A RANGE OF RAINSCREENS

in-depth look at the variety of rainscreen applications

CONTINUING EDUCATION AIA

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Description:	Selecting the appropriate moisture management system for the building envelope can be a daunting task. Determining the appropriate rainscreen application can be based on several contributing factors – climate, building codes, cladding, and a variety others. This course will explore the importance of rainscreens as a moisture management solution, as well as the characteristics of the assortment of applications.
MCE Info:	Contact your respective governmental licensing & regulatory agency
Expiration date:	1 year from AIA Accreditation

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LEARNING OBJECTIVES

Understand the performance characteristics of rainscreens in the building envelope

Recognize the characteristics and differences of “open” and “closed” rainscreens

Understand and identify the installation applications of “open” and “closed” rainscreens

Recognize the pre-installation considerations when choosing the appropriate rainscreen application

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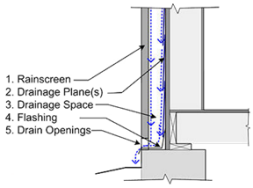
WHAT IS A RAINSCREEN?



An air cavity, or capillary break, which allows for drainage and drying in a building’s envelope formed by creating a gap between cladding and a water-resistant barrier attached to sheathing

Building Science Corporation /buildingscience.com

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WHY RAINSCREENS?

In areas where water has proven to be the biggest enemy for buildings, rainscreens allow for the “management” of water in the building’s exterior envelope.

The goal of the rainscreen is to allow for the entire wall assembly to dry out.

Interview w/ Kevin Thompson, The Green Valley Group

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WHY RAINSCREENS?

If there are ventilation openings at the top of the gap, the rainscreen provides a path for moving ventilation air. This ventilation air rises due to the stack effect, which is strongest when sun shines on the wall. Research shows that this type of ventilation is a powerful drying mechanism.

Martin Holladay, *All About Rainscreens*: Mar. 1, 2013. greenbuildingadvisor.com

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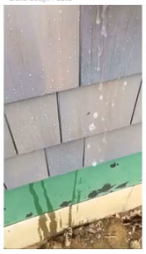
WITHOUT RAINSCREENS

Bronzi Design + Build



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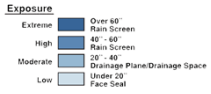
NATIONAL RAINFALL



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INTERNATIONAL RAINSCREEN CODES - CANADA

2005 NBC of Canada: Section 9.27.2.2

"… **exterior walls exposed to precipitation** shall be protected against precipitation ingress by an exterior cladding assembly consisting of a first plane of protection and **a second plane of protection incorporating a capillary break**…"

"… a cladding assembly is deemed to have **a capillary break** between the cladding and the backing assembly where… an open drainage material, not less than **10mm thick** and with a cross-sectional area that is not less than 80% open, is installed between the cladding and the backing, over the full height and width of the wall."

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ABSORPTIVE CLADDINGS

Wood

Manufactured Stone

Stucco

Composite Wood

Fiber Cement

Brick

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WHY RAINSCREENS?

Ventilation Drying

6mm (1/4 inch) space can provide 4.2 air changes per hour on average size home with 1 Pascal of pressure

Drying capacity of 1.2 gallons of moisture per day

Bodycote

Rainscreen walls dried three times faster than walls without an airspace

Building Research Association of New Zealand

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CHARACTERISTICS OF A RAINSCREEN

WRB to keep water away from OSB/Sheathing

Proper flashings at penetrations

"Air Gap" between WRB and back of the siding

Weep holes at the bottom of the wall to drain

Ventilated opening at the top of the wall to promote drying

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RAINSCREEN APPLICATION OPTIONS
variety of rainscreen applications

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RAINSCREEN OPTIONS
furring strips/strapping

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FURRING STRIPS

Ventilated air space created by attaching wood strips (generally 1 x 3 stock) to the outside of a WRB

Strapping is measured 16 inches on center, aligned with the stud framing inside the sheathing

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FURRING STRIPS

PROS

- Readily available at most lumberyards
- Can be installed in most conditions
- Can be installed with closed & open rainscreen applications
- Can be installed with exterior insulation

CONS

- Cost
- Labor intensive
- Wood furring is subject to saturation/decomposition
- Average of 15% of wall is unventilated
- Cuts down on airflow behind vertical siding when installed horizontally (longer drying time/won't cut down on bulk water
- Waving vinyl siding

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RAINSCREEN OPTIONS

rolled rainscreen/entangled matrix

Kevin Cradock – Cradock Builders

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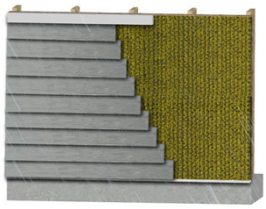
ROLLED RAINSCREEN
entangled matrix

Rolled/plastic rainscreens are designed to promote drainage and drying by allowing a constant airflow behind the siding

The entangled matrix technology allows for continuous ventilated airspace over the entire surface area



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ROLLED RAINSCREEN
entangled matrix

PROS

- Low installation cost
- Ease of installation/No need for furring strips
- Provides a consistent airflow in the entire wall assembly
- Material is not subject to decomposition or saturation

CONS

- Most cannot be installed in an Open Joint/Open Rainscreen application (not UV Stable)
- If installed improperly (uneven pressure may cause "wave" in the aesthetics of the siding)
- Long term UV exposure before cladding

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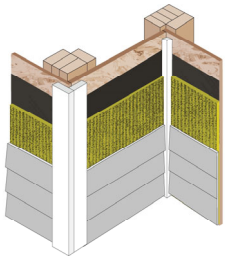
ROLLED RAINSCREEN
installation considerations



Account for the GAP

- Account for enhanced thickness
  - Trim details
  - Remodeling Projects
- Provide opening at top and bottom of the wall

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RAINSCREEN OPTIONS
corrugated strips/battens

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CORRUGATED STRIPS
battens

Corrugated strips have a "honeycomb" design to promote airflow throughout the wall cavity

Available in several sizes for different types of applications in the wall system

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CORRUGATED STRIPS
battens

PROS

- Available in several sizes for different applications
- Honeycomb design allows strips to NOT be prone to saturation and rot
- Optimize airflow in the building envelope
- Airflow stays consistent regardless of vertical/horizontal applications
- Has a variety of applications

CONS

- Cost
- Does not act as a nail base for cladding
- Labor intensive (similar install to furring strips)
- Not compatible with all siding

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RAINSCREEN OPTIONS

open rainscreen/open joint rainscreen

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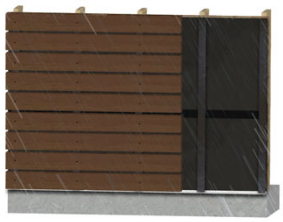
OPEN JOINT RAINSCREEN

Open Joint Rainscreens consist of the same fundamentals of a "closed" rainscreen with the addition of an open cavity/joint between the installed cladding materials

The open cavity along with the addition of a rainscreen, optimizes the airflow in the entire wall system, allowing for maximum drying capacity



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OPEN JOINT RAINSCREEN

PROS

- Available in several sizes for different applications
- Honeycomb design allows strips to NOT be prone to saturation and rot (with battens)
- Optimize airflow in the building envelope with open joint between cladding
- Airflow stays consistent regardless of vertical/horizontal applications

CONS

- Cost
- Labor intensive (similar install to furring strips)
- Not compatible with all siding

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OPEN JOINT CLADDING MATERIALS
what characteristics to look for…

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DURABILITY IS KEY

WATER

- Because of the open cavity between the cladding materials, there is more water entering the wall cavity
  - Must increase the water tightness of the WRB
  - WRB becomes the main defense to protect your sheathing in the wall cavity
    - Imperative that the WRB is installed correctly

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DURABILITY IS KEY

AIR

- The added air space (open joint) between the cladding materials and the water resistant barrier attached to the structure's sheathing allow for further ventilation/drying in the wall assembly
  - This added airflow will put increased stress on the WRB and any materials in the building's envelope
  - Optimum drying potential between cladding boards and sheathing
- Coastal areas will have more volatile air conditions

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DURABILITY IS KEY

UV EXPOSURE

- UV exposure has known degrading effects on many things including building materials
- With the open cavity between cladding materials, the WRB has a greater chance of being negatively affected by UV light
  - In order for WRBs to perform in an open joint application, there must be a long-lasting UV Rating
  - UV Radiation effects not only the WRB, but all materials in the wall cavity, including furring strips, flashing tapes, or battens
    - All materials in an Open Joint wall cavity, must contain a long standing UV rating

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OPEN JOINT CLADDING MATERIALS
preinstallation considerations…

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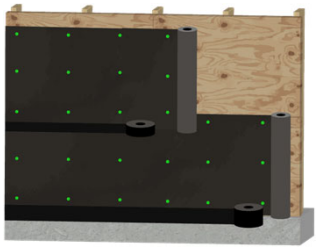
PREINSTALLATION CONSIDERATIONS
uv stable flashing tapes



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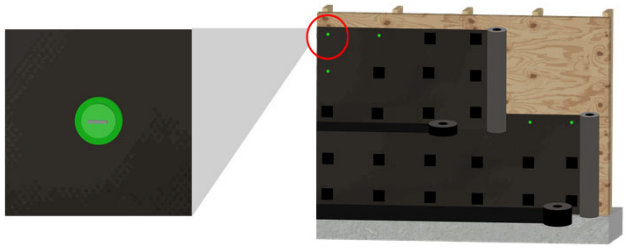
PREINSTALLATION CONSIDERATIONS
uv stable flashing tapes



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PREINSTALLATION CONSIDERATIONS
staple/fastener options

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PREINSTALLATION CONSIDERATIONS
cap staple & cladding fastener placement

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PREINSTALLATION CONSIDERATIONS

furring strips vs. corrugated battens

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JOBSITE INSTALLATIONS

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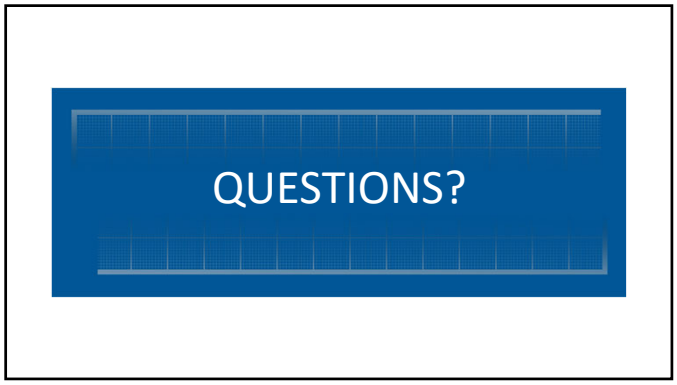

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