl space" which is an underfloor area with ceiling height of less than 6'4". Basements with non-habitable space must have a ceiling height of at least 6'8". Rooms or areas with a ceiling height between 6'4" and 6'8" are not defined for new dwellings but will come into play when alterations are made of existing dwellings.

There is an exception that allows bathrooms on ***any floor*** in ***new dwellings*** to have a ceiling height of 6'8" ***but only in front of*** water closets (toilets), bidets, or sinks, ***not*** in the entire bathroom where 7' is required. And then the amendment specifies that the ceiling height ***above fixtures*** can be of a height such "that the fixture is capable of being used for its intended purpose".

The last part of this amendment addresses alterations to ***"existing"*** building basements.

This portion of the amendment permits ceiling heights not less than 6'4" for alterations to existing basements. Because definitions state that any building for which a legal building permit has been issued is considered an "existing building", it is a bit unclear as to when this amendment is applicable.

The amendment goes on to address what are called ***bathroom plumbing fixture clearances*** that permits the space in front of a water closet, bidet, or sink to have a ceiling height 6'4" but only for basement bathrooms. Because existing basements are permitted to have a ceiling height of 6'4" as stated in the previous paragraph, the added text for bathrooms may be confusing because it is.

The last part of this amendment permits alterations to existing stairs to have a minimum headroom of 6'4". Also be aware that there are stair headroom requirements in the section titled "Stairways".

As an added note, all of the ceiling height amendments apply to either “new buildings”, “bathrooms in new buildings”, “basements in new buildings”, “existing basements”, and bathroom plumbing fixtures in “existing basements”. There are no ceiling height rules for alterations of existing dwellings above the basement or for additions to existing dwellings including basements under these additions.

If you believe that ceiling heights might be an issue for you when finishing a basement in a new home, you can take advantage of lower requirements in existing dwellings by taking out the building permit for a finished basement separate from the main dwelling and in so doing the 6’4” ceiling height would be applicable. Because of the definitions in the code, one could even argue that a basement in a new home is eligible for the 6’4” ceiling height but you would want to check with the building department if you face that situation.

**MN Rules 1309.0309, Garages and Carports, Subp. 3 Automatic Garage Door Opening Systems –** This editorial amendment reiterates that installation, service or repair of automatic garage door opening systems is regulated and, by rule, a permit would be required for this work.

**MN Rules 1309.0309, Garages and Carports, Subp. 4 Fire Sprinklers –** This amendment requires attached garages of two-family dwellings and townhouses and single family dwellings with a floor area of 4500 square feet or more to have sprinkler protection in accordance with the code. Sprinkler requirements are located in two places in the code so do not overlook this language. Because both of the referenced standards for residential sprinklers, NFPA 13d and P2904, do not require sprinklers in garages, there will be some confusion over the legitimacy of the garage sprinkler requirement based on the codes rules of interpretation.

**MN Rules 1309.0310 Emergency Escape and Rescue Openings –** This amendment applies to new and existing dwellings and allows emergency escape and rescue openings to be excluded only in a basement if the entire dwelling has sprinkler protection in accordance with P2904 or NFPA 13D. You will be able to use this exception if you are building a home exceeding the 4500 square foot area limitation that requires fire sprinklers. While the cost effectiveness of this may be questionable for existing homes, this exception doesn’t require sprinkler protection of garages and covered porches and decks when applied to existing dwellings.

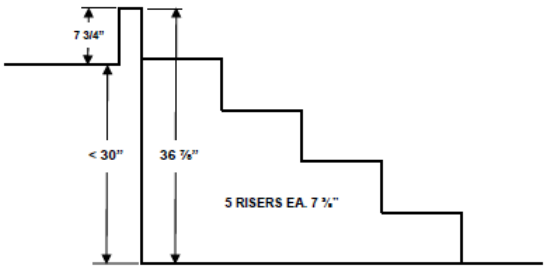
Another exception in this section applies to basements and basement bedrooms constructed prior to August 1, 2008, which undergo an alteration or repair. That exception eliminates the requirement for emergency escape and rescue openings if the entire basement, stairs to the level of exit discharge, and all areas open to the means of egress are protected by a sprinkler system in accordance with P2904 or NFPA 13D. The purpose of this amendment is a bit unclear because it is very likely that those homes either already have emergency escape or rescue openings or are not required to have one based on the work. Furthermore, it appears that in the case of a one-story dwelling the entire dwelling would require sprinklers under this amendment. Only the second floor of a two story would be exempt. The August 1, 2008, date is the date when the Minnesota Building Code was recognized as the standard of construction in Minnesota. The cost effectiveness should be considered.

This rule also amends a portion of the egress window opening requirements as they pertain to windows that must meet fall protection requirements. Window opening devices that required special knowledge to operate were previously noncompliant. That requirement has been deleted.

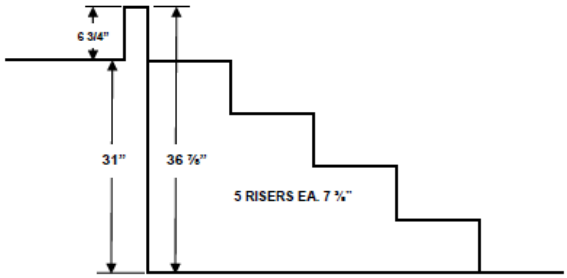
If you are constructing or remodeling a home for someone who will be doing foster care or day care that is licensed or registered by the state, you need to be aware that there are rules that apply to these uses that don’t apply to dwellings. The rule requires egress openings in “rooms used for foster or day care licensed or registered by the state of Minnesota”. Does this mean all rooms? Does it mean the kitchen if children use the kitchen or the bathroom? You will want to discuss this with the Building Department if you have a client with those plans.

The rules for replacement of existing egress windows is largely unchanged.

**MN Rules 1309.0311 Means of Egress, Subp. 1, Floor elevations at exterior doors –** This amendment provides some relief from the need for landings on the exterior side of doors other than the main entrance door. First, it permits landings to be up to 7 ¾" below the threshold on either side of a door. Then it excludes ***exterior*** landings completely if the height from grade to the ***interior floor surface*** is less than 30 inches. While it seems to be a quirky exception, there may be some opportunity to use this at patio door locations. Apparently the elevation of the interior floor impacts the safety or usability of the exterior stairs/landing.




NO LANDING REQUIRED – LESS THAN 30" FROM INTERIOR LANDING TO EXTERIOR GRADE




LANDING REQUIRED –31" FROM INTERIOR LANDING TO EXTERIOR GRADE BUT NO CHANGE IN THE STAIR

**MN Rules 1309.0311 Means of Egress, Subp. 2 –** This amendment provides some relief from complying with stair requirements including those serving attics and crawl spaces. This amendment would allow ships ladders and folding stairs to those areas. The interesting part of the amendment is that it deletes all of the model code language regulating stairway widths. DLI has corrected this oversight but not before the printing of new code books occurred. Expect some confusion over this issue.

**MN Rules 1309.0311 Means of Egress, Subp. 3, Headroom –** Headroom requirements for stairs remains at 6'8". An exception has been added that states "The minimum headroom for existing buildings shall be in accordance with section R305.2.2". R305.2.2 states "Alterations to existing basement stairways shall have a minimum headroom in all parts of the stairway not less than 6 feet 4 inches…" Given that stairs in existing buildings are infrequently altered, it is not clear what this amendment is intended to accomplish or what problem it was intended to solve.

**MN Rules 1309.0312 Window Fall Protection, Subp. 2 –** Window fall protection requirements will apply to all new dwellings, additions, and installation of windows not considered a replacement. You should read the rule carefully. Generally, it will apply to 2nd story windows that have sill heights less than 36 inches from the floor. Exceptions apply to windows that aren't openable, won't allow a 4 inch diameter sphere to pass through an opening or have appropriate window fall prevention devices. A question that has been raised relates to second floor windows that open onto a porch roof. The rule applies when "the lowest part of the opening of an operable window is located more than 72 inches above the finished grade or surface below". A porch roof is a surface. You may find differing interpretations of this rule. The rule does have an exception for "replacement windows". DLI did not provide a definition as to what they consider a replacement window. The code does have a section on "replacement windows" that is applicable to egress windows. It is unclear if those are the windows that they are intending to exempt or if their view is broader.

**MN Rules 1309.0313 Fire Sprinkler Systems -** This amendment will require fire sprinklers complying with P2904 or NFPA 13D for attached dwellings ***meeting the definition of "townhouse"***, all two family dwellings, and all single family dwellings exceeding 4500 square feet in area. There are a number of issues to consider here. If you have a dwelling with a "mother-in-law" or similar apartment, the building might need a sprinkler system regardless of area. It becomes an interpretation issue regarding whether a second dwelling unit exists. This applies retroactively when a second dwelling unit is installed in an existing dwelling. **If you are building row type dwellings that do not meet the definition of "townhouse", you should contact the Building Department for assistance early in the planning phase so you do not experience any surprises.** The 4500 square foot area trigger in **this section** is believed to include all floors and basements excluding garages. This area is based on dimensions taken from the interior side of exterior walls. By definition this would include sunrooms and similar enclosed areas. The area does not include an open porch that only has a common wall with the dwelling. Any other floor area enclosed in any

way contributes to the 4500 square foot area limit. Because the thickness of walls changes when a basement is finished, you may wish to consider whether or not some interior basement work would reduce your area below 4500 square feet. Because additions can be made to existing homes that don't have sprinkler systems, you may wish to consider the timing of construction of sunrooms or other portions of the dwelling if that fits your plans or if the area of those structures places you above the limit. Again, the term "existing building", while blatantly clear, is subject to interpretation. Questions have arisen over the matter of stairs, bow windows, and two story foyers. The rule states that area is based on floor area without exclusions for stairs. So one opinion would be that stairs contribute to floor area on each floor. A two story foyer would only have floor area on one story. The area of a bow window would be counted if the floor joists cantilever over the wall below. It is the exterior wall line that will be considered.

Regarding the design of sprinkler systems, you will be guided by P2904 (if available) or NFPA 13D. DLI has put in place requirements exceeding those standards by amendment. They include requirements for at least one sprinkler head in attached garages and one head for every 20 lineal feet of common wall where attached covered patios, covered decks, and covered porches occur unless the area is 40 square feet or less. No definitions are provided for the terms "attached covered patios", "covered decks", and "covered porches". There is likely to be a lack of uniformity in the application of this section. It is important to point out that P2904 and NFPA 13D do not require any exterior heads or heads in garages. Those documents were not amended by DLI. Obviously a conflict occurs. The rules of interpretation found in Chapter 1300 do not provide clear guidance other than to further confuse the matter. You will certainly see conflicting opinions on this requirement.

Last, if you are considering any alternate construction methods to residential sprinklers when they are required, you should consult with the Building Department early in the design phase so that you can have confidence that your concept will be acceptable.

Detailed plans for residential sprinklers must be submitted for review and additional inspections will be required at various stages of construction. Service sizes must accommodate sprinkler systems. Because water conditioning systems may restrict flows to sprinkler systems, you would be doing your customers a favor by including the possibility of a water softener in your design calculations. Additional permits and fees may be applicable.

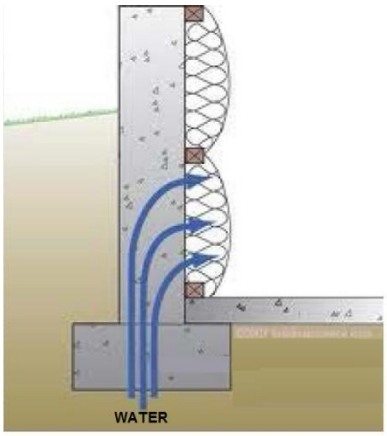
Amended section R313.4 requires that dwellings containing a state licensed facility have a sprinkler system as required by the applicable licensing provisions. State licensed facilities are defined in Chapter 1300 as "State licensed facilities means …. a building and its grounds that are licensed by the state as a hospital, nursing home, supervised living facility, boarding care home, or residential hospice." So if you are considering the construction of a dwelling containing a hospital or nursing home in it or any of the other uses listed, you will need to provide a sprinkler system in conformance with applicable agency rules.

**MN Rules 1309.0314 Smoke Alarms** – The application of new smoke alarm rules for **existing** buildings will cause significant confusion and inconsistency and you are forewarned. Authors of the text are of the opinion that the language would require the installation of smoke alarms when a window or door is installed or replaced in an existing dwelling. But that is not what the text says. The new text states that installation or replacement of a window or door is an alteration or repair. There is no argument about that. The text is simply providing examples of what an alteration or repair is. The list is not extensive or exclusive. It is simply explanatory material. The first exemption then excludes all work on the exterior surfaces of dwellings and again provides a list of examples. That list includes, but is not limited to, roofing, siding, decks, porches, and chimney repairs. Installation or replacement of a window or door is just as much work on the exterior surfaces as is the construction of a porch or the replacement of siding so, based on how the rule is written, the application of the rule from previous codes is basically unchanged.

**MN Rules 1309.0315 Carbon Monoxide Alarms** – This amendment addresses a new requirement for CO alarms as part of the Minnesota Building Code. In new dwellings or townhouses, CO alarms are required to be installed within ten feet of all sleeping rooms or areas when fuel fire appliances are installed or if there is an attached garage regardless of whether there are openings between the garage and dwelling. Masonry fireplaces are not, by definition, appliances so dwellings containing only those elements do not require CO alarms. The biggest impact with this rule is its ***application to existing buildings***. ***Any permit*** (plumbing, mechanical, electrical, building) issued for an existing building that falls under the scoping

provisions of the Minnesota Residential Code triggers the requirement for CO alarms to be installed and inspected. Access into the dwelling to verify compliance with CO alarm requirements is required and is the responsibility of the permit holder.

**MN Rules 1309.0402 Minimum Compressive Strength of Concrete** – This section changes the compressive strength requirement for footings for buildings and structures constructed under the Minnesota Residential Code from 2500 psi at 28 days to 5000 psi. This can be concrete with a compressive strength of 2500 psi with an approved admixture that provides a water and vapor resistance at least equal to 5000 psi concrete. You will want to alert your redi-mix suppliers regarding this change. You should be prepared to show that the appropriate mix was used for the footings at the time of the foundation inspection by means of batch tickets. The rule applies to attached garages, detached garages on a slab or with frost footings, dwellings with frost foundations but slab on grade floors, dwelling additions on piers such as sun rooms and porches, and decks. The illustration provided by DLI shows the reason for the requirement.




**MN Rules 1309.0404 Foundation and Retaining Walls, Subp. 1** – This amendment contains prescriptive foundation lateral support requirements in the form of new blocking requirements. The current table has been amended to include this requirement.

**MN Rules 1309.0406 Foundation Waterproofing and Dampproofing, Subp. 1 Dampproofing –** This amendment deletes in its entirety text in the IRC relative to dampproofing. All foundation walls that enclose space below grade including crawl spaces must be ***waterproofed***. A word of caution here. This code section only requires water proofing to finished grade. The energy code will require that the foundation waterproofing extend for the entire height of the foundation wall including the top surface of the foundation wall.

**MN Rules 1309.0602 Wood Wall Framing, Subp 1, Maximum allowable length of wood studs –** The 2007 Minnesota Residential Code included a new table prepared by DLI to address heights of wall studs that were not prescriptively addressed in the model code. This table is based on an allowable deflection limit of L/120. The 2015 Minnesota Residential Code now requires the allowable deflection limit to be not less than L/180 when interior gypsum board is applied. This effectively renders the table unusable for most dwelling construction applications. This means that any designs intending to use stud lengths exceeding ten feet must be provided with substantiating engineering.

Because the prescriptive table in the 2007 Minnesota Residential Code did not account for windows or doors in these tall walls, a new footnote has been added to accommodate openings. The footnote reads “full height studs shall be provided on each side of the opening, equal in number to the spacing of the required full height studs multiplied by half the width of the opening, plus one stud”. The spacing of full height studs listed in the tables is 24”, 16”, 12”, and 8”. The footnote does not identify if the width of the opening is measured in feet or inches. So if the words were converted to a formula it would be (24”, 16”, 12”, or 8”) X 3/2 (using three feet as an example because inches provides an unrealistic number) + 1 = the number of studs on each side of the opening. Using 8” spacing, the number of studs on each side comes to 13! The formula is poorly explained and the results are unrealistic. But since the table can’t be used for dwellings when gypsum sheathing is used, the point is mostly moot.

**MN Rules 1309.0702 Interior Covering, Subp. 2 Vapor retarders -** This amendment requires either a Class I or Class II vapor retarder on the inside of exterior walls in dwellings constructed in Climate Zones 6 and 7. You need to determine where in Minnesota Climate Zones 6 and 7 exist. The map identifying those areas is in Chapter 11 but ***DLI has deleted that chapter***. All of Minnesota is either in climate zone 6 or 7 so the amendment applies statewide and the Climate Zone reference is moot. However, a class II vapor retarder is permitted “only when specified on the construction documents”. The SONAR states that the decision on which vapor retarder to use will be determined by “the contractor or design professional”. Plans must indicate which class of vapor retarder will be used. Note: The vapor retarder required in this section should not be confused with the “air barrier” required in the residential energy code.

**MN Rules 1309.0703 Exterior Covering, Subp. 2a Water-resistive barrier –** This amendment requires that water resistive barriers overlap flashing by a minimum of two inches. This will require that the vertical leg of flashing be at least 2 inches in height. Laps of either the water resistive barrier ***or the flashing*** must be a minimum of 6 inches. This will be an easily overlooked issue for flashing because this flashing requirement is in the section on water-resistive barriers and not in the section on flashing.

**MN Rules 1309.0703 Exterior Covering, Subp. 3 Exterior plaster –** This amendment inserts new requirements in the code for control joints and expansion joints in exterior plaster. The provision for control of expansion "shall be determined by the exterior plaster application designer". The requirements of ASTM C 1063 sections 7.11.4 – 7.11.4.4 do not apply. Your exterior plaster designer may be asked to provide a design to address expansion. There is also new prescriptive language for curing of exterior plaster. Plaster applicators will want to review all of the exterior plaster amendments and new IRC text.

There is also a new flashing requirement in this amendment, applicable to **all exterior finishes**, requiring flashing at the intersection of the foundation and the rim joist framing when the exterior wall covering does not lap the foundation insulation.

**MN Rules 1309.0903 Weather Protection –** This amendment details the requirement for kick-out flashing. Kick-out flashing is required on all new buildings. For "existing buildings", kick-out flashing is required "when simultaneously re-siding and re-roofing". An exception excludes the need for kick-out flashing when re-roofing occurs. The amendment is silent when only re-siding occurs.

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## CHANGES IN THE INTERNATIONAL RESIDENTIAL CODE

**Table R301.7 Deflection –** A revised deflection limits table is provided and includes specific deflection criteria for exterior walls with interior gypsum board finishes.

**TABLE R301.7**
**ALLOWABLE DEFLECTION OF STRUCTURAL MEMBERS[a, b, c, d, e]**

| STRUCTURAL MEMBER | ALLOWABLE DEFLECTION |
|---|---|
| Rafters having slopes greater than 3:12 with no finished ceiling attached to rafters | L/180 |
| Interior walls and partitions | H/180 |
| Floors and plastered ceilings | L/360 |
| All other structural members | L/240 |
| Exterior walls with plaster or stucco finish | H/360 |
| Exterior walls—wind loads[a] with brittle finishes | H/240 |
| Exterior walls—wind loads[a] with flexible finishes | L/120[d] |
| Lintels supporting masonry veneer walls[e] | L/600 |

**Note:** L = span length, H = span height.

a. The wind load shall be permitted to be taken as 0.7 times the Component and Cladding loads for the purpose of the determining deflection limits herein.
b. For cantilever members, *L* shall be taken as twice the length of the cantilever.
c. For aluminum structural members or panels used in roofs or walls of sunroom additions or patio covers, not supporting edge of glass or sandwich panels, the total load deflection shall not exceed L/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed L/175 for each glass lite or L/60 for the entire length of the member, whichever is more stringent. For sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed L/120.
d. Deflection for exterior walls with interior gypsum board finish shall be limited to an allowable deflection of H/180.
e. Refer to Section R703.7.2.

**R302.1 Exterior walls. -** There are now two separate tables for fire protection of exterior walls depending on whether or not the dwelling has sprinkler protection. Unfortunately, the reductions in fire ratings for exterior walls only apply when P2904 is used. It is not known if this is intentional or an oversight. The matter of the validity of using P2904 comes into play again. Also, the reduction in setbacks applies only to the dwelling and not a garage unless the garage has full sprinkler protection.

**R303.4 Mechanical ventilation.** Where the air infiltration rate of a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the dwelling unit shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3. – This new section will require a whole-house mechanical ventilation system if a blower door test indicates an air infiltration rate of less than 5 air changes per hour. There do not appear to be any exceptions for existing dwellings that are expanded. There may be some confusion regarding the application of this code section. First, the reference to Section N1102.4.1.2, and others, is problematic because this section is in Chapter 11 of the IRC and DLI has deleted that chapter. You will not find that section in the Minnesota Residential Code published by ICC. Even if it is applicable, you would need to buy an additional code book for this section or obtain the text in some other way. Second, there is also a similar test required in the residential energy code that has different satisfaction criteria.

**R308.4 Hazardous locations.** – This section addresses safety glazing and has been completely rewritten for clarity. You will want to review requirements for glazing adjacent stairs and glazing and wet surfaces as those are the areas where changes have occurred.

**R310.2.2 Drainage.** – This is a new section that requires window well drainage to be connected to the buildings foundation drainage system.

**R317.3.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations.** – The code now requires the use of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper fasteners for installation of fire-retardant treated wood. This will largely be a townhouse application.

**R319.1 Address numbers.** – The code now specifies that address characters must be 4 inches minimum in height with a minimum stroke width of ½ inch.

**R404 Concrete and masonry foundation walls.** – This section has been completely rewritten and has also been amended by the state. In addition to text dealing with structural issues there are new sections on consolidation of concrete, slump requirements, form materials and form ties, location of reinforcement, wall openings, support of reinforcement, lap splices, and construction joint reinforcement. The text of some of those sections follows:

> ***R404.1.2.3.4 Proportioning and slump of concrete.*** *Proportions of materials for concrete shall be established to provide workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding. Slump of concrete placed in removable forms shall not exceed 6 inches.*
>
> > ***Exception:*** *When approved, the slump is permitted to exceed 6 inches for concrete mixtures that are resistant to segregation, and are in accordance with the form manufacturer's recommendations. Slump of concrete shall be determined in accordance with ASTM C143.*
>
> ***R404.1.2.3.5 Consolidation of concrete.*** *Concrete shall be consolidated by suitable means during placement and shall be worked around embedded items and reinforcement and into corners of forms. Where stay-in-place forms are used, concrete shall be consolidated by internal vibration.*
>
> > ***Exception:*** *When approved for concrete to be placed in stay-in-place forms, self-consolidating concrete mixtures with slumps equal to or greater than 8 inches that are specifically designated for placement without internal vibration need not be internally vibrated.*
>
> ***R404.1.2.3.7.2 Location of reinforcement in wall.*** *The center of vertical reinforcement in basement walls determined from Tables R404.1.2(2) through R404.1.2(7) shall be located at the centerline of the wall. Vertical reinforcement in basement walls determined from Table R404.1.2(8) shall be located to provide a maximum cover of 1.25 inches measured from the inside face of the wall. Regardless of the table used to determine vertical wall reinforcement, the center of the steel shall not vary from the specified location by more than the greater of 10 percent of the wall thickness and ⅜-inch. Horizontal and vertical reinforcement shall be located in foundation walls to provide the minimum cover required by Section R404.1.2.3.7.4.*
>
> ***R404.1.2.3.7.3 Wall openings.*** *Vertical wall reinforcement required by Section R404.1.2.2 that is interrupted by wall openings shall have additional vertical reinforcement of the same size placed within 12 inches of each side of the opening.*
>
> ***R404.1.2.3.7.4 Support and cover.*** *Reinforcement shall be secured in the proper location in the forms with tie wire or other bar support system to prevent displacement during the concrete placement operation. Steel reinforcement in concrete cast against the earth shall have a minimum cover of 3 inches. Minimum cover for reinforcement in concrete cast in removable forms that will be exposed to the earth or weather shall be 1½ inches for No. 5 bars and smaller, and 2 inches for No. 6 bars and larger. For concrete cast in removable forms that will not be exposed to the earth or*

*weather, and for concrete cast in stay-in-place forms, minimum cover shall be ¾ inch. The minus tolerance for cover shall not exceed the smaller of one-third the required cover or ⅜ inch.*

***R404.1.2.3.7.5 Lap splices.*** *Vertical and horizontal wall reinforcement shall be the longest lengths practical. Where splices are necessary in reinforcement, the length of lap splice shall be in accordance with Table R611.5.4.(1) and Figure R611.5.4(1). The maximum gap between noncontact parallel bars at a lap splice shall not exceed the smaller of one-fifth the required lap length and 6 inches (152 mm). See Figure R611.5.4(1).*

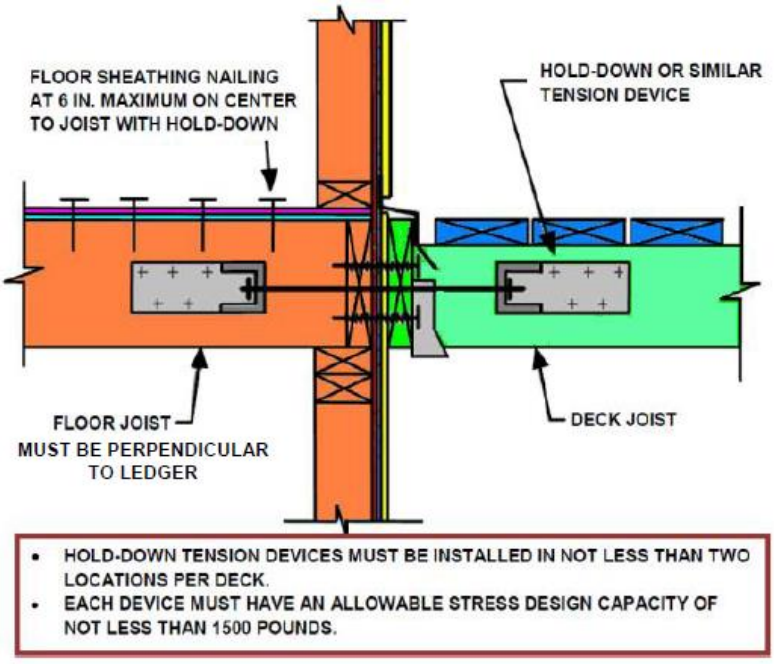
***Note: Make sure any poured wall engineering submitted after January 24 is based on the 2015 Minnesota Residential Code.***

**R501.3 Fire protection of floors.** – This is a new section that requires all floors that are not protected with fire sprinkler systems to have a ½" gypsum board or ⅝" wood structural panel lid on the underside. This will apply to crawl spaces of buildings with sprinkler systems unless the crawl space has full sprinkler protection. There are a few exceptions. The lid is not required if you use 2X10 or 2X12 dimension lumber. Other dimension lumber triggers the requirement. You get a total of 80 square feet of floor area that can be excluded but it must be fireblocked at the perimeter. This also applies to additions to existing dwellings. It applies to any floor including landings, porches, and decks. It applies to crawl spaces unless sprinklers are installed in the crawl space. If you use 2X6 or 2X8 dimension lumber, I-Joists, or trusses, the lid must be applied unless the home has a sprinkler system in accordance with P2904 or NFPA 13D. The rules are silent on the matter of penetrations by ducts, lights, speakers, and other common openings. We have received inquiries about installation of sprinklers in basements in lieu of the floor protection. The code does provide an exception to the floor protection when the basement is protected with a sprinkler system in compliance with P2904 or NFPA 13D. However, if you use PEX for sprinkler piping you would still need the lid so sprinklers installed in lieu of the lid would need to be hard piped. Sprinkler installations would require a design by someone who can demonstrate knowledge of the rules.

**R506.2.4 Reinforcement support** – the code now requires that when reinforcement is provided in slabs on ground that the reinforcement be supported to remain in place from the center to upper one third of the slab for the duration of the placement.

**R507 Decks** – There is a new section devoted to prescriptive requirements for decks. Included in those rules are:

- There is a requirement for lateral load connections at a minimum of two locations per deck (see illustration). A word of caution here. The prescriptive method applies only when the house joists are perpendicular to the ledger and are dimension lumber. It also requires that floor sheathing attached to the two floor joists used for the lateral load connection be fastened at closer spacing than elsewhere. If you have conditions different than the prescriptive application, you have two choices: design the deck to be free-standing or have your design engineered. There are no prescriptive requirements when using I-Joists, trusses, or dimension lumber joists that are parallel to the deck ledger.




- The use of composites for exterior deck boards, stair treads, handrails and guardrail systems has a new approval method. If the product has a label demonstrating compliance with ASTM D 7032, an

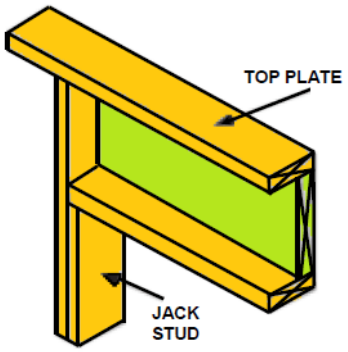
evaluation report is not required and it may be installed in accordance with the manufacturer's instructions. You should retain a sample of the labeling and the installation instructions for the final inspection. Composites used other than where listed here or without the ASTM label can still be used when an evaluation report exists for the product.

- The code provides prescriptive attachment methods for ledgers to 2-inch nominal band joists by means of a table and illustrations. In lieu of a 2-inch nominal band joist, a minimum 1x9 ½ Doug fir LVL rimboard may be used.
- A ledger can be attached to the dwelling over wood structural panel sheathing, gypsum board sheathing, or foam sheathing not exceeding 1-inch.
- The code prohibits girders from being supported on ledgers. Only joists may be supported on ledgers.

***Note: The electrical code has requirements for electrical receptacles in rooms defined as "sunrooms". This is an often overlooked requirement resulting in the need to install additional receptacles. If you have any questions regarding what constitutes a sun room under the NEC, please contact the Building Department.***

**R602.3.5 Braced wall panel uplift load path.** – There is a new section that may result in the need for uplift framing connectors in some cases. You will want to review this code section as it applies to the designs you use.

**R602.7.1 Single member headers.** – There is a new table that provides prescriptive direction on the use of single member headers. This creates some opportunities to reduce material costs and better insulate that portion of a wall.




**R602.10 Wall bracing.** - The wall bracing section has grown from part of a column in the code some years ago to more than 30 pages in length. There are a myriad of new rules and new prescriptive solutions. The content is too lengthy to address in this brief report however you are urged to review the new text carefully. ***How you achieve compliance with wall bracing requirements must be clearly shown on your plans.***

**R612.4 Garage doors** – wind resistant garage doors will continue to be required. The DLI's Structural Advisory Committee considered a proposal to delete this requirement since its origins in hurricane failures in Florida were not applicable to Minnesota. However the Committee, assuming all garages were attached, were provided with garage doors, and that garage doors are always closed, expressed concern that a failure of the garage door would allow strong winds to breach the fire separation of the dwelling, expose the attic of the dwelling, and cause structural damage to the roof of the dwelling.

**R703.9 Exterior insulation and finish system (EIFS)/EIFS with drainage.** – There are new standards in place for the use of EIFS.

**R703.10 Fiber cement siding.** – There are new standards in place for the use of fiber cement siding.

**R703.11 Vinyl siding.** – There are new requirements and standards in place where vinyl siding is installed over foam plastic sheathing.

**R703.12 Adhered masonry veneer installation.** – This is new text in the IRC that states that adhered masonry veneer must be installed in accordance with the manufacturer's installation instructions, must be provided minimum clearances to earth, paved areas, and walking surfaces supported by a foundation, and must be flashed by the means stated.

**R802.11 Roof tie-down.** – There is a new section on attachment of roof assemblies that provides better direction on truss and rafter attachments. When rafters or trusses are spaced not greater than 24" o.c. and the uplift force does not exceed 200 pounds, toenails may be used as fasteners. Uplift forces greater than 200 pounds must be resisted by the use of appropriate connectors. There is a table that identifies the uplift force. Note that it limits the use of the table to overhangs of not greater than 24 inches.

**R806.4 Unvented attic assemblies.** – There is a new section that permits unvented attic assemblies. If you choose to use this section be sure the roofing material you use is approved for use on an unvented attic.

**R905.2.4.1 Wind resistance of asphalt shingles.** – There is a new standard and classification requirements for wind resistance for asphalt shingles.

**R907.3 Reroofing - Recovering versus replacement.** – The prohibition of overlays of roofing has been deleted. This will permit one overlay of roofing over an existing roof. Some exceptions apply. The code also clarifies that an existing ice and water barrier may remain and be covered with a new layer of same.

**R1003.9.1 Chimney caps.** – Masonry chimneys must now be provided with rain caps.

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## SPRINKLER TIDBITS

**Additions to existing homes.** Multiple inquiries have been made regarding additions to existing buildings and whether or not sprinklers must be installed. MN amended section R313.2 requires residential sprinklers in homes greater than 4500 square feet but exception 2 of this section states: "An automatic residential fire sprinkler system shall not be required if additions, alterations, or repairs are made to existing buildings that do not have an automatic residential sprinkler system installed." The Minnesota Residential Code defines an "existing building" as "Existing building is a building erected prior to the adoption of this code, or one for which a legal building permit has been issued." If you have a legal building permit in hand, you can apply for a permit to construct an addition to that dwelling at any time after the initial permit issuance without delay and if the original building did not require a sprinkler system, the addition would not trigger a requirement for a sprinkler system.

**PEX pipe protection.** P2904.3.1 requires that CPVC, PEX, and PE-RT pipe be protected from exposure by a layer of not less than 3/8" thick gypsum board or ½" thick plywood unless exposed piping is permitted by the pipe listing. One common manufacturer specifies that their pipe must be covered by one layer of 3⁄8" gypsum wallboard, a suspended membrane ceiling with lay-in panels or tiles weighing greater than 0.35 lbs. per square foot when installed with metallic support grids, 1⁄2" plywood soffits, or one layer of 1⁄2" plywood. NFPA 13D contains no specific requirement but defers to individual product approvals and listings.

**Testing.** Both P2904 and NFPA 13D require testing of sprinkler systems at the working pressure of the system for not less than 15 minutes. Winter conditions may influence testing.

**Where do the dry heads go?** MN rules 1309.0313, R313.3, item 2, requires "one dry head for every 20 lineal feet of common wall between the dwelling unit and the covered patio, covered deck, covered porch, or similar structure". The code does not say that you must place one dry head in each 20 foot, only that one head be provided. There is no direction on where the heads should be located. If you had a 20 foot porch, could the head be at one end or must it be centered? If you had a 40 foot porch, could you place them side by side? The code is silent. For garages, the code requires one dry head within 5 lineal feet of each door installed between the dwelling and garage.

**Sun rooms, patio enclosures, screened living rooms, sprinklers?** Questions have been raised about sprinkler requirements for enclosed rooms that may be constructed over a patio, sun rooms constructed on columns, and other enclosed living spaces. Some of these spaces may be heated, others may not. At least one DLI opinion is that unheated living spaces do not require sprinkler protection. This opinion is not supported by any exceptions in the applicable standards. What it boils down to is if it is enclosed, it requires full sprinkler protection, if it is open and exposed and exceeds 40 square feet it will need at least one dry head. Caution must be taken to prevent freezing pipes when a room has three exterior walls and a roof and is large enough to require more than a single head. With network systems each head must be served from 3 or 4 locations depending on the design.

**Can I install a hybrid system that is part multi-purpose and part network system?** Such a system is not specifically allowed in either standard but could be considered as an alternate method of construction.

**Qualifications for designers, contractors and installers.** Sprinkler systems that are also part of the potable water supply can only be installed by properly licensed plumbers. The State Fire Marshal's office has the responsibility to enforce a Minnesota Statute that requires that anyone designing or contracting to install multipurpose potable water piping systems have an annual contractor license issued by their office. Any individual installing such systems is also required to have an annual license. If the installing contractor is not the designer of the system, both would need to be licensed. Local building departments have no authority to enforce these licensing requirements.

**Fire protection contractor install residential systems?** Contrary to some communications that have come from the State Fire Marshal's Office, fire protection contractors are not permitted to install systems that are part of the domestic water piping system. Written policies from the SFM office state that fire protection contractors can only install standalone systems.

**State Fire Marshal Policy.** The State Fire Marshal has on its website Interp FP-09 (2007) that addresses sprinklers in single- and two-family dwellings and townhouses (IRC P2904 and NFPA 13D). The interp states "While the State Fire Marshal Division believes that this system does not fall under the jurisdiction of Minnesota Statute 299M, the following conditions must be met:

1 The installed system shall comply in all respects with the national listing.
2 Plans shall be submitted for approval by the local Authority Having Jurisdiction before installation begins.
3 The water supply shall be analyzed and confirmed to be adequate for the proper system operation before the plans are submitted to the local Authority Having Jurisdiction.
4 The pre-engineered tubing and nozzles shall be confirmed as the proper size (based on the existing water supply) to the local Authority Having Jurisdiction.
5 Installing plumbers shall be factory trained and certified for this type of system.
6 The installation shall comply with the applicable provisions of NFPA 13D
7 This policy does not apply to conventionally piped NFPA 13D residential sprinkler systems. All of the requirements for SFMD Policy FP-01 apply to conventionally piped NFPA 13D systems.

It is questionable what authority the SFMD has in enforcing this policy and it is questionable what responsibility contractors or local building departments have in adhering to it.

**Sprinkler obstructions.** Both standards have rules to address obstructions, such as light fixtures and ceiling fans, pitched ceilings, beams, and open ceiling framing. Designers and installers need to be aware of those issues.

**Shutoff valves.** Both standards prohibit a valve used to shut off the sprinkler system unless the valve shuts off the entire water system.

**Signage and water conditioners.** Both standards require signs to be posted by the main water shutoff and designs in both standards can be impacted by the installation of water conditioning systems and even lawn watering systems. Sprinkler designers are urged to consider designing systems in anticipation of a water conditioning system.

**Antifreeze systems.** You don't want to use an antifreeze system!

**Impacts of alterations or finishing previously unfinished space.** Because the installation of partitions, changes in ceiling finishes, and creation of exempt spaces can impact the effectiveness of a design, plans for alterations must include revised sprinkler plans. Consideration must be given to the impact of adding heads to an existing system.