

R703.1 Exterior Wall Envelope-Code Change



Hopefully you are aware of a code change that was approved in September that effects how you need to construct your exterior envelope. To be safe, lets discuss the change and a little about its history. In September, the Residential Structures Board approved a code change to R703.1 (see attached) of the 2008 Oregon Residential Specialty Code. This change requires that all cladding types are installed in a manner that enhances the draining potential of the exterior envelope. This change is the result of scientific studies that showed traditional installation techniques did not provide a reasonable amount of drainage for water that enters the envelope system. Furthermore this change is the result of investigations into a growing number of building system failure.

When does this code change take place?

The amendment to the code will be enacted on January 1, 2010, with a grace period until April 1st 2010. Any new residential structure permitted after those dates must comply with the requirements of the amended language. This provision also is required for remodels and additions that replace the existing exterior veneer, or is not matching the existing veneer.

Starting in January what am I required to do?

While you could use the grace period and postpone the inevitable, you will be required to install an enhanced drainage system. The main body of the language requires that the exterior veneer is applied with a water-resistive barrier (WRB) complying with R703.2, integrated flashings as required in R703.8, and a 1/8" gap between the WRB and the exterior veneer. This gap can be provided by non-corrodible furring strips, drainage mats, or drainage boards.

The amended language also allow for an array of exception. The most likely to be used is one that allows the use of "enhance" water-resistive barriers. As required by the code, to qualify these products need to be manufactured in a manner that improved the draining potential and is tested to the specified ASTM protocol. There are a few currently available on the market such as Pactiv's Rain-Drop® or Dupont's DrainWrap®.

If you want to use #15 felt without providing the gap, an exception was created to allow the use of window pan flashing to enhance the durability of the envelope. To use this approach, the pan system needs to be detailed in your construction documents, and must be installed in a through-wall fashion. A through-wall pan is required to extend to the exterior face of the veneer, thus promoting enhanced drainage. The type of pan will vary but can be comprised solely or a combination of rigid non-corrodible flashing and self-adhered membranes (SAM). A SAM pan can extend to the exterior face when protected for light exposure. The intent of the exception is not to require the bottom nailing flange to be removed. Instead a reasonable vertical drop in the pan would be allowed to provide for the flange to remain.

Another exception allows for the use of an exterior veneer product that in manufactured in a manner to improve drainage and is tested to the specified ASTM protocol. While complying products are currently few and far between, there are products in development that should be available within our enactment timeline.

I was told I could just use a double layer to comply.....

Unfortunately that was not an approved exception. In fact the primary study also tested this practice and did not show a significant improvement.

What you can do is install a layer of #15 felt or equivalent and either apply a layer of "enhanced" WRB on top of the felt or provide the 1/8" gap. This meets the code requirement while allowing you to continue using your traditional product

Classes will be available around the state in the early part of 2010. Please contact myself or your local HBA for offerings. If you have any questions, please email me at jbalkema@oregonhba.com.

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2008 Oregon Residential Specialty Code Mid-Cycle Code Amendment

R703.1 Exterior Coverings

Permanent Rule Adoption ***Effective Date: January 1, 2010*** ***Grace Period: Ends March 31, 2010***

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*Text formatting: ~~strike through~~ denotes text that has been deleted,
Underline/bold denotes text that has been added.*

BACKGROUND:

The 2008 ORSC included new model code language requiring an exterior wall to be constructed in such a manner that it prevents the accumulation of water in the wall and provides a means of draining water that enters the assembly to the exterior. After receiving numerous questions from contractors and jurisdictions regarding the intended performance expectation of the new language, the Oregon Building Codes Division convened a task force to study the issue. To date the task force has discussed a variety of issues and reviewed several different proposals.

The weight of science regarding the drainage potential of various wall assemblies strongly indicates that in order to achieve the “means of draining water” that the ORSC now requires, a gap should be provided or at the very least a drainage-enhanced house wrap or other alternative should be used.

This amendment addresses some of the key issues:

- **Minimum requirement:** *What is the minimum requirement for providing drainage under ORSC 703.1?*
 - The amendment clarifies that an $\frac{1}{8}$ inch space shall be provided. In addition, this section provides for six distinct exceptions addressing enhanced-drainage weather resistive barriers and claddings, pan flashings, tested assemblies and remodeling.
- **Application:** *To which types of cladding will the requirement apply?*
 - Testing and many field studies are pointing to water intrusion failures across various siding systems. As a result, the requirement will be applicable to all exterior claddings regulated by R703.1.
- **Flashing:** *Is flashing addressed in this change?*
 - The amendment includes an exception where penetrations incorporate pan flashings, which drain to the exterior surface of the cladding in a through wall fashion. This exception addresses one of the most commonly cited areas of failure, which is

window penetrations as noted in a 2006 study issued jointly by the US Department of Housing and Urban Development and the National Home Builders Association's Research Center. The study may be viewed in its entirety at the following URL: <http://www.toolbase.org/PDF/CaseStudies/PanFlashingReport.pdf>

- **Remodel:** The requirements of R703.1 are not applicable where the exterior veneer is matching an existing exterior finish as in additions, alterations or repairs.

In order to accommodate training needs and adjustments in products coming to market, a grace period has been established which extends from January 1, 2010 through March 31, 2010. Projects submitted for plan review which are received by jurisdictions on or before March 31, 2010, may comply with either this amendment or the language in effect prior to January 1, 2010.

These items have been prepared as insert pages for the 2008 ORSC. Pages are formatted so that when inserted, the amendments will face the page containing the existing code language.

**SECTION R703
EXTERIOR COVERING**

R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. ~~The exterior wall envelope shall include flashing as described in Section R703.8. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with Chapter 11 of this code.~~

R703.1.1 Exterior Wall Envelope. To promote building durability, the exterior wall envelope shall be installed in a manner that water that enters the assembly can drain to the exterior. The envelope shall consist of an exterior veneer, a water-resistive barrier as required in R703.2, a minimum 1/8 inch (3 mm) space between the water-resistive barrier and the exterior veneer, and integrated flashings as required in R703.8. The required space shall be formed by the use of any non-corrodible furring strip, drainage mat or drainage board. The envelope shall provide proper integration of flashings with the water-resistive barrier, the space provided and the exterior veneer. These components, in conjunction, shall provide a means of draining water that enters the assembly to the exterior.

Exceptions:

1. A space is not required where the exterior veneer is installed over a water-resistive barrier complying with section R703.2 which is manufactured in a manner to enhance drainage and meets the 75% drainage efficiency requirement of ASTM E2273 or other recognized national standards.
2. A space is not required where window sills are equipped with pan flashings which drain to the exterior surface of the veneer in a through wall fashion. All pan flashings shall be detailed within the construction documents and shall be of either a self-adhering membrane complying with AAMA 711-07 or of an approved corrosion-resistant material or a combination thereof. Self-adhering membranes extending to the exterior surface of the veneer shall be concealed with trims or other measures to protect from sunlight.
3. A space is not required where the exterior veneer is manufactured in a manner to enhance drainage and meets the 75% drainage efficiency requirement of ASTM E2273 or other recognized

national standards and is installed over a water resistive barrier complying with section R703.2

4. A space is not required where the exterior veneer is matching an existing exterior finish as in additions, alterations or repairs.
5. A water-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to section R703.7 or R703.8.
6. Compliance with the requirements for a means of drainage, and the requirements of Section R703.2 and Section R703.8, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
 - 6.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
 - 6.2. Exterior wall envelope test assemblies shall be at least 4 feet (1219 mm) by 8 feet (2438mm) in size
 - 6.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299 Pa).
 - 6.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate: control joints in the exterior wall envelope; joints at the perimeter of openings penetration; or intersections of terminations with dissimilar materials.

The remainder of Section R703 is unchanged