

HardiePanel Rainscreen

QUICK REFERENCE

For Multi-family And Commercial Projects

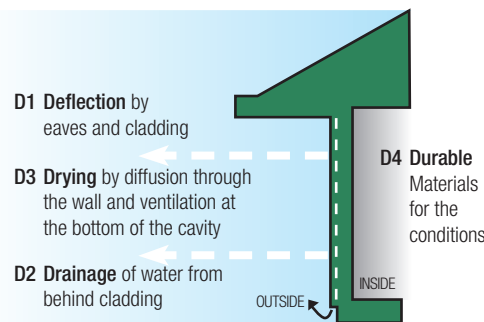
TABLE OF CONTENTS

- | | |
|--|--|
| 1 Why a rainscreen? | 5 How do I attach furring to my building? |
| 2 What is a rainscreen? | 6 How do I attach HardiePanel® vertical siding to furring? |
| 3 To which products and applications do the rainscreen requirements apply? | 7 HardiePanel vertical siding warranty and rainscreen |
| 4 What furring can I use? | 8 Frequent questions from the field |

WHY A RAINSCREEN?

Building Science experts have proven rainscreen assemblies maximize the service life of buildings through superior moisture management (drainage and drying).

The 4 D's of Moisture Management Design provides a framework for how rainscreen improves drainage and drying.



D1 Check claddings and flashings for deflection (aim to keep out water)

D2 Arrange for drainage paths to outside (should water get in)

D3 Arrange for ventilation and vapour diffusion drying (to eliminate remaining water)

D4 Choose components that are durable for conditions (to avoid damage while drying)

*2006, NZ Department of Building and Housing, "External Moisture – An Introduction to Weathertightness Design Principles"

The guidance and instructions provided herein are only valid for and applicable to James Hardie® products. James Hardie Building Products Inc. makes no warranty or representation with respect to use of the information contained herein for any use other than with James Hardie products, including but not limited to use with fiber cement siding products made by other manufacturers or siding products made of other materials.

The following third party resources are provided for additional reference.

Building Science Corporation:

buildingscience.com/documents/digests/bsd-013-rain-control-in-buildings

buildingscience.com/documents/digests/bsd030-rain-control-theory

buildingscience.com/documents/reports/rr-0907-ventilated-wall-claddings-review-performance-modeling

American Institute of Architects:

aia.org/aiaucmp/groups/ek_members/documents/pdf/aiab098384.pdf

aia.org/aiaucmp/groups/ek_members/documents/pdf/aiab099815.pdf

Jon Eakes Learning Curve:

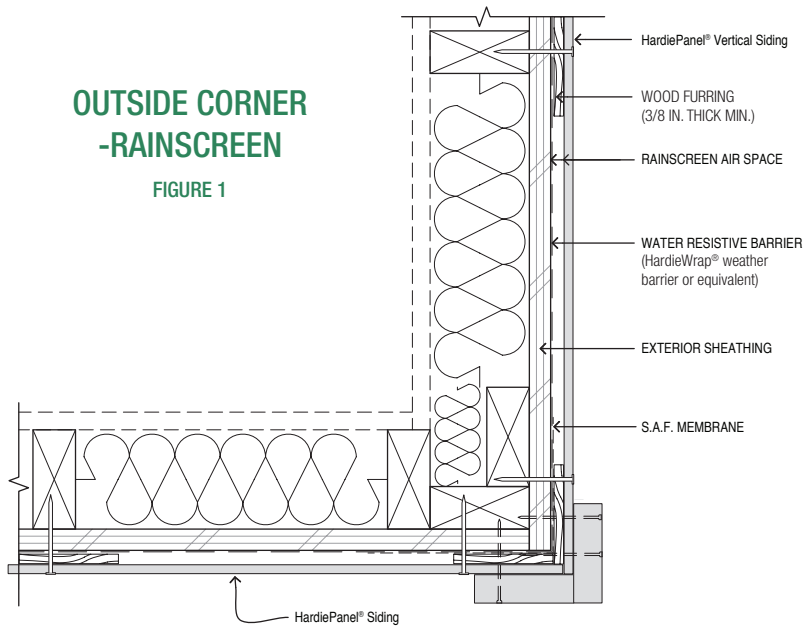
joneakes.com/jons-fixit-database/2112-Rainscreen-Detailing-and-the-Canadian-Building-Code

WHAT IS A
RAINSCREEN?

A rainscreen is an exterior cladding system featuring an air gap between the exterior cladding and the water-resistive barrier. The air gap is created by vertical furring attached to the wall, with the cladding fastened to framing or nailable substrate*, through the furring. James Hardie requires the drainage and ventilation cavity (air gap) to be 3/8 in. (10 mm) or greater.

OUTSIDE CORNER
-RAINSCREEN

FIGURE 1

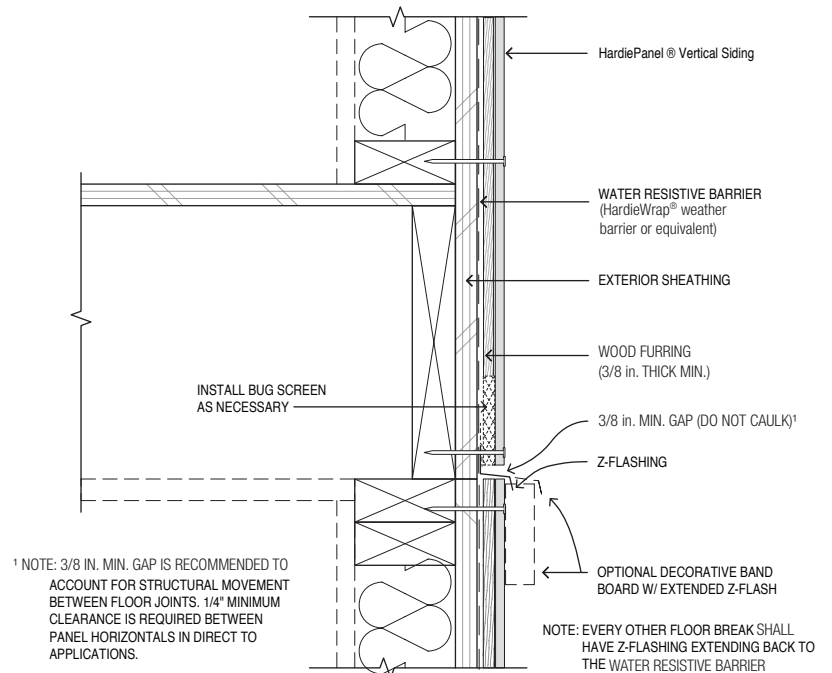


* NAILABLE SUBSTRATE. The IRC defines a Nailable Substrate as a product or material such as framing, sheathing, or furring, composed of wood or wood-based materials, or other materials and fasteners, providing equivalent fastener withdrawal resistance under transverse load.

NOTE: Rainscreen CAD details can be found at JamesHardieCommercial.com

HORIZONTAL BREAK AT FLOOR
TRANSITION - RAINSCREEN

FIGURE 2



¹ NOTE: 3/8 IN. MIN. GAP IS RECOMMENDED TO ACCOUNT FOR STRUCTURAL MOVEMENT BETWEEN FLOOR JOINTS. 1/4" MINIMUM CLEARANCE IS REQUIRED BETWEEN PANEL HORIZONTALS IN DIRECT TO APPLICATIONS.

NOTE: EVERY OTHER FLOOR BREAK SHALL HAVE Z-FLASHING EXTENDING BACK TO THE WATER RESISTIVE BARRIER

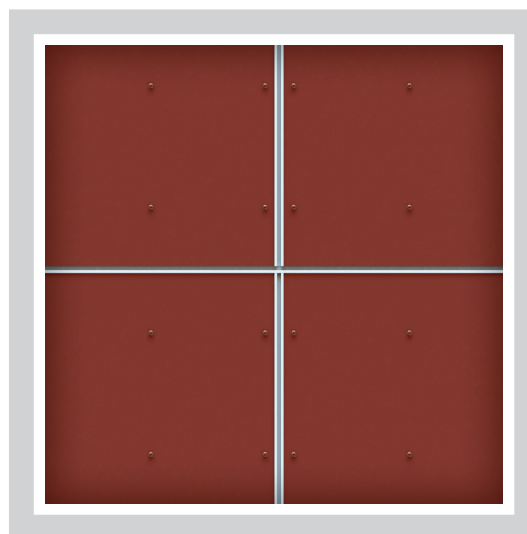
**RAINSCREEN
REQUIREMENTS
APPLY TO...**

TO WHICH PRODUCTS AND APPLICATIONS DO THE RAINSCREEN REQUIREMENTS APPLY?

All James Hardie panel cladding products, including HardiePanel® vertical siding, Cempanel® vertical siding, and Prevail™ Panel, require a rainscreen (3/8 inch air gap behind the cladding) when installed on multi-family or commercial projects under any of the conditions listed below:

- 1 | Exterior walls without eave overhangs; or
- 2 | Exterior walls that are 3 stories and taller; or
- 3 | Exterior walls where fiber-cement panels are installed with express seam joints (see Figure 3).

FIGURE 3





WHAT FURRING
CAN I USE?

FURRING MATERIAL SPECIFICATION

Furring material may be steel (Z-girt, hat channel) or wood to create a minimum 3/8 in. air gap behind the fiber cement panel. Furring should be installed vertically to facilitate drainage and drying.

STEEL FURRING:

Material must be 20 gauge min (33 mil) to 16 gauge max (54 mil), with a dimension that satisfies the installation requirements.

When installing steel Z-girts, be sure to nail close to the Z-girt spine when applying panel fasteners. This helps prevent deflection which can result in incomplete fastening and gaps between the panel and the furring.

WOOD FURRING:

If wood furring is not being used as a nailable substrate, there is no wood species or specific gravity requirement.

Furring should be of sufficient width to assure adequate siding fastener connection; widths from 2 in. to 3.5 in. are recommended. Wall corner intersections may require wider furring to accommodate trim.

If wood furring is being used as a nailable substrate, material must be Spruce-Pine-Fir or any wood species with a specific gravity of 0.42 or greater in accordance with the American Forest and Paper Association (AFPA) and American Wood Council National Design Specification (NDS).

Wood furring shall conform to building code for natural decay resistance or treated lumber (2012 IBC §718.2). Typical wood rainscreen furring includes treated 1/2 in., 3/4 in., 3/8 in. thick plywood, or treated nominal 1x4 in. lumber (actual 3/4 in. thick).

James Hardie recommends following expert advice and manufacturer's warnings against direct contact between aluminum and copper based preservative treated wood. In cases where such wood is used as furring, a non-permeable barrier placed between surfaces where contact occurs is recommended to avoid potential corrosion of aluminum flashing & accessories.

Barrier material options for use with copper based preservative treated furring:

- 6 mil minimum polyethylene sheeting
- Neoprene or EPDM rubber
- Any material specifically called out by the preservative manufacturer

ALTERNATIVE FURRING:

Other non-wood or non-steel furring may be considered for use in rainscreen applications. These furring types are considered non-structural and subject to use per manufacturer's instructions. You and your design professional are responsible for determining the suitability and performance of alternative furring types. James Hardie makes no representation as to their performance or suitability.

Guidance: http://www.wwpinstitute.org/documents/RevisedSpecGuideJan2012_000.pdf

HOW DO I ATTACH
FURRING TO MY
BUILDING?

Furring attachment guidance can be found in James Hardie Building Products Technical Bulletin 19 (TB19), Table A.4: Design Guidance on Furring Attachment for James Hardie® Siding, which can be downloaded from:

jameshardie.com/pdf/technical-bulletins/19-jh-over-advanced-framing-or-continuous-insulation.pdf

See pages 7-8 for additional information regarding furring options, attachment instructions and fasteners.

HOW DO I ATTACH
JAMES HARDIE
PANEL PRODUCTS
TO FURRING?

HardiePanel vertical siding Multi-family/Commercial Installation instructions are found at the following locations (jameshardiecommercial.com):

USA HZ5® Products

jameshardiecommercial.com/pdf/install/hardiepanel-hz5-commercial.pdf

USA HZ10® Products

jameshardiecommercial.com/pdf/install/hardiepanel-hz10-commercial.pdf

Canadian HZ5 Products

jameshardiecommercial.com/pdf/install/hardiepanel-hz5-canada-commercial.pdf

See pages 7-8 for additional information regarding furring options, attachment instructions and fasteners.

WOOD FRAMING
CONDITIONS – TABLE 1

Wall Assembly	Substrate Requirements	Furring Options	Furring Attachment Reference	Panel Attachment to Wall Over Furring Reference	Fastener Guidance
Wood furring attached directly to wood framing**	Furring counts as part of nailable substrate; it is directly attached to wood sheathing & framing; it is SPF or equivalent wood species with specific gravity of 0.42 or greater	Plywood or dimensional lumber, minimum 3/8 in. thick	Technical Bulletin 19 Table A 4 JH Tech Support	ESR 1844	Use wood frame fastener selected per ESR 1844
Wood Furring attached through 1 in. or less non-nailable substrate**	Furring does not count as nailable substrate; it is attached to wood sheathing and framing through 1 in. or less of non-nailable substrate such as gypsum and/or rigid insulation	Plywood or dimensional lumber, minimum 3/8 in. thick	Technical Bulletin 19 Table A 4 JH Tech Support	ESR 1844	Extend fastener selected per ESR 1844 by the thickness of the furring and the total thickness of non-nailable substrate.
Wood Furring attached through greater than 1 in. non-nailable substrate**	Furring counts as entire nailable substrate; it is structurally attached** to wood sheathing and framing through greater than 1 in. of non-nailable substrate such as gypsum and/or rigid insulation, it is SPF or equivalent wood species with specific gravity of 0.42 or greater	Dimensional lumber with thickness equal to ESR 1844 fastener embedment into wood	Technical Bulletin 19 Table A 4 JH Tech Support	ESR 1844	Use wood frame fastener selected per ESR 1844. Fully embed fastener into furring
Metal furring attached to wood framing**	Furring counts as all of nailable substrate	16 to 20 ga steel hat channel	Technical Bulletin 19 JH Tech Support	ESR 1844	Use metal fastener selected per ESR 1844

**Furring must be installed to resist code defined structural loads (such as wind load)

NOTE: The siding attachment system design is the responsibility of a design professional. The advice provided in this guide for building a nailable base for attachment over foam sheathing, gypsum sheathing, OSB sheathing, or any combination thereof, must be approved by the professionals engaged for your project, e.g., a builder, architect or engineer. James Hardie disclaims any and all liability for the use or misuse of the information contained in this guide.

Note: James Hardie recommends a siding mock-up prior to installation to review assembly details, and ensure the fastening practice and/or fastening tools are properly adjusted. Fasteners must be installed to avoid overdriving, but snug enough to remove gaps between connected parts. Adjust driving tools and installation practice accordingly.

STEEL FRAMING
CONDITIONS – TABLE 2

Wall Assembly	Substrate Requirements	Furring Options	Furring Attachment Reference	Panel Attachment to Wall Over Furring Reference	Fastener Guidance
Wood furring attached directly to steel framing**	Furring does not count as nailable substrate, it is directly attached to steel framing	Plywood or dimensional lumber, minimum 3/8 in. thick	Technical Bulletin 19 Table A 4 JH Tech Support	ESR 1844	Use steel frame fastener selected per ESR 1844. • 3 full threads past back of steel stud for screws • 1/4 in. past back of steel stud for pins
Wood furring attached through 1 in. or less non-nailable substrate**	Furring does not count as nailable-substrate; it is attached to steel framing over 1 in. or less of sheathing and/or rigid insulation	Plywood or dimensional lumber, minimum 3/8 in. thick	Technical Bulletin 19 Table A 4 JH Tech Support	ESR 1844	Use steel frame fastener selected per ESR 1844. • 3 full threads past back of steel stud for screws • 1/4 in. past back of steel stud for pins
Wood furring attached through greater than 1 in. non-nailable substrate**	Furring counts as entire nailable substrate; it is attached** to steel framing through greater than 1 in. of sheathing and/or rigid insulation; it is SPF or equivalent wood species with specific gravity of .42 or greater.	2x4 dimensional lumber	Technical Bulletin 19 Table A 4 JH Tech Support	ESR 1844	Use wood frame fastener selected per ESR 1844. Fully embed fastener into furring
Steel furring to steel framing**	Furring counts as nailable substrate; it is attached to steel framing	16 to 20 ga steel Z-girt or hat channel	Technical Bulletin 19 Table A4 JH Tech Support	ESR 1844	Use steel frame fastener per ESR 1844

**Furring must be installed to resist code defined structural loads (such as wind load)

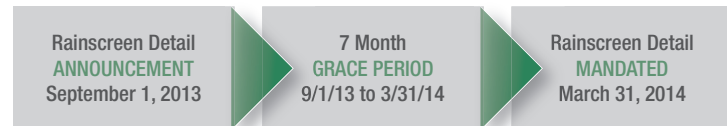
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**HARDIEPANEL®
VERTICAL SIDING
WARRANTY AND
RAINSCREEN**

What are the key rainscreen implementation dates?

The rainscreen detail announcement date was September 1, 2013, followed by a 7 month grace period. The rainscreen mandate takes full effect March 31st 2014 for projects not started by that date.



What about my warranty during the grace period?

For projects starting construction between 9/1/13 and 3/31/14 where the HardiePanel product rainscreen requirement cannot be met due to: design / bid / construction timing, planning constraints or other timing related factors, the product warranty coverage remains in place and all other conditions of the warranty for the product as published by James Hardie Building Products apply.

What about my warranty after March 31st 2014?

The HardiePanel vertical siding limited warranty only covers material and manufacturing defects in the siding. Premature deterioration/performance issues arising from the non-inclusion of an air gap (rainscreen) behind the HardiePanel vertical siding shall be considered improper installation and are not warrantable. At the time a claim is made, if non-inclusion of an air gap (rainscreen) behind the HardiePanel vertical siding contributed to premature deterioration/a performance issue in the siding, your warranty will be void for the panels affected.

FREQUENT
QUESTIONS
FROM THE FIELD

Why do I have to install James HardiePanel products over a rainscreen in Multi-family construction but not on a single family residence?

Multi-family/Commercial structures tend to have larger expanses of flat wall (as much as 6 stories tall to the weather) with more complex details and wall intersections. For single family construction, James Hardie recommends installing a rainscreen (air gap) between HardiePanel vertical siding and the water-resistive barrier as a best practice. James Hardie recommends that you consult with your design professional if you have questions regarding the use of rainscreen on your single family project.

Can I use drainage mats to create the required (minimum 3/8 inch) air gap behind HardiePanel siding?

Currently, James Hardie does not recommend the use of drainage mats.

How do I handle transitions from rainscreen to non rainscreen?

The answer will depend on the desired transition aesthetic. Contact James Hardie Building Products technical line 866.442.7343 or 888.542.7343 to discuss your project's needs.

You allow us to direct attach panel without an air gap on a 2 floor building with eave overhangs. Why not on a 3 floor building with eave overhangs? On a building with eave overhangs, What difference is there between a 2 floor building and a 3 floor building as it relates to the rainscreen (air gap) requirement?

On buildings 3-stories and taller, it is more difficult to keep water away from potential entry points as deflection from eave overhangs covers less wall area. The risk of water going behind the siding at some point during the service life of the building necessitates the inclusion of a rainscreen cavity (air gap) between the HardiePanel vertical siding and the water-resistive barrier to better facilitate drainage and drying. James Hardie does not warrant damage to its products or wall components as a result of water intrusion.

Is this change being driven by James Hardie experiencing product failures?

No. Building science experts have proven rainscreen assemblies maximize the service life of buildings. James Hardie is adopting the use of rainscreens in applications where we believe it will best benefit our customers.

What type of furring do you recommend?

Refer to pages 4-6 of this guide for furring specifications.

Why does James Hardie require a rainscreen system when the local code does not?

The building code is merely the minimum standard that is legally required to construct a building. James Hardie Building Products has always encouraged the adoption of good building practice based on sound science and testing. Building science experts have proven that rainscreen assemblies maximize the service life of buildings.

Technical Requests

If you have questions or cannot find something, contact us using the information below:

**888-J-HARDIE
(1-888-542-7343)
info@jameshardie.com**

For technical inquiries of a more complex nature, including information/applications and structural requirements that are not published in our available technical literature, please use this form.

Providing the correct information for your project on the attached form will reduce the number of clarifying questions required to provide a suitable response to your inquiry for your project. Please note that James Hardie does not provide a plan review service.

[Click Here for Technical Service Request Form](#)