



INSTALLATION INSTRUCTIONS



EnergyShield® and EnergyShield® CGF

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Conditions of Use

EnergyShield and EnergyShield CGF rigid foam insulation boards comply with CAN/ULC S704 standard as referenced in the National Building Code of Canada, Provincial codes and the current CCMC Listing.

- Ensure compliance with:
 - The applicable building code sections, which always supersede these instructions.
 - Structural requirements
 - Fire requirements
 - Wind pressure requirements
 - Exterior wall covering requirements
 - Flashing requirements
 - Moisture barrier requirements
 - Air barrier requirements
 - Vapour barrier requirements
 - Accessory manufacturer's instructions and recommendations for application over or behind foam boards.
 - This installation instruction. **See Note# 1.**
- EnergyShield/EnergyShield CGF is not a nailing base for attachment of any kind.
- EnergyShield/EnergyShield CGF is not structural. **See Note #2.**
- This instruction pertains to EnergyShield and EnergyShield CGF.

Examination

- Inspect EnergyShield/EnergyShield CGF for damage related to transportation and handling.
- Ensure EnergyShield/EnergyShield CGF is suitable for installation.
- Segregate and discard EnergyShield/EnergyShield CGF damaged beyond repair and not fit for intended use.

Preparation

- Store EnergyShield/EnergyShield CGF indoors on risers elevated at least 102 mm (4 inches) above floor/grade. When EnergyShield/EnergyShield CGF must be stored outdoors, completely protect EnergyShield/EnergyShield CGF from moisture. (Manufacturer's packaging is not sufficient protection from moisture.)
- If building interior is not protected from exterior moisture, protect EnergyShield/EnergyShield CGF as if stored outdoors.
- Do not allow standing water to collect on top of protection or below EnergyShield/EnergyShield CGF.
- EnergyShield/EnergyShield CGF damaged by moisture is not fit for intended use and must be discarded.
- Take appropriate measure to secure EnergyShield/EnergyShield CGF from wind events. Do not exceed weight of 11 kg. (25 lbs) per 0.09 m² (ft/2).
- If exterior temperature and/or materials are less than 12° C (55° F), a primer (check with tape manufacturer) may be required prior to installing sheathing tape and/or flashing tape.
- Follow sheathing tape and flashing tape manufacturer's instructions for specific EnergyShield/EnergyShield CGF preparation, primer application and required installation temperature.
- Install EnergyShield/EnergyShield CGF over clean, dry suitable framing spaced no more than 610 mm (24 inches) on center.
- EnergyShield/EnergyShield CGF may be left exposed no more than 60 days from date of installation.
- All wall applications are for above grade installations only.
- Keep open flame away from EnergyShield/EnergyShield CGF at all times.

APPLICATION #1

Installation of EnergyShield/EnergyShield CGF over structural sheathing or direct to structural wood/metal stud framing for continuous insulation.

EnergyShield/EnergyShield CGF Orientation

- Fasten EnergyShield/EnergyShield CGF through structural sheathing to wood/metal stud framing with printed facer visible. **See Note #2** for structural framing requirements to attach EnergyShield/EnergyShield CGF direct to framing.
- Install EnergyShield/EnergyShield CGF with long edges perpendicular to wood/metal stud framing. Accessories such as masonry ties or other cladding attachments may dictate suitable orientation. **See Note #3.**

Fasteners to Attach EnergyShield/EnergyShield CGF

- 11 mm (7/16 inch) head galvanized roofing nails, 19 mm (3/4 inch) wood stud framing penetration.
- 6D ring shank nails with 24 mm (15/16 inch) diameter plastic washers, 19 mm (3/4 inch) wood stud framing penetration.
- 11 mm (7/16 inch) crown 16 gauge staples, minimum 12.7 mm (1/2 inch) wood stud framing penetration.
- 44 mm (1 3/4 inch) or larger diameter washer style fasteners, minimum 19 mm (3/4 inch) wood stud framing penetration or 6.5 mm (1/4 inch) minimum for metal stud framing. Plasti-Grip® CBW by Rodenhouse or equivalent. **See Note #3 and #4.**

Note #1: Instructions are for EnergyShield and EnergyShield CGF. Any recommendations for accessories are designed to supplement and defer to the window, door, tape, sealant, flashing, water resistive barrier, air barrier and fastener manufacturer's written instructions. Follow water resistive barrier and air barrier manufacturer's written instruction for attachment to EnergyShield/EnergyShield CGF. Follow cladding manufacturer's written instruction for cladding attachment through EnergyShield/EnergyShield CGF to structure.

Note #2: Structural requirements can typically be achieved by code accepted shear or corner bracing such as, 25mm x 102mm (1 inch by 4 inch) wood let-in-bracing, metal strap cross bracing, inset shear panels and structural sheathing at corners and at regular intervals to meet lateral loads. Always consult local building codes for appropriate solution.

Fastener Spacing to Attach EnergyShield®/EnergyShield® CGF

- EnergyShield/EnergyShield CGF field—every 406 mm (16 inch) on center. EnergyShield/EnergyShield CGF perimeter—every 305 mm (12 inch) on center. Place perimeter fasteners 9.5 mm (3/8 inch) from edge of board. When 44 mm (1 3/4 inch) or larger diameter washer style fastener is used, one fastener at perimeter joints can bridge two boards.
- Drive correct length fastener flush to EnergyShield/ EnergyShield CGF surface. Do not countersink fastener or washer.

EnergyShield/EnergyShield CGF Layout

- Use maximum length EnergyShield/EnergyShield CGF to minimize joints.
- Cut or split EnergyShield/EnergyShield CGF to fit between masonry ties if applicable or purchase EnergyShield/ EnergyShield CGF 406 mm (16 inch) or 610 mm (24 inch) wide.

- For a footing with a masonry veneer brick ledge, attach bottom edge of first course of EnergyShield/EnergyShield CGF to structural sheathing or sill plate 6.5 mm (1/4 inch)–12.7 mm (1/2 inch) above footing to allow clearance for drainage. If wood framing is installed flush with footing, place bottom edge of first course of EnergyShield/EnergyShield CGF even with bottom edge of structural sheathing or sill plate.
- Stagger EnergyShield/EnergyShield CGF joints from those of underlying exterior structural sheathing.
- Place the bottom edge of first course of EnergyShield/ EnergyShield CGF flush with exterior structural sheathing or bottom plate.
- Locate EnergyShield/EnergyShield CGF so that starting and ending edges overlap at outside and inside corners and are fastened to the nearest wood stud or blocking.
- Fit EnergyShield/EnergyShield CGF tight at all joints, penetrations and features.
- Place top edge of last course of EnergyShield/ EnergyShield CGF flush with vertical termination of structural sheathing or top plate.

IMAGE 1: WOOD FRAME WITH STRUCTURAL SHEATHING, ENERGYSHIELD AND BRICK VENEER OR EXTERIOR SIDING

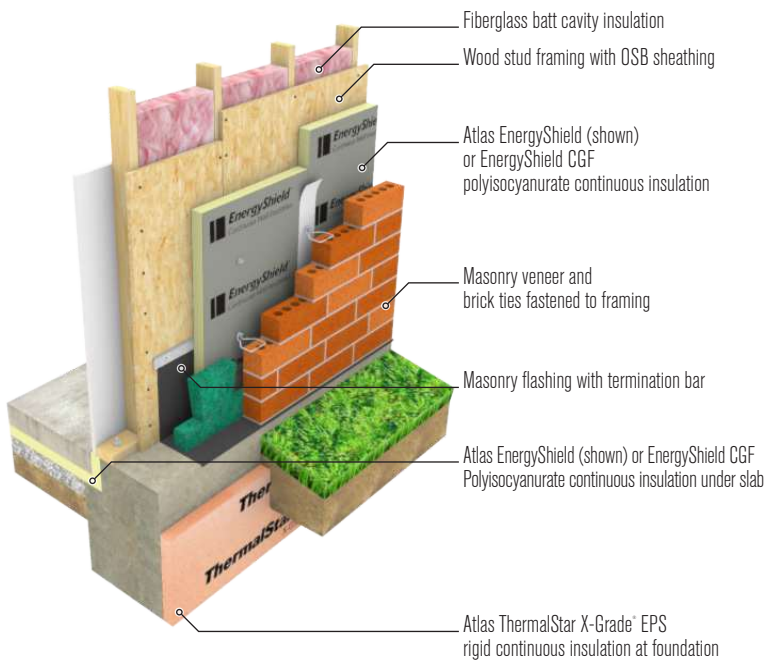
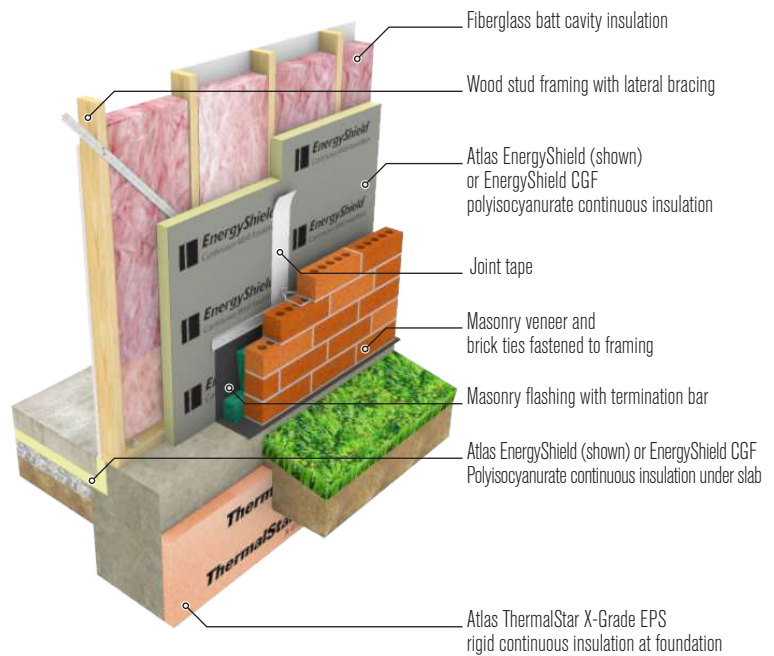


IMAGE 2: WOOD FRAME WITH LATERAL BRACING, ENERGYSHIELD WITH BRICK VENEER OR EXTERIOR SIDING



Note #3: For multiple layer EnergyShield/EnergyShield CGF installations, offset vertical joints between first and second layers of EnergyShield/EnergyShield CGF by at least one stud cavity and horizontal joints by at least 152 mm (6 inch).

Note #4: Multiple layer EnergyShield/EnergyShield CGF installations may require specialty fasteners with sufficient length and engineering to span total EnergyShield/EnergyShield CGF thicknesses of 25.4 mm (1 inch) and greater. EnergyShield/EnergyShield CGF fasteners by Rodenhouse, CI Windlock and Hilti or equivalent are such examples. First layer may be tacked or glued in place until the second layer is installed with fasteners through to structure.

Note #5: Exterior cladding fastening systems which fasten to wood stud framing through EnergyShield/EnergyShield CGF are often sufficient to fasten EnergyShield/EnergyShield CGF for a complete installation. In these cases, the installer can determine sufficient fasteners or adhesives to temporarily secure EnergyShield/EnergyShield CGF to meet project environmental conditions until the cladding system can anchor EnergyShield/EnergyShield CGF to structure.

APPLICATION #2

Installation of EnergyShield/EnergyShield CGF direct to wood/metal stud framing for interior insulation with a 12.7 mm (½ inch) gypsum thermal barrier.

EnergyShield®/EnergyShield® CGF Orientation

- Fasten EnergyShield/EnergyShield CGF to wood/metal stud framing with printed facer visible.
- Install EnergyShield/EnergyShield CGF with long edges either parallel or perpendicular to wood/metal stud framing.

Fasteners to Attach EnergyShield®/EnergyShield® CGF

- 11 mm (7/16 inch) head galvanized roofing nails, 19 mm (¾ inch) wood stud framing penetration.
- 6D ring shank nails with 24 mm (15/16 inch) diameter plastic washers, 19 mm (¾ inch) wood stud framing penetration.
- 11 mm (7/16 inch) crown 16 gauge staples, minimum 12.7 mm (½ inch) wood stud framing penetration.
- 44 mm (1¾ inch) or larger diameter washer style fasteners, minimum 19 mm (¾ inch) wood stud framing penetration or 6.5 mm (¼ inch) minimum for metal stud framing. Plasti-Grip® CBW by Rodenhouse or equivalent.

Fastener Spacing to Attach EnergyShield/EnergyShield CGF

- EnergyShield/EnergyShield CGF field—every 406 mm (16 inch) on center. EnergyShield/EnergyShield CGF perimeter—every 305 mm (12 inch) on center. Place perimeter fasteners 9.5 mm (¾ inch) from edge of board. When 44 mm (1¾ inch) or larger diameter washer style fastener are used, one fastener at perimeter joints can bridge two boards.
- Drive correct length fastener flush to EnergyShield/EnergyShield CGF surface. Do not countersink fastener or washer.

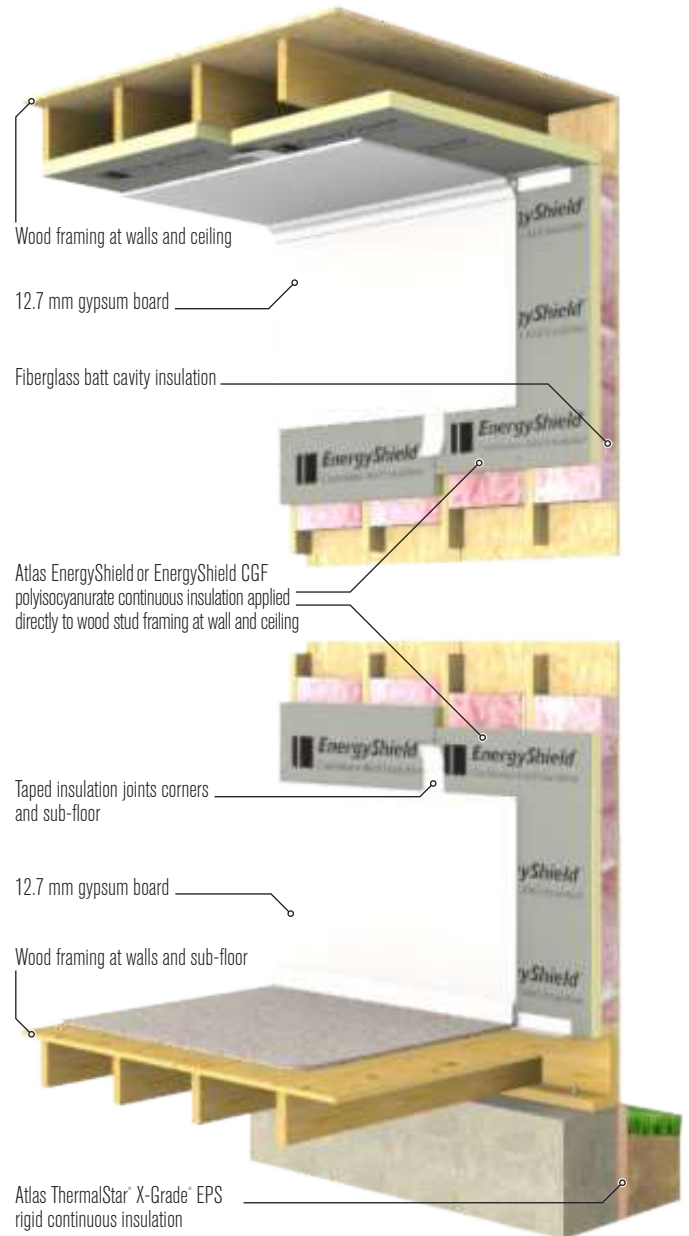
EnergyShield®/EnergyShield® CGF layout

- Use maximum length EnergyShield/EnergyShield CGF to minimize joints.
- Place the bottom edge of first course of EnergyShield/EnergyShield CGF flush with sub-floor or finish floor.
- Locate EnergyShield/EnergyShield CGF so that starting and ending edges overlap at outside and inside corners and are fastened to the nearest wood stud or blocking.
- Fit EnergyShield/EnergyShield CGF tight at all joints, penetrations and features.
- Place top edge of last course of EnergyShield/EnergyShield CGF flush with vertical termination of top plate.

Install 12.7 mm (½ inch) Gypsum Thermal Barrier

- In this application a 12.7 mm (½ inch) interior gypsum board thermal barrier or other CAN/ULC-S124 compliant cover is required to cover EnergyShield/EnergyShield CGF.
- Refer to specific gypsum board manufacturer's instructions for attaching gypsum board to framing through foam board.

IMAGE 3: WOOD OR METAL FRAMING, BATT INSULATION IN THE STUD CAVITY, RIGID FOAM INSULATION FINISHED WITH 12.7 MM (½ INCH) GYPSUM THERMAL BARRIER



APPLICATION #3

Installation of EnergyShield/EnergyShield CGF over masonry wall for interior or exterior continuous insulation.

General

- Exterior CI—Where EnergyShield/EnergyShield CGF does not act as sheathing membrane, ensure the separately installed air, moisture, vapor barrier is properly installed/cured prior to installing EnergyShield/EnergyShield CGF.
- Interior CI—Ensure exterior waterproofing is installed and functioning prior to installing EnergyShield/EnergyShield CGF.
- Seal EnergyShield/EnergyShield CGF joints as required.

Orientation for Masonry Wall

- Fasten or adhere EnergyShield/EnergyShield CGF to face of masonry wall with printed facer visible.
- For footings with masonry veneer brick ledges, place bottom edge of first course of EnergyShield/EnergyShield CGF 6.5 mm (1/4 inch)–12.7 mm (1/2 inch) above footing to allow clearance for drainage.
- Install EnergyShield/EnergyShield CGF with long edges parallel to footing. Accessories such as masonry ties or other cladding attachments may dictate suitable orientation.

Fasteners for Masonry Wall When Brick Ties are Installed Through EnergyShield/EnergyShield CGF Joints

- Masonry fastener with minimum 60 mm (2 3/8 inch) diameter washer, 25.4 mm (1 inch) minimum masonry penetration. Plasti-Grip® Grip PMF Fastener by Rodenhouse or equivalent.

Fastener Spacing for Masonry Wall

- EnergyShield/EnergyShield CGF field—every 406 mm (16 inches) on center. EnergyShield/EnergyShield CGF perimeter—every 305 mm (12 inches) on center. One 60 mm (2 3/8 inch) washer style fastener at joint can bridge two boards.
- Drive correct length fastener flush to EnergyShield/EnergyShield CGF surface. Do not countersink fasteners or washers.

EnergyShield/EnergyShield CGF Adhered to Masonry Wall

- An alternative to using fasteners alone, adhere EnergyShield/EnergyShield CGF to masonry wall or over the air and vapour barrier with suitable construction adhesive. Follow adhesive manufacturer's installation instructions for conditions, preparation, installation and curing time.

Layout for Masonry Wall

- Use maximum length EnergyShield/EnergyShield CGF to minimize joints.
- Stagger EnergyShield/EnergyShield CGF joints in horizontal rows from one course to the next a minimum of 152 mm (6 inches) so no two vertical joints meet.
- Cut or split EnergyShield/EnergyShield CGF to fit between masonry ties or purchase EnergyShield/EnergyShield CGF 406 mm (16 inches) or 610 mm (24 inches) wide.
- Overlap EnergyShield/EnergyShield CGF at corners. Fit EnergyShield/EnergyShield CGF tight at all joints, penetrations and features.
- Install masonry ties, exterior claddings or interior finishes per manufacturer's instructions and registered design professionals specification.

Interior Masonry Wall

- Secure EnergyShield/EnergyShield CGF to interior masonry walls or ceilings using cut nails, adhesive, a combination of both or with metal/wood furring. Follow preceding instructions for orientation, layout, spacing of fasteners and adhesive.
- Where EnergyShield/EnergyShield CGF is the interior thermal and vapor control layer, install continuously over the entire surface of the exterior masonry wall and carefully seal/tape all penetrations, joints and transitions to dissimilar materials.
- A 12.7 mm (1/2 inch) interior gypsum board or other CAN/ULC-S124 compliant cover is required over interior installations of EnergyShield/EnergyShield CGF. Hold EnergyShield/EnergyShield CGF in place until wood/metal furring is attached through foam to structure. See gypsum board manufacturer's instructions for attachment to furring.

IMAGE 4: POURED CONCRETE OR CMU MASONRY CAVITY WALL WITH EXTERIOR CONTINUOUS INSULATION

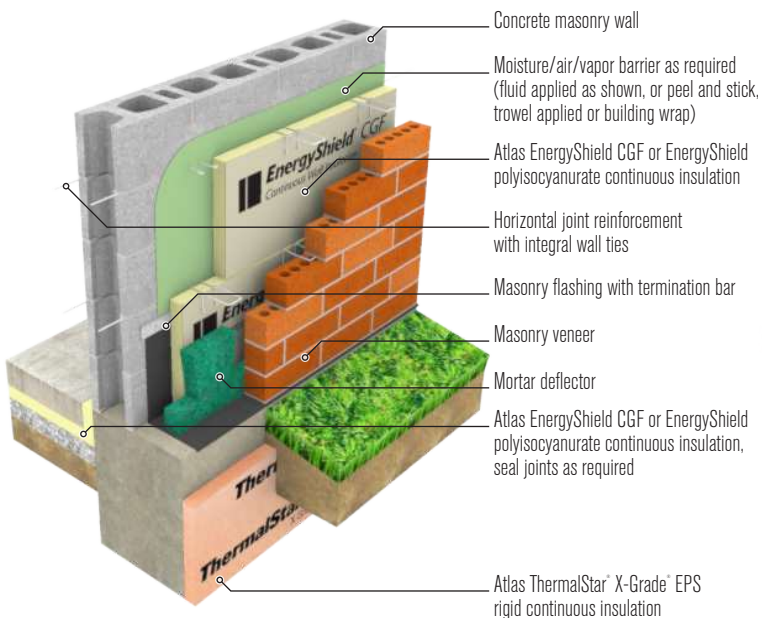
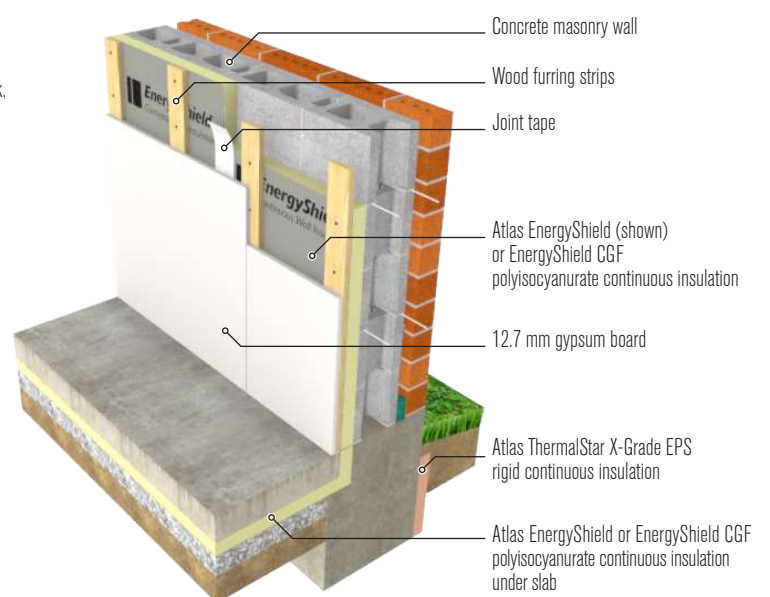


IMAGE 5: POURED CONCRETE OR CMU MASONRY CAVITY WALL WITH INTERIOR CONTINUOUS INSULATION



APPLICATION #4

Detail EnergyShield/EnergyShield CGF as a sheathing membrane and drainage plane.

Follow all requirements in Application #1 then proceed as follows. See Note #9.

Brick Ties

- Consider using a threaded fastener style tie such as a Heckman "Posi-Tie" or Hohmann & Barnard "2 Seal Tie" or equivalent to reduce/eliminate the amount of horizontal EnergyShield*/EnergyShield* CGF joints created by brick ties which fasten directly to wood/gypsum sheathing or wood/metal stud framing such as corrugated sheet metal anchors or straps.

Flashing Tape

- Prepare facer at joints of EnergyShield/EnergyShield CGF per flashing tape manufacturer's recommended instructions to ensure a clean, dry, bondable surface. Use a sample of flashing tape to test adhesion prior to taping. Only prepare as much EnergyShield/EnergyShield CGF facer as you intend to tape in a day's work.
- Apply minimum 76 mm (3 inches) wide flashing tape to joints of clean, dry EnergyShield/EnergyShield CGF. See Note #6.
- Use tape manufacturer's recommended primer for improved adhesion.
- Use a 76 mm (3 inch) "J" Roller with firm pressure to apply flashing tape centered over all joints, corners, fastener heads and joints between dissimilar materials.
- Center flashing tape on vertical joints starting at lowest point and work upward in shingle fashion to ensure correct lap of intersecting tapes for water shed.
- "Terminate" horizontal flashing joints by adhering 2/3 of a self flashing 2–3 mil acrylic sheathing tape to EnergyShield/EnergyShield CGF and remaining 1/3 to the thicker flashing tape. See Figure A and Note #7.

Prepare Rough Openings

- Install pan flashing tape in rough opening prior to installation of window, door, feature and/or penetration.
- Pan flash the window/door sill with flashing tape to direct moisture to face of EnergyShield/EnergyShield CGF. Extend pan flashing tape no less than 152 mm (6 inches) up each side of the rough jam and no less than 38 mm (1 1/2 inches) on to EnergyShield/EnergyShield CGF. See Figure A.

Windows and Doors

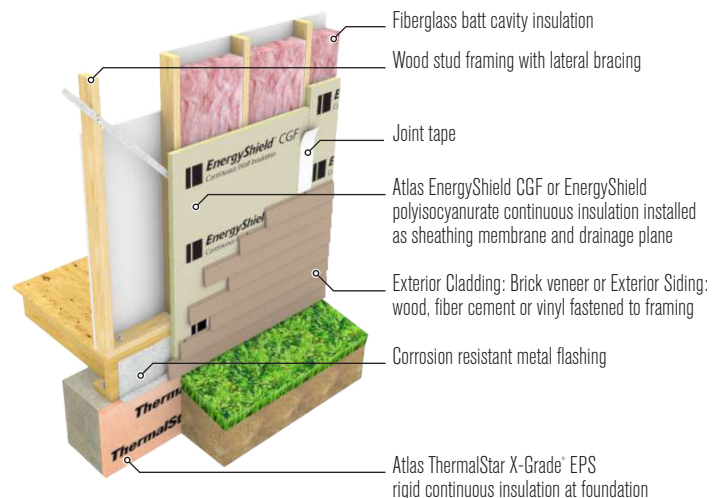
- Use flange-type windows and doors. See Figure A.
- Install window, door, feature and penetration according to applicable code and/or window/door manufacturer instructions.

- Prior to setting window/door in to rough opening, apply a continuous bead of sealant to the header and side window flanges only. See Note #8.
- After window has been properly installed in rough opening and fastened to structure, install window side flashing tapes. Completely cover the window side flanges extending a minimum of 50 mm (2 inches) on to the face of EnergyShield/EnergyShield CGF. See Figure A.
- Install window head flashing tape completely covering the window head flange and each window side flashing to extend onto EnergyShield/EnergyShield CGF no less than 50 mm (2 inches) past side window flashing tapes. See Figure A.
- "Terminate" header flashing tape with a self flashing 2–3 mil acrylic sheathing tape by adhering 2/3 sheathing tape to EnergyShield/EnergyShield CGF and remaining 1/3 to the thicker flashing tape. See Figure A.

Penetrations and Features

- Seal wall penetrations and features such as pipe, electrical access and dryer vents with compatible sheathing tape, flashing tape, caulk and/or sealant.
- "Terminate" uppermost horizontal flashing tape with a self flashing 2–3 mil acrylic sheathing tape by adhering 2/3 sheathing tape to EnergyShield/EnergyShield CGF and remaining 1/3 to the thicker flashing tape.

IMAGE 6: LATERALLY BRACED WOOD FRAMING, CONTINUOUS INSULATION DETAILED AS A WRB AND DRAINAGE PLANE WITH TAPED JOINTS AND CLADDING FASTENED THROUGH FOAM TO STRUCTURE



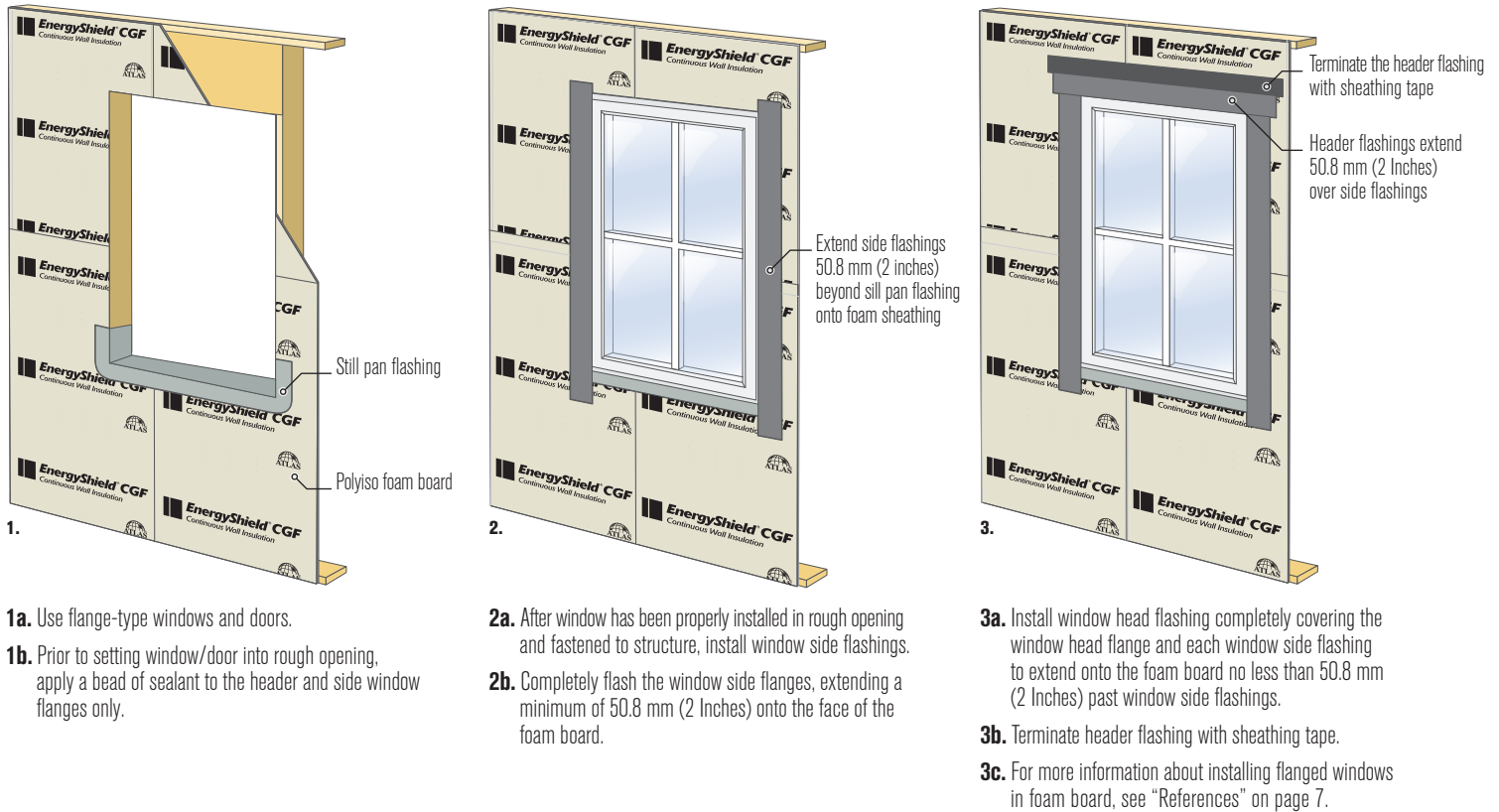
Note #6: There are several building tapes that may be used on EnergyShield/EnergyShield CGF. Consult tape manufacturer for specific compatibility.

Note #7: Leading building science experts often recommend thicker flashing tapes such as a 18 mil or greater flashing tape be "terminated" with a second application of thinner "self flashing" sheathing tape. The second application of a self flashing sheathing tape is a "belt and suspenders" approach that promotes water shed and prevents any moisture from getting behind header and other horizontal flashing tapes due to separation from "fish mouth" or poor adhesion. Thinner acrylic or butyl flashing tapes such as 10–15 mils tend to be self-flashing and may not need to be terminated with a sheathing tape to promote water shed.

Note #8: Common trade practice is to not apply sealant to bottom window flange so that any trapped moisture may escape the sill pan flashing and drain. For the same reason, the bottom window flange is also not typically flashed with tape. Consult window manufacturer's instructions for specific flashing guidance when installing flange type windows over rigid EnergyShield/EnergyShield CGF.

Note #9: In applications where a sheathing membrane is installed over EnergyShield/EnergyShield CGF, follow sheathing membrane manufacturer's instructions for attaching to/ or through EnergyShield/EnergyShield CGF. In applications where sheathing membrane is installed behind EnergyShield/EnergyShield CGF, taping of EnergyShield/EnergyShield CGF seams is not recommended unless all other EnergyShield/EnergyShield CGF flashing details are followed. It is strongly advised that penetrations in the wall envelope such as windows, doorways, etc. are flashed to the exterior surface of EnergyShield/EnergyShield CGF, regardless of the presence of a separate sheathing membrane under EnergyShield/EnergyShield CGF layer.

FIGURE A: FLANGED WINDOW INSTALLATION



1. Use flange-type windows and doors.
- 1b. Prior to setting window/door into rough opening, apply a bead of sealant to the header and side window flanges only.
- 2a. After window has been properly installed in rough opening and fastened to structure, install window side flashings.
- 2b. Completely flash the window side flanges, extending a minimum of 50.8 mm (2 Inches) onto the face of the foam board.
- 3a. Install window head flashing completely covering the window head flange and each window side flashing to extend onto the foam board no less than 50.8 mm (2 Inches) past window side flashings.
- 3b. Terminate header flashing with sheathing tape.
- 3c. For more information about installing flanged windows in foam board, see "References" on page 7.

APPLICATION #5

Installation of EnergyShield/EnergyShield CGF as under slab insulation.

Site Preparation

- Prepare suitable, drainable sub-grade, aggregate base or a combination of both.
- Cover installation area with protective membrane, minimum 10 mil polyethylene or equivalent.
- Overlap membrane joints by 610 mm (24 inches) and tape overlapping membrane joints with compatible tape.
- Extend membrane 1.8 meter (6 foot) on all sides of installation area.

Orientation

- Place first course of EnergyShield®/EnergyShield® CGF on membrane with printed side visible.

Layout

- Stagger joints of subsequent layers so that no two joints meet.

Joint Treatment

- Taping joints of initial, intermediate through final layers of foam board is recommended.

Membrane Cover

- Fold the 1.8 meter (6 foot) extensions of membrane over the last course of EnergyShield/EnergyShield CGF taping membrane ends to board facer.
- Apply a layer of 10 mil membrane over the last course of EnergyShield/EnergyShield CGF. Overlap membrane joints by 610 mm (24 inches) and tape overlapping membrane joints with compatible tape. Ensure membrane extends 152 mm (6 inches) past each edge and down each side. Secure to membrane with compatible tape or bury/back-fill with sub-grade or aggregate.

REFERENCES AND HELPFUL LINKS

- Technical Evaluation Report—TER #1205-05, Construction Details for the Use of Foam Plastic Insulating Sheathing (FPIS) in Light-frame Construction, SBC Research Institute, November 2012.
- Guidance on Taped Insulating Sheathing Drainage Planes: Final Report, Aaron Grin and Joseph W. Lstiburek, Building Science Corp., December 2012.
- Stuck On You, by Joseph W. Lstiburek, ASHRAE Journal, February 2013.
- Engineering Evaluation Report-Guide to Attaching Sheathing, Furring and/or Cladding through Continuous Foam Insulation to Wood Framing, Steel Framing, Concrete and CMU Substrates with Trufast SIP TP, SIP LD and Tru-Grip Fasteners, NTA, Inc., March 2012.

About Atlas

Atlas EnergyShield® products are designed and manufactured in the United States and Canada by Atlas Roofing Corporation for the ultimate utility in modern building envelopes. For 30-plus years, Atlas Roofing Corporation has served as an innovative, customer-oriented manufacturer of residential and commercial building materials. Atlas Roofing Corporation promotes 18 state-of-the-art manufacturing plants in North America, with eight dedicated to the Atlas EnergyShield product family.

Atlas International Polyiso Manufacturing

Coverage to support LEED and local building needs. Most U.S. and Canada locations can help earn LEED credit for local/regional materials, with <500 mile distance from project to production facility.

Why Atlas EnergyShield?

Leading performance compared with Extruded Polystyrene (XPS), Expanded Polystyrene (EPS) and rock wool. True CI with no thermal bridging.

Air and moisture barriers that are field proven, code compliant and material tested. Energy efficiency levels to match IECC and current building codes, as well as ASHRAE 90.1, required per LEED

Meets fire ratings and codes with low flame/smoke propagation, and a preferred response to fire over polystyrenes. It's stable, durable, non-corrosive and compatible with solvents.

Atlas EnergyShield is lightweight and easy to work with standard tools and available fasteners, and can be installed in almost any temperature.

Atlas provides a 15-year thermal performance warranty—for CI that lasts.

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