



BUILDING TRUST



RMAX® ECOMAXCI® WALL SOLUTION INSTALLATION INSTRUCTIONS FOR CONTINUOUS INSULATION

METHOD 2: UTILIZING LIQUID APPLIED R-SEAL 2000 LF LIQUID FLASHING AND SELF-ADHERED R-SEAL 6000 FLASHING

RMAX: A BETTER INSULATION SOLUTION

Since 1978, Rmax has been manufacturing commercial, industrial and residential polyiso insulation products and providing engineered solutions for enhanced energy efficiency with less labor and materials. The ECOMAXci® Wall Solution for commercial steel stud buildings, featuring ECOMAXci® FR Air Barrier continuous insulation, is just one more example of our industry leadership in action.

Combining proven, high-performing thermal insulation board with Rmax branded tapes and flashings – the ECOMAXci® Wall Solution improves thermal efficiency and provides an Air Barrier Association of America (ABAA) evaluated solution to minimize air and water intrusion. The ECOMAXci® Wall Solution can be installed utilizing self-adhered tapes and flashings or liquid flashings.

ECOMAXci® FR Air Barrier is an approved component of the High Velocity Hurricane Zone (HVHZ) R-Trac System. Refer to the corresponding *Rmax ECOMAXci® Wall Solution Installation Instructions* based on application needs:

- Method 1 – Utilizing Self-Adhered R-SEAL 3000 Tape and R-SEAL 6000 Flashing
- Method 2 – Utilizing Liquid Applied R-SEAL 2000 LF Liquid Flashing and Self-Adhered R-SEAL 6000 Flashing

This document contains general information and installation instructions for the ECOMAXci® Wall Solution and must be followed in order for Rmax warranties to be valid. For additional information and compliance verification, refer to the current DrJ® Engineering, LLC Technical Evaluation Report, TER 1212-03. For warranty information, refer to the Rmax “Sales Policy” and “ECOMAXci® Wall Solution Limited Warranty”.

HANDLING, STORAGE AND PROTECTION REQUIREMENTS

- ECOMAXci® FR Air Barrier insulation boards are shipped in wrapped bundles, approximately 48” high. Exercise care during handling of insulation boards to prevent breaking or crushing of the edges and surfaces. Rmax requires that insulation bundles be unloaded from trucks by a fork-lift or similar equipment with suitable forks to slide under bundles. DO NOT roll or tumble bundles off delivery trucks.
 - Store insulation bundles on pallets or other dunnage at least 4” above ground level. Dunnage supplied by Rmax for shipment of the insulation is not adequate for use in outdoor storage of the materials. DO NOT store bundles directly on the ground.
 - The wrapping materials used to ship the bundles are not adequate for weather protection at the job site. Place additional coverings, such as tarps, over the bundles once off-loaded from the delivery truck.
-

BEFORE YOU BEGIN

The design and construction of the exterior walls and supporting structure is the responsibility of the project architect, engineer, general contractor and the building owner. The structure must be designed to resist all live, dead, wind and construction loadings per governing building codes.

Establish a quality assurance program to ensure a continuous air and water-resistive barrier installation for the entire building envelope. Properly tie in and seal all air and water-resistive barrier systems used throughout the building envelope, including the Rmax ECOMAXci® Wall Solution, to provide complete continuity.

OSHA safety and construction guidelines shall be followed on the job site, as well as, local code requirements.

Prior to installation:

- Refer to the *Materials Checklist* (page 2) for components and materials.
- Ensure compatibility of ECOMAXci® Wall Solution components and other materials with all building substrates and systems to which they tie into.
- Ensure wall framing has been erected.
- Clean surfaces and address irregularities that will affect the placement or performance of the ECOMAXci® Wall Solution components.



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MATERIALS CHECKLIST

[use as required within this document]

- Rmax ECOMAXci® FR Air Barrier Continuous Insulation¹
- Rmax R-SEAL 3000 Tape¹
- Rmax R-SEAL 6000 Flashing¹
- Rmax R-SEAL 2000 LF Liquid Flashing¹
- Rodenhouse, Inc. Grip-Deck® Self Drilling Screws
- Rodenhouse, Inc. Thermal-Grip® ci Prong Washers
- Sealants (Rmax R-SEAL 2000 LF, Sika Sikasil® WS-295, Sika® SikaHyflex® -407, Henry Company Henry® 925 BES)
- Primers (Berry Global Polyken® 44SA, Polyken® 1027 or Nashua® 357SA)
- Backer rods (Sika Corp Sika® Backer Rod)
- Polyurethane expansion foam (Sika Corp Sika Boom®)
- Tools, as needed based on materials and installation technique (drill or screw gun, squeegee and/or J-roller, caulking gun and tips)
- Personal Protective Equipment (hard hat, safety glasses, safety vest, work gloves)

¹Components have been tested together to pass fire, air and water system standards – substitution is NOT allowed.

GETTING STARTED

- Rmax recommends that only skilled, trained contractors and installers familiar with air and water sealing techniques and building envelope systems be used to perform the required work.

NOTE: High quality products do not take the place of poor quality installation.

- Continually inspect all wall assembly materials and substrates for any damage and proper installation. DO NOT install the ECOMAXci® Wall Solution components or other materials over damaged or improperly installed substrates. DO NOT install any damaged components or materials.
- Once all products have been inspected and accounted for, installation may begin.
- DO NOT install the ECOMAXci® Wall Solution during adverse weather conditions (rain, sleet, snow, heavy winds, etc.).
- DO NOT install or seal wet or damaged construction materials within a wall assembly (gypsum sheathing, wood sheathing, cavity insulation, continuous insulation, tapes, flashings, etc.).
- Ensure all building materials are completely dry before installing, sealing or covering.
- Fasten ECOMAXci® FR Air Barrier completely by the end of each working day.

FOR BEST PRACTICE AND TO RESIST MOISTURE INTRUSION THROUGH THE BUILDING ENVELOPE, SEAL ALL JOINTS AND SEAL OR PROTECT BOARD EDGES AT THE END OF EACH DAY.

STEP BY STEP INSTALLATION

Unless specifically stated otherwise, all references to joints within this document are assumed to be static. **See Section 5** for expansion, control and other dynamic joints.

1. ECOMAXci® FR Air Barrier Continuous Insulation Boards

- Only remove the wrap from the bundles that are to be installed that day. Insulation boards are very light in nature and must be handled with care, especially during windy days.
- Apply ECOMAXci® FR Air Barrier to smooth surfaces free of under driven fasteners, holes, ridges or depressions that will affect the placement or performance of the insulation boards. All surface irregularities, such as low or high spots, should be repaired so the surface is flat to receive the insulation boards. It is the responsibility of the contractor and installer to ensure that the system is properly prepared to receive the insulation boards. DO NOT score, slash or otherwise cut either facer of the insulation board in order to force the panel to conform to wall irregularities.
- Ensure substrate is free of water and surface moisture.
- Start at the end of a wall section. Install the insulation boards on the wall with the long dimension horizontal. Insulation boards must be plumb and level. Orient the insulation boards with the Rmax Solutions shield logo facing the exterior.
- Tightly butt insulation boards and center joint over framing with each board bearing a minimum of 1/2".
- Continue installing ECOMAXci® FR Air Barrier horizontally across the wall before starting a new row of panels. Stagger each row of insulation boards a minimum of one stud space to the row below. Tightly butt all insulation boards.
- Where possible, extend bottom edge of boards a minimum of 1" below the top of the foundation or structure. Ensure the top edge of the highest row of insulation boards along each wall facade is flush with the top of the parapet or stud framing.
- A change in wall plane is a deliberate change in direction or out of plane framing or substrates. DO NOT span the insulation board across materials that are out of plane more than 1/4". For changes in direction (corners, surface offsets, etc.) the boards should snugly fit in an overlap. **Reference Figure 1 and 8.**

MATERIAL & LABOR SAVINGS

Rmax recommends using ECOMAXci® FR Air Barrier in 12' lengths to minimize the number of joints and reduce the linear footage of joint tape.



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I. Where the insulation board is cut to accommodate throughwall penetrations, minimize voids and gaps.

J. Repair minor damage to the aluminum facer using R-SEAL 2000 LF. **Reference step 3-P.**

K. Replace major damage (missing sections) to the foam core or aluminum facer by fully cutting out the damaged area. The removed piece must be the full height of the board and wide enough to ensure new vertical joints are backed by framing. Cut a new piece of ECOMAXci® FR Air Barrier insulation board to tightly fill the open area. Fasten and seal the new piece as outlined in this document.

NOTE: ECOMAXci® FR Air Barrier may be installed in multiple layers. All joints of subsequent layers shall be staggered at least one stud space horizontally and a minimum of 6" vertically. Provided the second layer is being installed immediately following the installation of the first layer, attach the first layer with enough fasteners to hold it in place until the second layer is attached per **Section 2**. In this scenario, only the final layer needs to be sealed. If the second layer is not being installed immediately, this document must be followed for each layer independently.

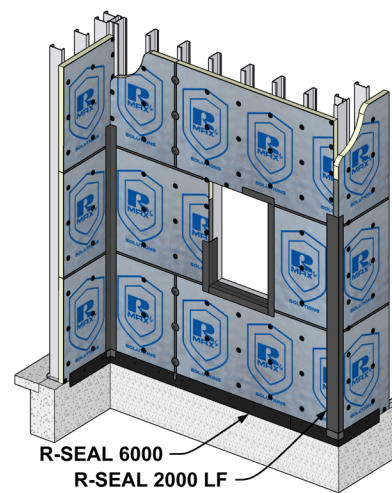


Figure 1

2. Insulation Board Securement

A. Fasteners (Screw and Washer): Mechanically fasten insulation boards to wall framing using a minimum 2" diameter solid plastic washer and self-taping corrosion-resistant steel screw, Rodenhouse, Inc. Thermal-Grip®ci Prong Washers and Grip-Deck® Self-Drilling Screws or equivalent, as determined by material manufacturer.

B. Fastening Pattern: Secure insulation boards at each stud with fastening pattern show in **Table 1** based on insulation board thickness. The maximum fastening pattern for insulation less than 1.5" is 12" on center at the perimeter of the wall and rough openings and 16" on center throughout the wall field offset 8" from the horizontal joints. **Reference Figure 2.** The maximum fastening pattern for insulation 1.5" and greater is 24" on center vertically at every stud. **Reference Figure 3.**

NOTE: All vertical edges must be backed by framing.

MAXIMUM FASTENING PATTERN OF ECOMAXci® FR AIR BARRIER

Nominal Thickness	Wall Perimeter & Rough Opening Perimeter	Field Studs
Less than 1.5"	12" o.c.	16" o.c.
1.5" and greater	24" o.c. vertically; Match stud spacing horizontally	24" o.c.

Table 1

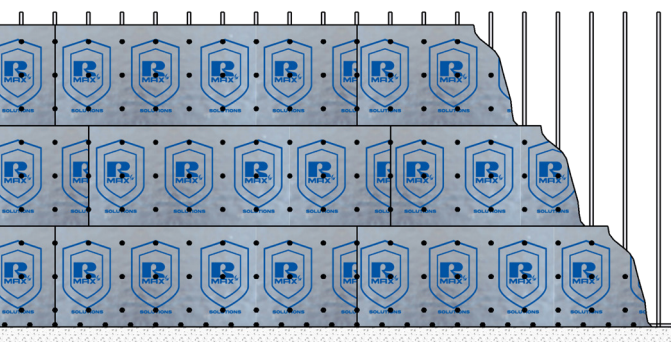


Figure 2

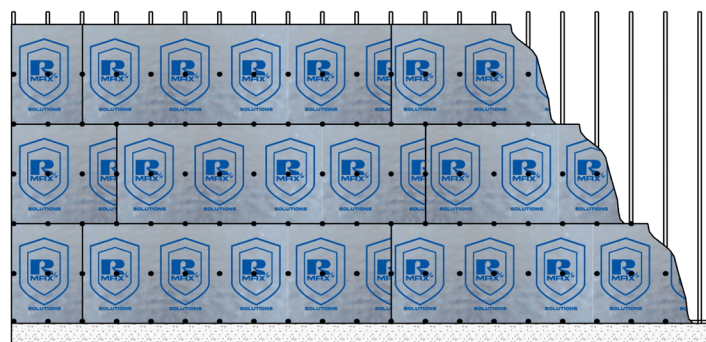


Figure 3

C. Fastener Installation: Fasteners must be long enough to penetrate the wall framing a minimum of four threads. Install fasteners to fit snug and flush with the insulation board surface, see fastener manufacturer for additional details and requirements. DO NOT crease or break the aluminum facer of the boards. DO NOT counter sink fasteners. If the aluminum facer is compromised, seal/repair with R-SEAL 2000 LF as outlined in **Section 3**.

D. Bridging Insulation Boards: Use one fastener to bridge a maximum of three adjacent boards. **Reference Figure 4.** When bridging boards, center fastener at intersection of board joints to maximize washer surface on each board.

E. Fastener Installation Errors: Fastener installation errors (misaligned, missed framing, spun out, over-driven, under-driven, etc.) must be corrected and repaired. Remove fastener and repair area with R-SEAL 2000 LF as outlined in **Section 3**, then reinstall fastener in unaffected area.



Figure 4

3. R-SEAL 2000 LF Tape

NOTE: In areas where R-SEAL 2000 LF and R-SEAL 6000 overlap, always apply the R-SEAL 6000 first. **Reference Figure 5.**

A. Use R-SEAL 2000 LF to seal all static insulation board joints, rough openings, corners, transitions, changes in plane, throughwall penetrations and repair minor damage to the ECOMAXci® FR Air Barrier aluminum facing or foam core. Refer to the R-SEAL 2000 LF data sheet for information on appropriate installation conditions.

B. All surfaces to which the liquid flashing is to be applied must be sound, clean and free of moisture, frost, oils, grease, dust, dirt and other debris that could inhibit adhesion. Immediately prior to application, clean surfaces to thoroughly remove all residues and any other foreign matter.

C. Cover punch holes or other small openings in framing members at rough openings with R-SEAL 3000, R-SEAL 6000 or similar prior to application of R-SEAL 2000 LF.

D. Fill open joints, voids and gaps anywhere around the insulation board greater than 1/4" wide prior to applying R-SEAL 2000 LF.

E. Prime exposed foam core at board edges with a light skin coat of R-SEAL 2000 LF (**Reference Figures 8 and 9**) or apply a layer of R-SEAL 3000 or R-SEAL 6000 to bridge substrates on either side of the foam core. The ECOMAXci® FR Air Barrier foam core does not support adhesion and is not to be considered the last surface of any taping sequence. When taping is required to go into the plane of the foam core, it must go beyond the foam core and onto the aluminum facer on the other side.

F. Treat, prime or otherwise prepare surfaces as necessary (fire retardant treated lumber, concrete, coatings, etc.). Fill holes, voids and gaps greater than 1/4".

NOTE: Substrates vary in makeup; therefore, a field pull test to confirm adhesion is always recommended.

G. **Tooling:** Tool R-SEAL 2000 LF using confined, uniform pressure to achieve complete surface contact with the substrate embossment or other surface irregularities and eliminate pinholes. As necessary, extend the liquid flashing to ensure complete contact with the intended substrate, especially where irregularities exist (indentions, gaps, wrinkles, creases, etc.).

H. **Lapping:** When applying a new layer of R-SEAL 2000 LF to an already cured layer, make sure the application is fully continuous.

I. **Intersection with Membranes:** When R-SEAL 2000 LF and membranes over-lap, apply the membrane first. **Reference Figure 5.** When this is not possible and the membrane is applied over the liquid flashing, cover the intersection with a liquid flashing patch. The patch must extend 2" into each surface. **Reference Figure 6.**

J. **Insulation Board Joints:** Apply a bead of R-SEAL 2000 LF centered at tightly butted insulation board joints. Tool to provide a minimum of 1" width by 30mil wet gauge thickness.

NOTE: Irregularities in facing materials and out-of-plane tolerances may require additional thickness of R-SEAL 2000 LF.

K. **Joint Fasteners:** Where insulation board fasteners fall at a joint, apply and tool R-SEAL 2000 LF continuously over the entire washer and a minimum of 3/4" radially beyond the washer. **Reference Figure 7.**

L. **Field Fasteners:** When NOT using Rodenhouse, Inc. Thermal-Grip®ci Prong Washers and Grip-Deck® Self-Drilling Screws, apply and tool R-SEAL 2000 LF continuously over the entire washer and a minimum of 3/4" radially beyond the field washers, similar to **Figure 7.**

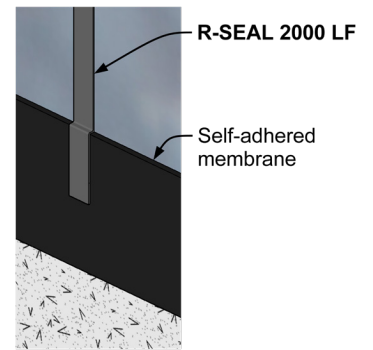


Figure 5

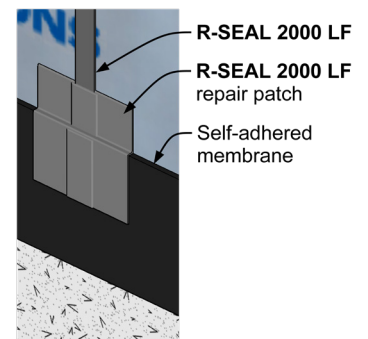


Figure 6

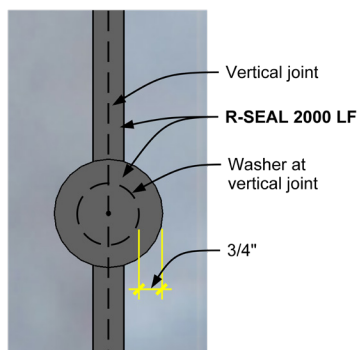


Figure 7

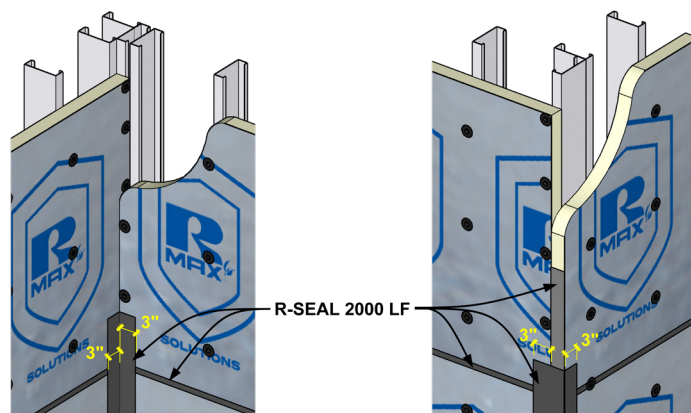


Figure 8

M. Rough Openings, Corners, Transitions and Changes in Plane: Use R-SEAL 2000 LF for static conditions only. Apply a bead of R-SEAL 2000 LF using a zigzag pattern and tool to achieve a minimum 3" extension beyond the last surface of each plane to be flashed at a continuous 50mil minimum wet gauge thickness. **Reference Figures 8 and 9.** For washers that fall within the flashed area, fully cover and extend liquid to ensure a minimum of 1" flashing beyond the washer.

NOTE: For roof to wall and wall to foundation transitions, use R-SEAL 6000. **Reference step 4-l.**

N. Throughwall Penetrations: Apply a bead of R-SEAL 2000 LF at penetration/insulation transition and tool to form a fillet. Apply and tool additional R-SEAL 2000 LF on penetration object and aluminum facer to ensure continuous flashing layer that extends a minimum of 2" onto each surface at a minimum 30mil wet gauge thickness. **Reference Figure 10.**

O. Correcting Fastener Installation Errors: Use R-SEAL 2000 LF to seal fastener installation errors (misaligned, missed framing, spun out, over-driven, under-driven, etc.). Remove fastener and cover a minimum of 2" onto fully adhered aluminum facings in all directions at a continuous 30mil minimum wet gauge thickness.

P. Minor Damage to Aluminum Facer or Foam Core: Use R-SEAL 2000 LF to cover minor damages a minimum of 2" beyond the damaged location in all directions at a continuous 30mil minimum wet gauge thickness.

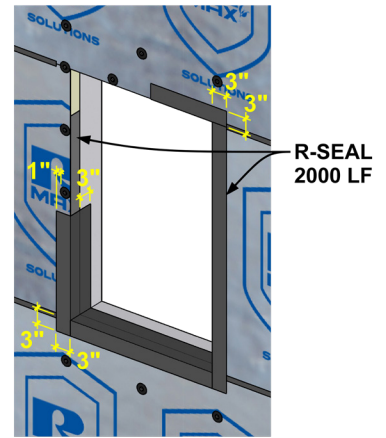


Figure 9

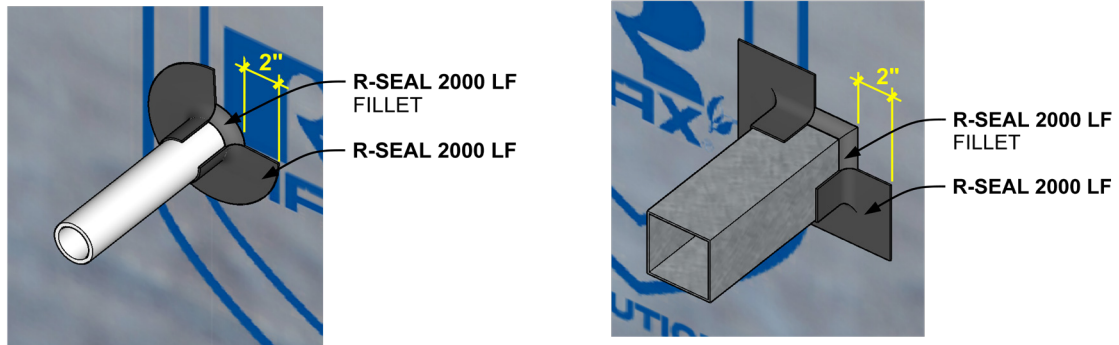


Figure 10

4. R-SEAL 6000 Flashing

NOTE: In areas where R-SEAL 6000 and R-SEAL 2000 LF overlap, always apply R-SEAL 6000 first. **Reference Figure 5.**

A. Use R-SEAL 6000 to seal insulation boards at corners, rough openings, throughwall penetrations and transitions. Refer to the R-SEAL 6000 data sheet for information on appropriate installation conditions.

B. All surfaces to which the flashing is to be applied must be sound, clean and free of moisture, frost, oils, grease, dust, dirt and other debris that could inhibit adhesion. Immediately prior to application, clean surfaces to thoroughly remove all residues and any other foreign matter. Exercise care when handling tape to avoid contaminating adhesive.

C. The ECOMAXci® FR Air Barrier foam core does not support adhesion and is not to be considered the last surface of any flashing sequence. When flashing is required to go into the plane of the foam core, it must go beyond the core and onto the aluminum facer on the other side or the adjacent substrate.

D. Treat, prime or otherwise prepare surfaces as necessary (fire retardant treated lumber, concrete, coatings, etc.). Fill holes, voids and gaps greater than 1/4".

NOTE: Substrates vary in makeup; therefore, a field pull test to confirm adhesion is always recommended.

E. Always install flashing in a shingle fashion, i.e., start at the bottom and work up.

F. Tooling: Apply firm, uniform pressure from the center out to the edge using a roller, plastic squeegee or similar tool to smooth out wrinkles and ensure complete surface contact with substrate embossment or other surface irregularities. Extend flashing to ensure complete contact with the intended substrate, especially where irregularities exist (indentions, gaps, wrinkles, creases, etc.).

NOTE: R-SEAL 6000 is a pressure sensitive flashing. Firm, uniform pressure is critical to create surface contact and achieve proper adhesion.

G. **Lapping:** When two layers of R-SEAL 6000 join, overlap a minimum of 3" and apply R-SEAL 2000 LF along both edges where the overlap occurs. **Reference Figure 11.**

H. **Fasteners:** Fully cover fasteners that fall within the flashed area with R-SEAL 6000 to maintain a minimum of 1" adhesion to the surface beyond the washer edges.

I. **Transitions (foundations, slabs, shelf protrusions, roofing membranes, blocking, etc.):** Use R-SEAL 6000 (where compatible with adjacent materials) at board terminations to transition into alternate substrates and maintain a continuous air and water-resistive barrier. Extend flashing a minimum of 3" each onto the aluminum facer and suitable adjacent substrate.

J. DO NOT allow the flashing to tent, form voids or buckle. For flashing that is tented, wrinkled, folded over on itself, fish-mouthed, or otherwise damaged, remove and replace. If removing flashing causes damage to facer, an additional layer of flashing should be applied to create a properly sealed transition.

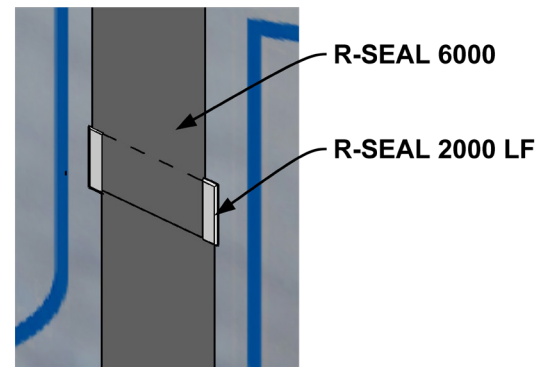


Figure 11

5. Expansion, Control and Other Dynamic Joints

NOTE: DO NOT use R-SEAL 2000 LF in moving joints.

A. This section applies to all joints subject to movement.

B. An insulation board must never span a dynamic joint and be secured on both sides of the dynamic joint. Cut the insulation board to create a joint as necessary or only secure the insulation board on one side of the dynamic joint.

C. DO NOT use fasteners to bridge insulation boards at dynamic joints; boards must be fastened separately on both sides of the joint.

D. For dynamic joints up to 3/4", R-SEAL 6000 flashing may be used to seal the insulation boards. Install a backer rod and/or bond breaker as required and loop flashing inside the joint to allow for movement. **Reference Figure 12.** The R-SEAL 6000 must extend a minimum of 3" onto each surface. Loop dimensions will vary based on joint performance requirements.

E. For expansion joints greater than 3/4", DO NOT use R-SEAL 6000 to loop or bridge joint. Refer to Construction Documents for proper detailing. Ensure air and water-resistive barrier is continuous.

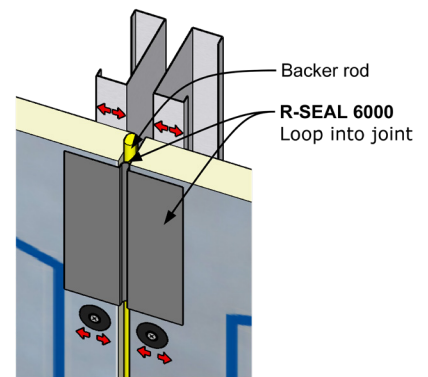


Figure 12

6. Future Trades (Exterior Facade Installation, Wall Penetrations, etc.)

A. Begin work by future trades only after all flashing of the ECOMAXci® Wall Solution has been completed and cured within that section.

B. Take care to minimize damage to installed wall components (insulation board facer or foam core, tapes, flashings, etc.) so as not to break the continuous air and water-resistive barrier provided by the ECOMAXci® Wall Solution.

C. All damage must be repaired as detailed previously throughout this document. Damage includes misaligned fasteners, holes or loose fasteners (due to missed framing, spin outs, over-driving, under-driving), tool damage, etc.

D. ECOMAXci® FR Air Barrier is non-structural and must not be used to support any exterior cover materials. All elements (mechanical, façade, etc.) penetrating the ECOMAXci® Wall Solution must be securely attached through the insulation boards directly to the structural framing.

E. Use common construction practices of maintaining the air and water-resistive barrier provided by the ECOMAXci® Wall Solution with all trade work (anchor penetrations, wall penetrations, etc.). Examples of acceptable sealing techniques include:

- Center a piece of commercial grade self-sealing flashing with 100% butyl rubber adhesive on the aluminum surface of the board before penetrating with structural screws.
- Seal barrel style exterior anchor penetrations, such as Heckmann Building Products Pos-I-Tie®, with either a one part moisture cure sealant, Henry Company Henry® 925 BES or equivalent. Sealants are not required with Rodenhouse, Inc. Thermal-Grip® Brick Tie Washers with Barrel Style Brick Ties.

F. Shim attachment elements, such as horizontal furring, a minimum of 3/16" to ensure proper gapping for positive drainage.

TIPS AND COMMON PRACTICES

The following do not take the place of installation instructions contained within this document:

- For added protection, counter flash R-SEAL 6000 with R-SEAL 2000 LF.
- When using a polyurethane expansion spray foam (or similar material) to fill gaps, allow material to fully cure then cut off excess to create a flat surface with adjacent materials, prior to applying tape or flashing. Extend R-SEAL products onto clean surfaces (beyond any overspray or residue) the minimum distance required throughout this document.
- Priming is not usually necessary for the aluminum facer of ECOMAXci® FR Air Barrier, steel or untreated wood under normal conditions. While priming can improve adhesion it does not dismiss the requirement for proper surface preparation.
- For rough surfaces and treated, textured or porous materials (OSB, fire retardant treated wood, concrete, etc.), it is recommended that a primer be used to promote adhesion between R-SEAL 2000 LF or R-SEAL 6000 and the substrate. Recommended primers for R-SEAL 2000 LF include Sika® Primer-210 for concrete and Sika Aktivator 205 for Kynar or Plastic. Recommended primers for R-SEAL 6000 include Polyken® 44SA, Polyken® 1027 or Nashua® 357SA from Berry Global. Always confirm appropriate, compatible use with both substrates.
- Substrates vary in makeup; a field pull test to confirm adhesion is always recommended.





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INSTALLATION GUIDE
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