

CLIP & CAULK™

SYSTEM GUIDE



LAMINATORS
Composite Panel Solutions

Effective March 2020

Tech Support: 800.523.2347 LaminatorsInc.com

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Denotes Additional Required Downloadable Content

SYSTEM OVERVIEW

The new and improved Back-Drained and Ventilated Clip & Caulk installation system from Laminators provides the traditional look of a shop-fabricated wet seal system without the added hassle and cost of panel fabrication. The back-drained and ventilated sub-framing provides enhanced system performance through improved moisture management and increased ventilation.

When combined with Omega CI, Laminators' new and improved Back-Drained and Ventilated, Field-Fabricated installation system offers an effective solution for veneer installations over continuous insulation while balancing thermal performance, water management, and fire resistance code requirements.

The Clip & Caulk installation system has been successfully tested to the NFPA 285 standard for multi-story fire testing for installations over Omega CI and exterior-grade, glass-mat faced gypsum sheathing. Refer to "System Applications & Limitations" on page 6 for additional information on NFPA 285 compliance.

WARRANTY DISCLAIMER

Failure to follow ANY of the guidelines contained within this document or those referenced on LaminatorsInc.com will void your warranty. For technical support, call 800.523.2347.



IMPORTANT NOTICE

This document is NOT comprehensive for installation, bidding, or design. Approved materials, CAD details, and technical bulletins are REQUIRED to be used in conjunction with this guide. Visit LaminatorsInc.com for the latest documents regarding this panel system.



LAMINATORS
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UNDERSTANDING THE CODE REQUIREMENTS

DEFINING THE EXTERIOR WALL ENVELOPE

To understand the features and benefits of Omega CI combined with Laminators' new and improved Back-Drained and Ventilated, Field-Fabricated installation systems, it is important to define the concept of a building envelope and identify the accompanying building code requirements. While the term building envelope can be used to describe the entirety of the skin of a building, inclusive of the roof elements and below-grade foundation features, the application of Aluminum Composite Material (ACM) panel systems is isolated to the exterior wall envelope.

The exterior wall envelope plays a multifunctional role in the performance of the overall building envelope and must accomplish the following:

- Manage moisture flow (liquid water and water vapor) through the exterior wall
- Minimize the impact of exterior air temperature on interior conditioned space
- Retain the majority of building-generated heat or conditioned air
- Control the spread of fire across the exterior
- Provide structural support for an aesthetic veneer system



BALANCING COMPLEX CODE REQUIREMENTS

The International Building Code (IBC) is the model code that defines safe building and design practices and has been adopted throughout the United States (adopted versions vary by state) with new versions of the code published on a three-year cycle. The IBC has established performance requirements for:

- Water management
- Thermal performance (continuous insulation)
- Fire resistance

These performance requirements pertain to the entirety of the exterior wall envelope including any veneer or cladding system.

Unfortunately, complying with the building code requirements for the exterior wall envelope forces designers and installers into a complex balancing act. Meeting any one performance requirement in isolation of the others can lead to a conflict or unbuildable condition. Achieving a code-compliant ACM veneer assembly often requires the use of proprietary solutions that involve complex detailing and planning, thereby increasing labor and material costs while reducing the flexibility for making adjustments during construction.

The following pages will serve as a primer in identifying the installation challenges associated with code-mandated water management, thermal performance, and fire resistance requirements while examining how Omega CI, combined with Laminators' new and improved Back-Drained and Ventilated, Field-Fabricated installation systems, offers the optimal solution.



UNDERSTANDING THE CODE REQUIREMENTS

WATER MANAGEMENT & VENTILATION

Code-Required Water Controls

Section 1403 of the IBC requires that exterior walls provide the building with a weather-resistant exterior envelope that meets the following requirements:

- Prevents the accumulation of water within the wall assembly by incorporating a continuous, water-resistive barrier on the substrate behind the exterior wall veneer system
- Provides a means for draining any water that enters the wall assembly to the exterior, including the use of flashings at various locations and interfaces across the building envelope

Defining Back-Drained & Ventilated

What the code does not explicitly state is that there must be a means present to promote drying of excess bulk and diffused water that primary water controls (i.e., flashings) are not able to completely manage out of the wall assembly. Drying of excess water is achieved through the introduction of ventilation to promote air flow within the cavity behind the exterior wall veneer system. The term **“Back-Drained and Ventilated”** is derived from the requirements that exterior walls must allow for *drainage behind* the exterior veneer system to prevent bulk water accumulation and provide *ventilation* as a means to keep the wall assembly dry.

Why Back-Drained & Ventilated Installation Systems are the Practical Option

An exemption to the exterior wall performance requirements of IBC Section 1403 exists that allows the use of exterior wall veneer systems that are not back-drained and ventilated (i.e., barrier systems) provided these systems are able to pass a specific testing protocol. Test assemblies must include all wall openings, terminations, interfaces with dissimilar materials, and joint details intended for use in the exterior wall envelope, and only those details that pass the test may be used in the actual construction of the exterior wall veneer system. The testing protocol involves subjecting the test assemblies to a simulated wind-driven rain under a pressure-differential with pass/fail criteria that allows for no water to pass through the system after a minimum test duration of 2 hours.

Due to the exhaustive nature of the exemption testing protocol, the extensive amount of coordination required to represent actual constructed conditions during testing, and the strict pass/fail criteria, it is typically in the best interest of the Design Professional of Record to comply with the performance requirements of IBC Section 1403 and elect the use of a back-drained and ventilated exterior veneer system. Barrier systems are required to be perfectly sealed over the life of the veneer system and rely heavily on other components being equally perfect (i.e., copings and interfaces with dissimilar materials); therefore, back-drained and ventilated veneer systems provide the greatest longevity from a water management standpoint.



UNDERSTANDING THE CODE REQUIREMENTS

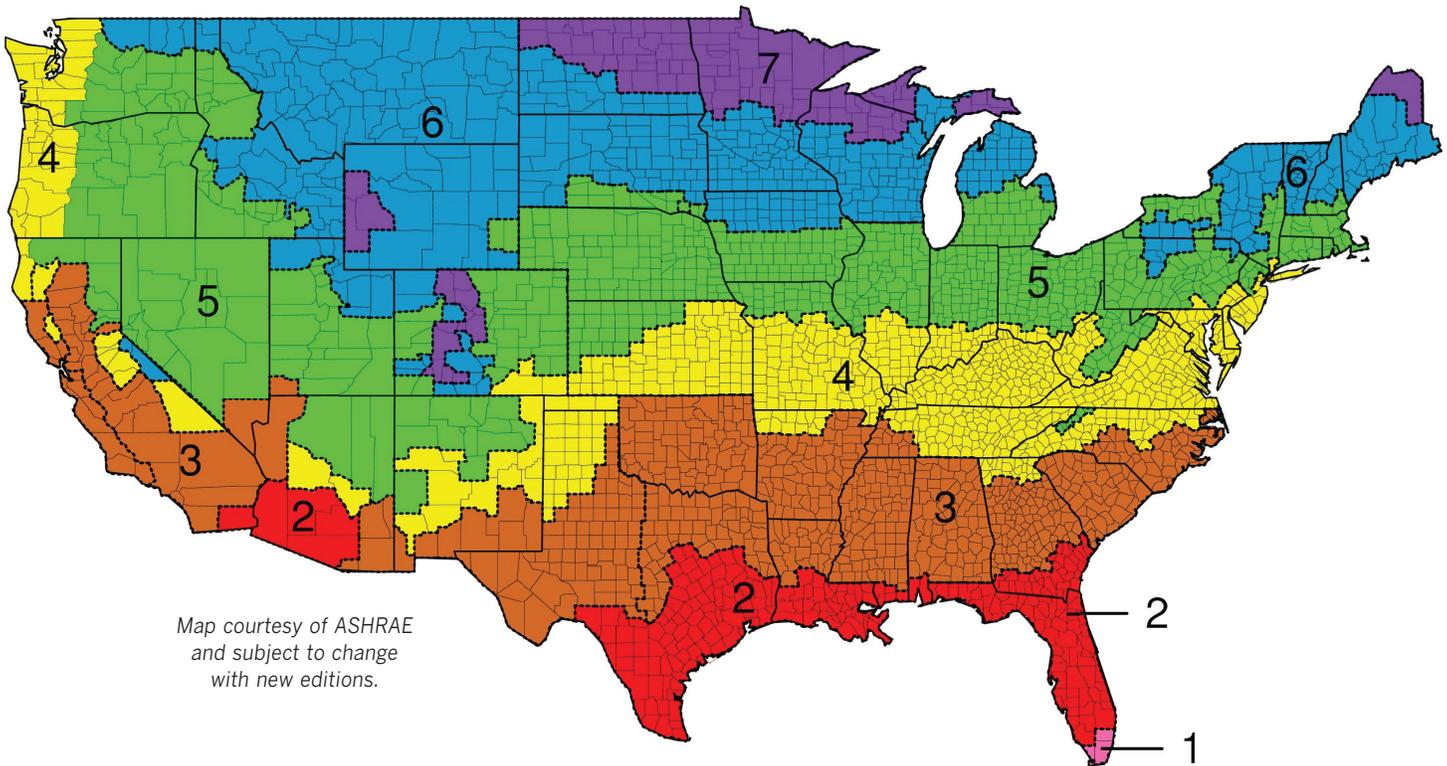
THERMAL PERFORMANCE & CONTINUOUS INSULATION

Understanding Energy Code Requirements

Chapter 13 of the International Building Code (IBC) requires that buildings be designed and constructed in accordance with the International Energy Conservation Code (IECC). While the IECC offers its own compliance criteria for commercial energy efficiency, it recognizes ANSI/ASHRAE/IES Standard 90.1 “Energy Standard for Buildings Except Low-Rise Residential Buildings.”

- Both the IECC and ASHRAE 90.1 are formally adopted as code once a state or other authority having jurisdiction (AHJ) adopts the latest version of IBC
- The IECC and ASHRAE 90.1 define prescriptive R-value minimums for continuous insulation in the building envelope for various types of building construction based on geographic climate zones
- R-value measures the resistance of a material to the flow of heat; the higher the R-value, the more effective a material is at resisting the flow of heat

The most recently adopted versions of ASHRAE 90.1 and IECC are now requiring continuous insulation in above-grade, steel-framed wall construction across the majority of the United States. The IECC and ASHRAE 90.1 each publish a climate zone map of the United States dividing the country into eight distinct Climate Zones. Depending on which version of IECC or ASHRAE has been adopted by a state or local AHJ, only Climate Zones 1 and 2 exclude continuous insulation requirements (newer versions of IECC and ASHRAE now have continuous insulation requirements in Climate Zone 2).



UNDERSTANDING THE CODE REQUIREMENTS

THERMAL PERFORMANCE & CONTINUOUS INSULATION *(cont'd)*

Installation Challenges with Continuous Insulation

Integrating continuous insulation requirements into an ACM panel veneer system is complex. The challenges associated with common installation methods can be summarized as follows:

1. Through-fastening sub-framing systems over continuous insulation elements ultimately relies on the compressive strength and long-term dimensional stability of the insulation product. Inconsistent initial crushing and long-term creep deformation of foam insulation products have the potential to result in unpredictable and uncontrollable out-of-plane conditions in the installed panel system over time. These out-of-plane conditions can lead to poor system performance and aesthetic issues, especially with panels that have metallic finishes.
2. Installation of sub-framing members (Z-girts, hat channels, etc.) that attach to the structure behind continuous insulation succeeds in providing a dimensionally stable substrate for panel installation by removing the need to through-fasten the rigid insulation products. However, metals create a pathway for thermal bridging that will reduce the overall R-value of the wall assembly.
3. Management of bulk and diffused water varies significantly among types of insulating materials. It is often difficult to balance requirements for drainage and ventilation with the complexity of a continuous insulation requirement behind a panel system. Oftentimes, water becomes trapped behind or within the insulating material and is unable to effectively dry out.
4. Proprietary bracket systems designed to stand the panel system off of the substrate to facilitate continuous insulation require complex detailing considerations that can significantly increase design and installation costs for a given project.

FIRE RESISTANCE & NFPA 285

ACM is classified as a combustible material and is therefore subject to limitations when installed on buildings other than Type V construction. Per Section 1407 of the IBC, unless specific exemption criteria are met, all ACM systems must be tested for compliance with NFPA 285 "Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components."



Fire Resistance Requirements for Foam Plastics

Foam plastic is one of the products commonly used to provide the now-requisite layer of continuous insulation in exterior wall assemblies. Foam plastic insulation is a petroleum-based product that will combust with sufficient heat, therefore triggering the requirement for exterior wall assemblies containing foam plastic insulation to be compliant with NFPA 285 regardless of whether the ACM veneer portion of the assembly meets the Section 1407 exemption criteria.

FEATURES & BENEFITS: BACK-DRAINED & VENTILATED + OMEGA CI

Features of Back-Drained & Ventilated Systems

Laminators' Back-Drained and Ventilated, Field-Fabricated installation systems (1-Piece, Tight-Fit Molding; Clip & Caulk) with Omega-Lite panels use aluminum extrusions as sub-framing members to create a 7/8"-deep cavity behind the panel veneer.

- Additional cavity space promotes air flow
- A drainage path is easily achieved through gaps in the aluminum sub-framing members
- Maintains the aesthetic familiarity of Laminators' ACM systems while refining system performance through improved moisture management and the allowance for air exchange

Features of the Omega CI System

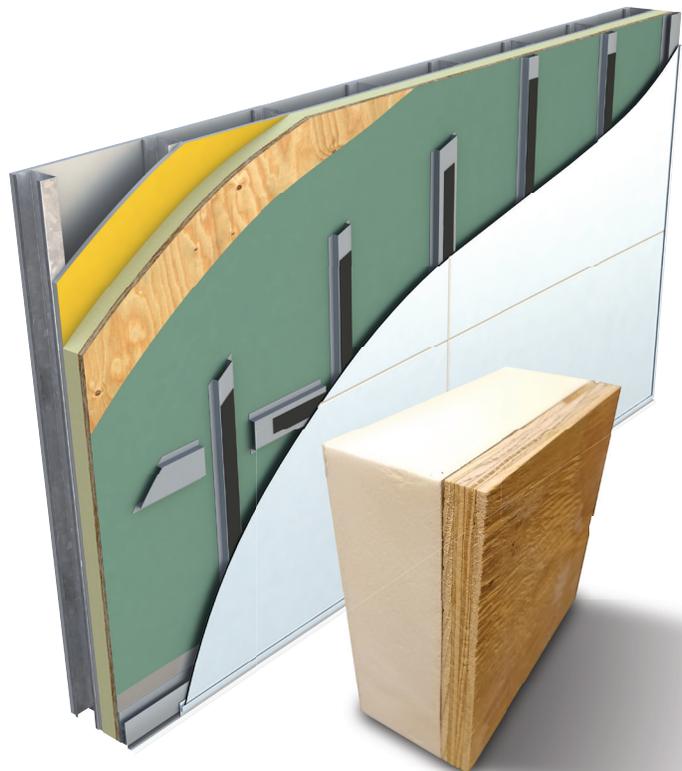
Omega CI is a continuously insulated structural system comprising a closed-cell, polyisocyanurate ("polyiso") foam core bonded to a coated glass backer and 5/8" fire-treated plywood as an exterior face. Omega CI is available in 4' x 8' sheets in 2.1" thickness (contact Laminators technical support for alternative thickness availability).

- Solves the installation challenges associated with continuous insulation (refer to "Understanding the Code Requirements," page 4)
 - The plywood layer provides a dimensionally stable substrate by normalizing attachment loads (avoiding deformation of the rigid foam insulation)
 - The foam insulation layer provides thermal resistance to achieve the desired R-value for the wall assembly without causing thermal bridging
 - Bulk and diffused water is managed at the face of the plywood sheathing layer (in combination with an air and water barrier) to avoid trapping water within the insulating layer
 - Does not require complex detailing and can be installed in a similar manner to traditional plywood sheathing
- Combines the installation of continuous insulation and sheathing into one component
- 2.1" thickness provides R-9.6 for IECC/ASHRAE 90.1 prescriptive continuous insulation requirement
- The plywood layer is fire-treated to allow for NFPA 285 compliance

Benefits of Back-Drained & Ventilated + Omega CI

Combining Laminators' Back-Drained and Ventilated, Field-Fabricated installation systems with Omega CI and an air and water barrier offers a simple design solution for installations requiring continuous insulation while maintaining code-mandated performance requirements for water management and fire resistance.

- Laminators' systems install directly to the plywood sheathing layer of Omega CI
 - Removes complex detailing and extensive planning associated with most proprietary "bracket-type" solutions for installation of ACM veneer systems over continuous insulation
 - Members can easily be relocated during construction providing installers with the flexibility necessary to accommodate changing field conditions
- Provides designers and installers the freedom to choose any air and water barrier product that can be installed over plywood sheathing (NFPA 285 requirements were met using Fire Resist Barritech VP by Carlisle Coatings & Waterproofing)
 - Panel adhesive interfaces directly with sub-framing members, removing the potential for panel adhesive incompatibility with air and water barrier products



SYSTEM APPLICATIONS & LIMITATIONS

OMEGA-LITE® VENEER SYSTEM LIMITATIONS

General Limitations

Laminators' Back-Drained and Ventilated, Field-Fabricated installation systems (1-Piece, Tight-Fit Molding; Clip & Caulk) are designed to be installed as veneer systems for exterior wall envelopes. The systems must be installed over a suitable substrate as indicated within this guide and must include the back-drained and ventilated sub-framing as part of the installation.

Laminators' Back-Drained and Ventilated, Field-Fabricated installation systems are **NOT** intended for the following applications:

- Structural wall panels
- Primary water control layers
- Top-side horizontal applications (e.g., copings, roofing returns, cornices) due to the potential for water infiltration from snow and rain events
 - Laminators recommends the installation of flat stock aluminum in place of panels for all top-side horizontal applications. Color-matched flat stock aluminum is available from Laminators.
 - Laminators defines top-side horizontal applications as any surface with a slope measuring less than 60 degrees from the horizontal plane (or a slope greater than 30 degrees measured from the vertical plane.

Exterior Wall Envelope vs. Architectural Features

When installed over an architectural feature, Laminators' field-fabricated installation systems are permitted to have the back-drained and ventilated sub-framing omitted. Laminators defines an architectural feature as a portion of the building that is not part of the exterior wall envelope, such as canopies and decorative banding. Typically, architectural features are not required to maintain the same code-mandated air and thermal control layers necessary to sustain conditioned building space; however, water controls must be included. The explicit determination of what portions of a building are considered part of the exterior wall envelope and which are architectural features are the responsibility of the Design Professional of Record and will need to be handled on a project-specific basis.

Please contact Laminators regarding system installation requirements for architectural features. Laminators requires a minimum level of water controls be maintained for system performance. These controls will need to be handled on a project-specific basis and will likely include the following: establishing a functional water barrier, venting for condensation, and flashings.

OMEGA CI SYSTEM LIMITATIONS

Omega CI is designed to be installed in a similar manner to traditional sheathing over an exterior wall assembly. However, it is important that designers and installers understand that Omega CI is intended to be used as a continuously insulated structural system to provide a dimensionally stable substrate for Laminators' Back-Drained and Ventilated, Field-Fabricated installation systems without sacrificing thermal performance or complicating water management and fire resistance requirements.

Omega CI is **NOT** intended for the following applications:

- Replacement of primary exterior wall sheathing
- Sheathing layers required to achieve fire ratings for exterior wall assemblies
- Sheathing layers required to achieve shear capacity for lateral force resisting systems
- Installations extending below grade

NFPA 285 COMPLIANCE

Laminators' Omega-Lite ACM panels are NFPA 285 compliant when installed in the 1-Piece, Tight-Fit Molding and Clip & Caulk installation systems over a specific tested wall assembly. **In order to provide an NFPA 285 compliant assembly, specialized detailing for window openings is required. Refer to the NFPA 285 requirements in the CAD details available at LaminatorsInc.com.**

MATERIAL HANDLING & MAINTENANCE

STORAGE & HANDLING

Material Receiving

Upon receipt of Laminators products, perform a visual inspection and inventory to identify any damages that may have occurred during shipping or any materials that may be missing. Any damages or missing materials must be noted on the bill of lading at the time of receipt and must be immediately reported to the distributor from which the product was purchased.

 **NOTE:** For 30 days from the time of delivery to the jobsite, Laminators warrants that Omega CI insulation panels will be free from plywood delamination due to manufacturing defects. Checking, leafing, splitting, and broken grain are not considered to be manufacturing defects and shall be excluded.

Storage

Omega-Lite panels and back-drained and ventilated sub-framing elements are to be stored horizontally on pallets in a dry, well-ventilated environment under the protection of a temporary or permanent roof structure. No more than 1500 pounds of panels are to be stacked on one pallet. If panels or sub-framing are to be stored in an exterior area, they must be placed under a well-ventilated, waterproof covering. Storage temperatures are not to exceed 120°F. Panels and sub-framing should be stored in an area protected from other construction activities and associated debris. Other materials shall not be stacked or placed in contact with panels and sub-framing to prevent staining, denting, or other damages.

Omega CI rigid insulation panels are double-packaged in a UV-resistant polyethylene bag designed for protection from the elements during flatbed shipment to the jobsite and short-term storage during construction. Omega CI panels must be protected from moisture and direct sunlight while on the jobsite. Outdoor storage of Omega CI for periods of time in excess of 45 days requires additional weatherproofing considerations and shall be secured under well-ventilated, waterproof coverings and elevated a minimum of 4" above ground level or as required to avoid contact with standing water.

Laminators' warranty does not cover damages related to improper storage. Storage conditions should be continuously monitored as any water infiltration, standing water, construction debris, or excessive temperatures will cause damage to the panels that will not be covered under warranty.

Handling

Omega-Lite panels are shipped with a protective masking to minimize scratching and staining during installation. Protective masking should be left on the field of the panel during installation to minimize potential damages from construction activities. Note that all masking must be removed within 2 weeks of panel installation, otherwise

removal may become difficult and the masking adhesive may affect the appearance of the panel following removal.

Handle Omega-Lite panels and back-drained and ventilated sub-framing members with clean work gloves to avoid hand injury from any sharp edges and to prevent staining of surfaces with contaminants. When moving individual panels from stacks, always lift one panel completely off the next to prevent surface scratches from construction debris. Do not slide one panel across another. Glazing suction cups are recommended to handle panels whenever possible.

Cutting

Omega-Lite panels, panel moldings, back-drained and ventilated sub-framing members, and Omega CI rigid insulation panels are shipped in standard sizes that can be cut to required installation size on the jobsite. To cut panels, moldings, and sub-framing members, use a circular saw or table saw with a carbide-tipped blade (60-tooth minimum) suitable for cutting non-ferrous metals. For cutting Omega CI, the use of a table saw is recommended. Do not remove the protective masking from the face of the Omega-Lite panel face prior to cutting. After cutting, use a deburring tool (Part No. DEBURRING TOOL) to remove burrs or sharp edges from the panels.

MAINTENANCE OF OMEGA-LITE PANELS

Cleaning

Omega-Lite panels should be cleaned at regular maintenance intervals following procedures documented in AAMA 609 & 610 "Cleaning and Maintenance Guide for Architecturally Finished Aluminum." During installation, mineral spirits or isopropyl alcohol can be used to remove uncured caulk and sealants. Never soak panels in solvents or allow solvents to be left in prolonged or continuous contact with panel surfaces as this can cause damage to panel finishes.

Scratches & Rub Marks

Touch-up paints are available from Laminators. Contact Laminators technical support for additional information.

Metallic Paint & Anodized Finishes

When installing panels with metallic and anodized finishes, it is very important that the directional arrows on the panel masking are oriented in the same direction. Color variation is a characteristic of aluminum composite panels with metallic paint and anodized finishes. Laminators **DOES NOT** warrant a color match for panels with metallic and anodized finishes.

MATERIAL HANDLING & MAINTENANCE

To ensure good color uniformity in panels with metallic finishes, periodically check adjoining panels by partially removing masking as the installation progresses. The masking should be reapplied to the panel to protect it. Should any defects be found, stop work immediately and contact Laminators for assistance.

Panel Color Coordination & Planning

Coordinate with Laminators for large projects ordered in phases to ensure the most consistent color matches between project phases.

PRE-INSTALLATION REQUIREMENTS

Substrate Compatibility & Tolerances

A structural substrate (Omega CI, plywood, OSB, CMU block, pre-cast or cast-in-place concrete) with a vapor-permeable air and water barrier is required for panel system installation. Installations directly over exterior-grade, glass-mat faced gypsum sheathing are permitted, but require an alternate layout of the back-drained and ventilated sub-framing.

Imperfections in any substrate may transfer through to the installed panel system. Prior to installation, the installer must verify that the substrate is within flatness tolerances. The maximum out-of-plane tolerance for panel installation shall be the smaller of the following:

- 1/4" in any 20' length measured vertically or horizontally, or
- 1/2" in any building elevation direction

All substrates must be structurally sound, within flatness tolerances, clean of debris, and dry. If unsatisfactory conditions are encountered, do **NOT** proceed with panel system installation. Unsatisfactory conditions should be immediately reported to the General Contractor and/or Design Professional of Record and must be corrected prior to panel installation. Laminators **DOES NOT** warranty the in-plane condition of the panel system following installation.

Water Controls & Ventilation

The system is designed to deflect bulk water at the surface of the panel veneer and manage any incidental water infiltration through the presence of an established drainage plane with an air and water barrier.

Proper flashings at roofs, parapets, wall openings (fenestrations), and other interfaces with dissimilar materials are essential to manage bulk water infiltration into the system. Weep and base wall flashings are necessary to provide a means for incidental water that enters the cavity behind the panel veneer to exit the system. Establishing ventilation (air flow) throughout the cavity is necessary to promote drying of any water that does not exit the system from weep and base wall flashings. At a minimum, venting is required at roof and parapet copings, wall opening heads and sills, grade interfaces, soffit panels, and fascia-to-soffit transition panels.

Water control and ventilation requirements will vary from project to project and the details in this manual and its related documents are intended to represent minimum requirements for Laminators' Back-Drained and Ventilated, Field-Fabricated installation systems to function as designed. Further considerations for water controls and ventilation will need to be established by the Design Professional of Record to meet specific project needs.

Installer Responsibilities

The panel installer is responsible for confirming the following prior to proceeding with installation of any Laminators panel system:

1. Confirm that the Design Professional of Record has established water controls for the project in the form of a defined drainage plane with an air and water barrier and associated flashings to manage water out of the panel system.
2. Confirm that the Design Professional of Record has established adequate ventilation to allow air flow behind the panel system for drying of any incidental water or condensation that may not be managed out of the panel system via water controls.
3. Confirm that the product accessories specified for installation (silicone caulks, fabrication sealants, adhesives) are listed as Laminators approved materials.
4. Confirm that fasteners (type, size, and spacing) and adhesive layout meet project wind load requirements as established by the Design Professional of Record.
5. Confirm that the panel system is to be installed over a compatible substrate within acceptable installation tolerances.
6. Provide temporary protections during construction to protect areas of panel installation and associated substrates from construction debris and water infiltration.
7. Ensure that no panel edges are left unsupported at the end of a work session. Confirm that all moldings and/or clips are in place along all panel edges upon completing work session.

OMEGA CI SYSTEM INSTALLATION

Omega CI rigid insulation panels (Part No. OCI-2.1-48) are installed in a similar manner to traditional plywood sheathing. Each panel consists of 5/8" fire-treated plywood sheathing bonded to polyiso foam core with a coated glass backer and is available in 4' x 8' sheets in 2.1" thickness (contact Laminators technical support for alternative thickness availability). Panels are fastened directly to the exterior wall assembly using specialized fasteners (Part No. OCI-FASTENER-4"WOOD/STEEL-X) available from Laminators.

Omega CI may be installed over the following exterior wall assemblies:

- Fire-rated assemblies with exterior-grade gypsum sheathing over steel stud framing
- Plywood or OSB sheathing over steel or wood stud framing
- CMU block walls
- Pre-cast or cast-in-place concrete walls

NOTE: Installations over open framing are not permitted. Omega CI is not intended to function as primary structural wall sheathing. For substrates not listed above, contact Laminators technical support.



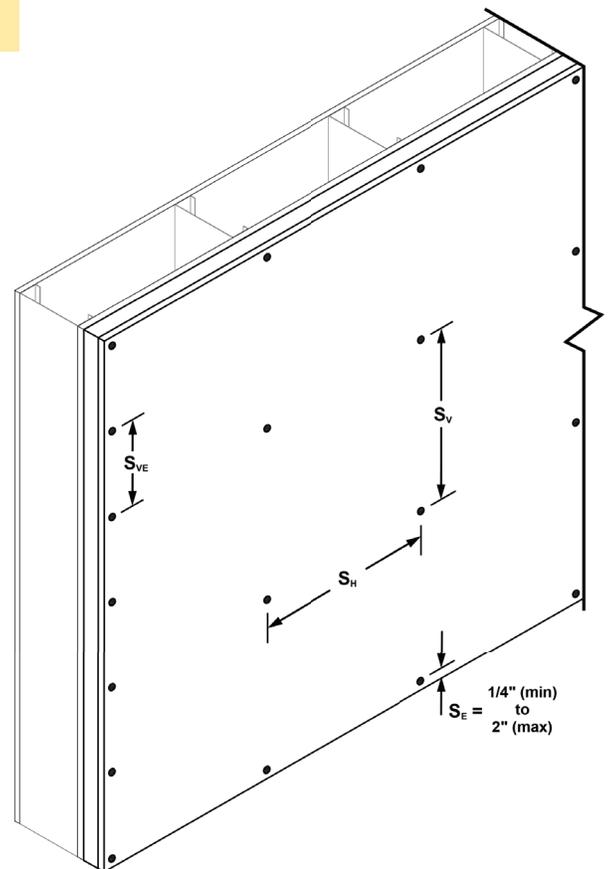
Installation over sheathing with steel stud framing is covered for the purposes of this guide. Partial installation layout shown is representative of typical fastening pattern. Refer to CAD details at LaminatorsInc.com for type and spacing of fasteners (spacing will vary based on project wind load requirements). Contact Laminators technical support for fastener recommendations when installing over sheathing with wood stud framing, CMU block walls, and pre-cast or cast-in-place concrete walls.

Installation Guidelines

1. Lay out location of steel stud framing on face of exterior wall assembly sheathing prior to installation.
2. Install panels horizontally in a running bond pattern with a single stud (min) joint offset. Avoid 4-corner intersections.

NOTE: Panels may be installed vertically as required. Do not span building expansion joints.

3. Install fasteners along panel joints and terminations so that center of fastener head is 1/4" (min) to 2" (max) from edge of plywood sheathing layer. Ensure that fasteners fully engage stud flanges.
4. Pre-cut panels as required to fit openings and projections.
5. For inside and outside building corners, remove portion of the foam layer along the edge of one panel at intersection to maintain continuity in the plywood sheathing layer (refer to CAD details at LaminatorsInc.com for additional information regarding inside and outside corners).
6. Maintain 1/8" gap between adjacent panels to allow for thermal expansion of wood sheathing layer.
7. For panels installed at grade terminations or directly against foundation, apply self-adhering membrane flashing (Part No. OCI-MEMBRANE FLASHING) to bottom edge and wrap 2" (min) distance onto each vertical face. Membrane flashing must be applied prior to installation.



BACK-DRAINED & VENTILATED SUB-FRAMING INSTALLATION

The Back-Drained and Ventilated Clip & Caulk installation system uses aluminum sub-framing members to transfer wind loads between the panel veneer and the exterior wall assembly. The aluminum sub-framing creates a 7/8" drainage cavity behind the panel veneer to manage moisture and promote ventilation. Drainage pathways are maintained along vertical member flanges or through gaps in horizontal members.

STRUCTURAL SUBSTRATES (INCLUDING OMEGA CI)

The back-drained and ventilated sub-framing is installed directly to the face of a structural substrate (e.g., Omega CI, plywood sheathing, OSB, CMU block, pre-cast or cast-in-place concrete).

The following sub-framing members are used for the installation of the Clip & Caulk system over structural substrates:

- SH members (Part No. 48BDV-SH) to support horizontal and vertical panel joints
- EJ members (Part No. 48BDV-EJ) to support system terminations and transitions
- AH members (Part No. 48BDV-AH) for intermediate panel supports

Sub-Framing Layout Procedures *(refer to partial installation layout on page 11)*

1. Verify application of vapor-permeable air and water barrier to structural substrate.
 - Type of vapor-permeable air and water barrier to be determined by Design Professional of Record
 - Follow air and water barrier manufacturer's recommendations on treatment of substrate joints prior to application in order to bridge 1/8" joints between Omega CI panels
2. Coordinate location and installation of flashing interfaces prior to installation of sub-framing members.
3. Verify shingle fashion installation of membrane flashing over all flashing interfaces. Alternate air and water barrier to flashing interfaces is allowed with the approval of the Design Professional of Record.
4. Lay out panel joint lines and edge locations.

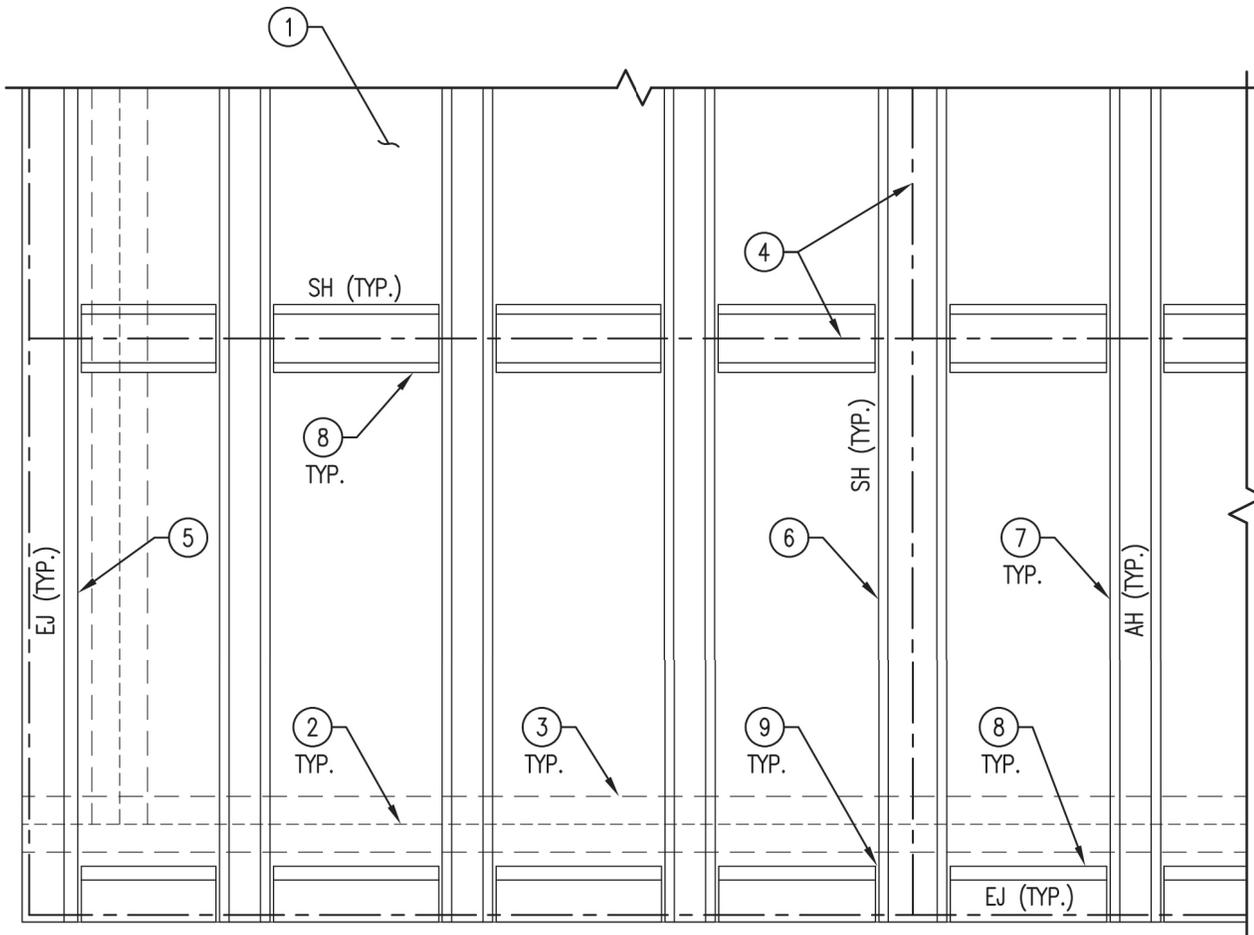
 **NOTE:** Centerlines of panel joints are intended to align with centerline marks on the face of SH members. Refer to CAD details at LaminatorsInc.com for positioning of panel system edge relative to closed end of EJ members.

5. Install vertically oriented EJ member along vertical edge of installation area.
6. Install vertically oriented SH members along centerline of vertical panel joints.
7. Install vertically oriented AH members at required spacing between vertical SH and EJ members.
8. Install horizontal EJ and SH members to fit between flanges of vertical EJ, SH, and AH members along horizontal panel joints and base of installation area.

 **NOTE:** Maintain 1/8" (min) to 1" (max) distance between cut edge of horizontal members and flanges of vertical members.

9. Insert mesh vent material (Part No. 48BDV-MESH VENT) for insect control into gaps between cut edges of horizontal members and flanges of vertical members.

BACK-DRAINED & VENTILATED SUB-FRAMING INSTALLATION



IMPORTANT NOTICE

The partial installation layout shown above is NOT comprehensive for installation, bidding, or design. The complete CAD details are REQUIRED to be used in conjunction with this guide. Visit LaminatorsInc.com for the latest documents regarding this panel system.



BACK-DRAINED & VENTILATED SUB-FRAMING INSTALLATION

GLASS-MAT FACED GYPSUM SHEATHING & ALTERNATIVE CONTINUOUS INSULATION SYSTEMS

The following sub-framing members are required for the installation of the Clip & Caulk system over exterior-grade, glass-mat faced gypsum sheathing and alternative continuous insulation systems:

- SH members (Part No. 48BDV-SH) to support horizontal joints and provide intermediate panel supports
- EJ members (Part No. 48BDV-EJ) to support horizontal system terminations and transitions
- FV members (Part No. 48BDV-FV) to support vertical panel joints and vertical system terminations and transitions

Sub-Framing Layout Procedures *(refer to partial installation layout on page 13)*

1. Verify application of air and water barrier to substrate.
 - Type and location of air and water barrier to be determined by Design Professional of Record
2. Coordinate location and installation of flashing interfaces prior to installation of sub-framing members.
3. Verify shingle fashion installation of membrane flashing over all flashing interfaces. Alternate air and water barrier to flashing interfaces is allowed with the approval of the Design Professional of Record.
4. Lay out panel joint lines and edge locations.

 **NOTE:** Centerlines of panel joints are intended to align with centerline marks on the face of FV and SH members. Refer to CAD details at LaminatorsInc.com for positioning of panel system edge relative to closed end of EJ members and edge of FV members.

5. Install horizontally oriented EJ member along horizontal base of installation area.
6. Install horizontally oriented SH members along centerline of horizontal panel joints and at required intermediate spacing between horizontal joints/edges.

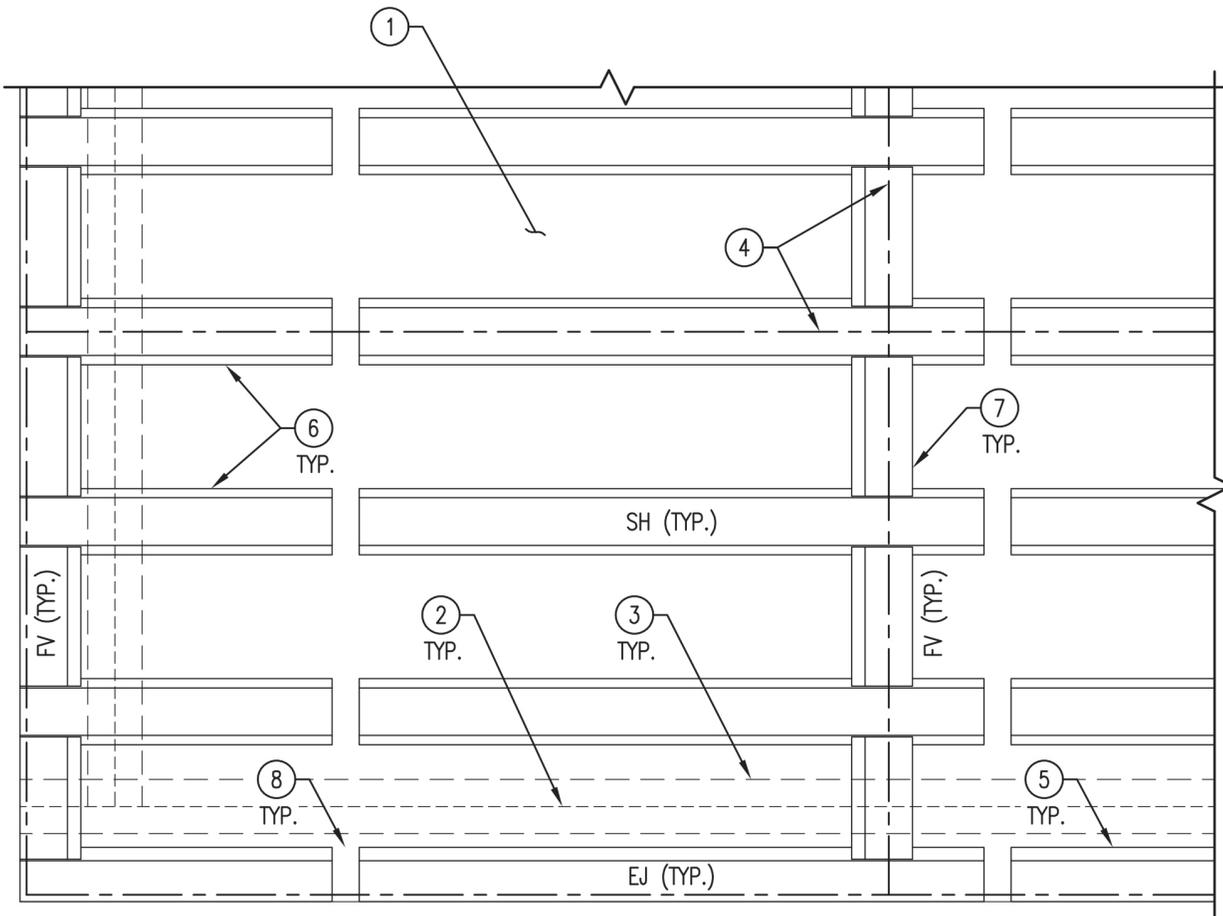
 **NOTE:** Maintain gaps for drainage in ALL horizontal members as required. Failure to provide adequate drainage will result in poor system performance. Refer to CAD details at LaminatorsInc.com for required size and frequency of drainage gaps.

7. Install FV members to fit vertically between the webs of horizontal EJ and SH members along vertical panel joints and edges.

 **NOTE:** Flanges of FV members are fastened to the flanges of the EJ and SH horizontal members. Maintain 1/8" (min) to 1/4" (max) distance between cut edge of FV member and web of horizontal members.

8. Insert mesh vent material (Part No. 48BDV-MESH VENT) for insect control into gaps between cut edges of horizontal members.

BACK-DRAINED & VENTILATED SUB-FRAMING INSTALLATION



IMPORTANT NOTICE

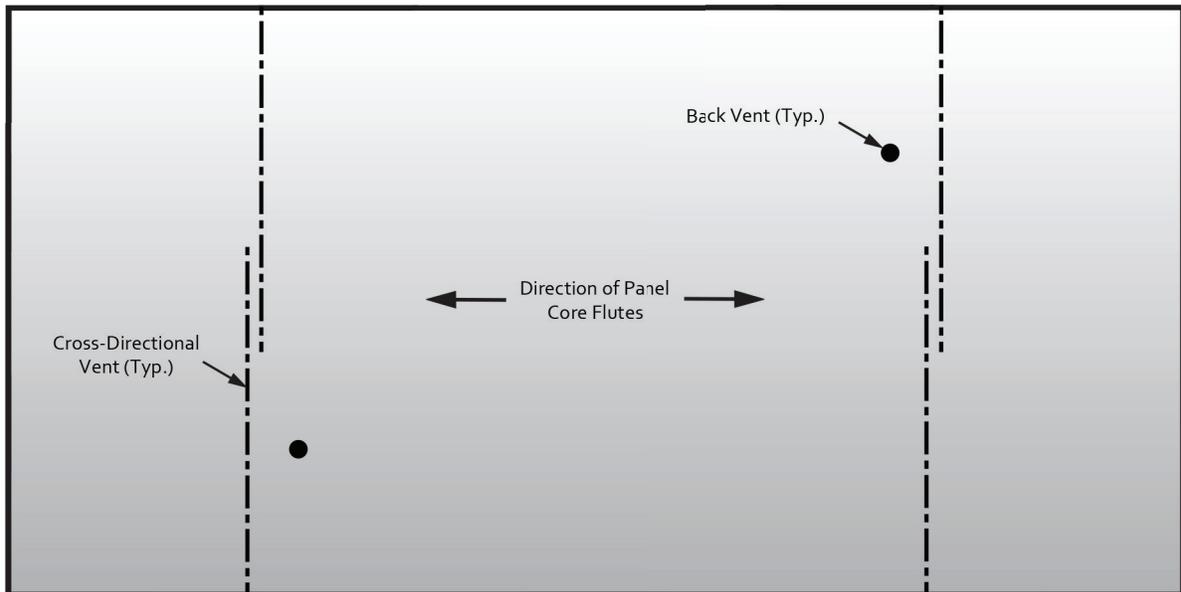
The partial installation layout shown above is NOT comprehensive for installation, bidding, or design. The complete CAD details are REQUIRED to be used in conjunction with this guide. Visit LaminatorsInc.com for the latest documents regarding this panel system.

PANEL PREPARATION

EDGE-SEALING & CORE-VENTING OMEGA-LITE PANELS

Omega-Lite panels utilize a fluted polypropylene core. With the Clip & Caulk system, installed panels are finished in place with a one-part silicone caulk joint applied directly to the exposed panel core.

All panels to be installed in the Clip & Caulk system are factory-sealed along the fluted edges of the panel core prior to shipment to protect against air pressure changes within the flutes due to temperature fluctuations. Vent holes are also provided in the back of the panels along with cross-directional vents through the flutes to allow for air exchange throughout the fluted core.



Any field cuts to panels that expose the cross direction of the fluted core must be edge-sealed prior to installation. In addition, (1) functional back vent with cross-directional venting (full panel width) must be maintained for each installed panel. Provide additional back vents as required to avoid placement of vent holes directly over panel adhesive, foam tape, and back-drained and ventilated sub-framing members.

PANEL PREPARATION

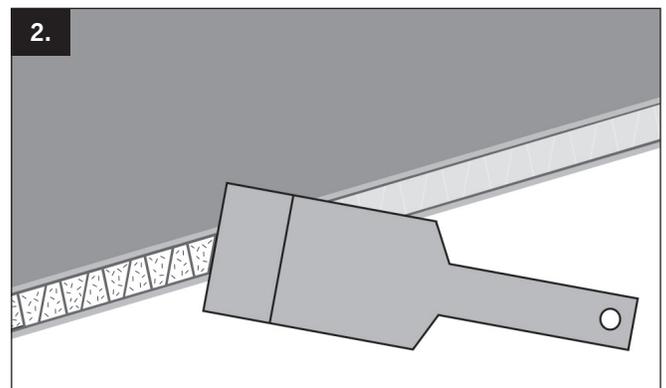
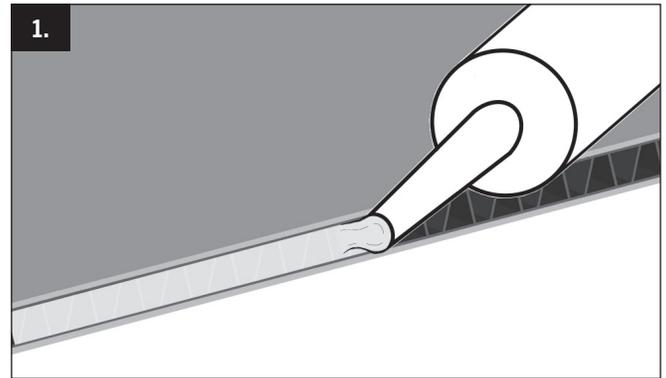
Procedures for Edge-Sealing

1. Apply 3/16" bead of Laminators approved silicone caulk along unsealed edge of fluted panel core.

 **NOTE:** Laminators recommends the use of Pecora 860 silicone caulk for edge-sealing operations. This product is available from Laminators.

2. Tool applied bead of silicone caulk, pushing caulk 3/8" (min) into panel flutes.
3. Remove any excess caulk from panel face and back (refer to "Maintenance of Omega-Lite Panels" on page 7).

 **NOTE:** Panel masking should remain in place during caulking and tooling operations to avoid staining finished panel face.



Procedures for Venting Panel Core

Back Vents

1. Drill panel back vents using a 1/8" dia. drill bit.
2. Provide a drill stop to prevent depth of drill bit from exceeding 1/8" (max).

 **NOTE:** Drill bit should penetrate the panel backer metal and skin of the polypropylene core into the panel flutes. Drill bit should not penetrate the skin of the polypropylene core behind the panel face metal.

Cross-Directional Vents

1. Locate cross-directional vents along the sides of the panel (perpendicular to fluted core).

 **NOTE:** Locate cross-directional vents within 3" to 4" of back vents.

2. Drill through the panel core perpendicular to the panel flutes using a 1/8" dia. x 36" long drill bit. Drill bits available from Laminators (Part No. DRILL BIT 36").
3. For panels wider than 36", drill cross-directional vents from opposite sides of panel so that vents cross full width of panel core.

PANEL PREPARATION

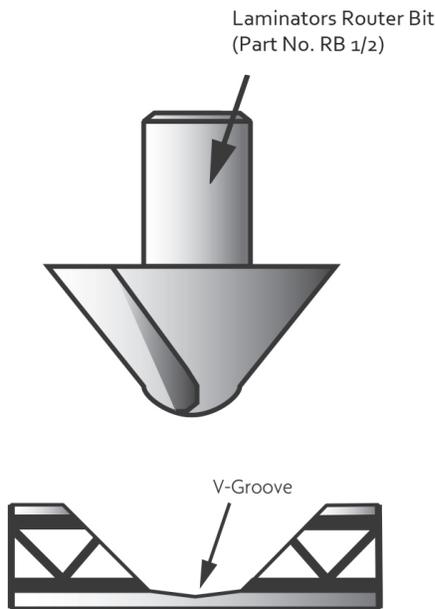
FABRICATED CORNERS & SOFFIT TRANSITIONS (OPTIONAL)

Omega-Lite panels can be made to turn inside and outside corners and transition from fascia to soffit conditions provided that special fabrication procedures are followed.

1. Set up a router table or portable router table to accept a 1/2" carbide shank with Laminators custom-designed router bit (Part No. RB 1/2).

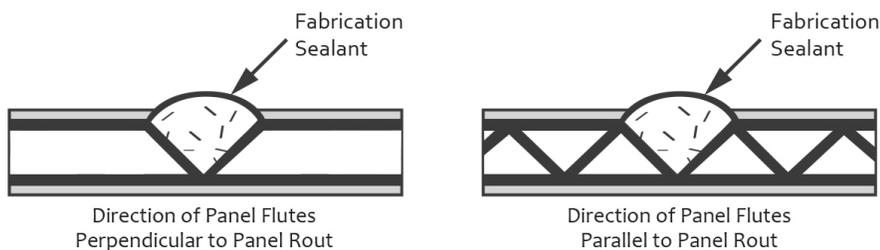
 **NOTE:** This router bit is only available from Laminators.

2. Orient the panel so that the router is cutting into the back of the panel (non-finish side). Center the router bit along the desired location of the corner bend and carefully rout the length of the panel, creating a v-groove. The use of a solid edge guard is recommended to maintain a straight v-groove. Verify that the depth of the router bit is properly set so that the entire panel core is removed and the back of the aluminum face metal is lightly scored during the process.



 **NOTE:** The rout for the corner bend is to be located on the back of the panel (non-finish side) regardless of fabrication for inside or outside corners. The thickness of aluminum face metal remaining should be 0.020".

3. Apply Laminators approved fabrication sealant along the v-groove prior to folding the panel. For inside corner applications, fabrication sealant is applied after folding.

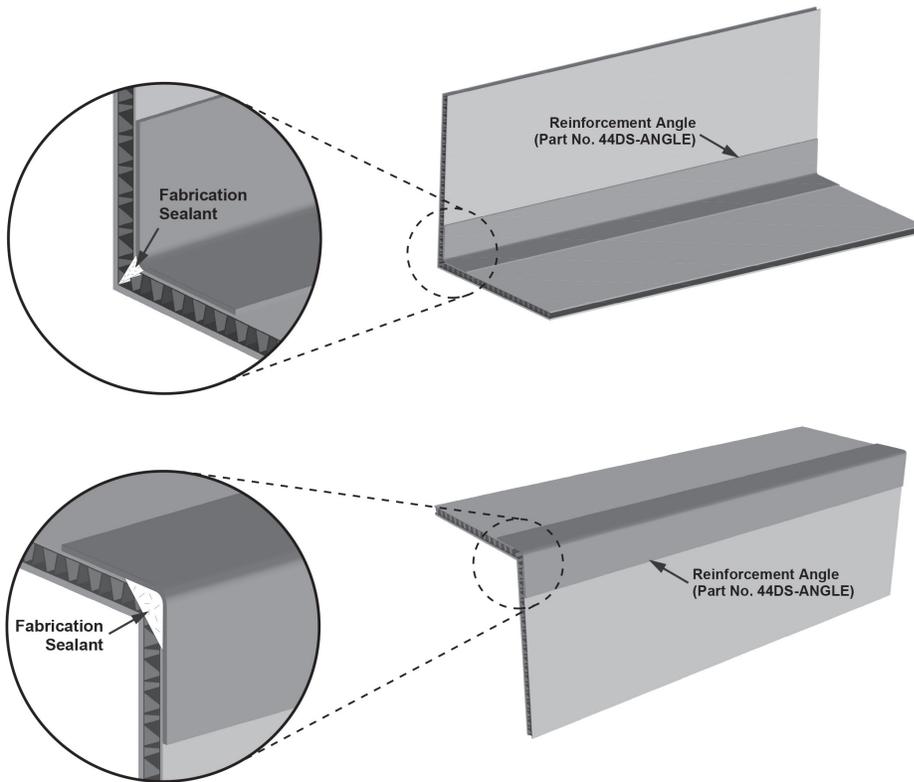
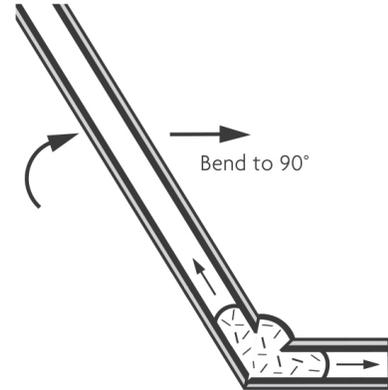


 **NOTE:** Apply Laminators approved fabrication sealant at an approximate coverage rate of 1/2 to 3/4 oz. per foot.

PANEL PREPARATION

FABRICATED CORNERS & SOFFIT TRANSITIONS (OPTIONAL)

4. Gently fold the entire panel along the corner rout to create either an inside or outside corner panel. For outside corners, ensure that enough sealant has been installed in the v-groove to force the sealant into the panel flutes during bending.
5. All panel corners must be reinforced using 1" x 1" x .060" continuous aluminum angles (Part No. 44DS-ANGLE) installed along the full length of the corner rout. Tool excess fabrication sealant squeeze-out from corner rout prior to installation of reinforcement angle to facilitate proper fit. Take care not to remove any sealant from the panel rout during tooling. Set the reinforcement angle in full bed of fabrication sealant along folded corner rout.



CLIP & CAULK SYSTEM INSTALLATION

SYSTEM OVERVIEW

The Clip & Caulk installation system is a non-progressive system that uses field-fabricated Omega-Lite panels attached to back-drained and ventilated sub-framing. Panel adhesive is located between each panel and the face of the back-drained and ventilated sub-framing to facilitate transfer of wind loads back to structure. Discrete clips are inserted into the panel core along the perimeter of each Omega-Lite panel and fastened to the back-drained and ventilated sub-framing to hold them in place until the panel adhesive cures.

Planning for panel system layout is required to achieve consistent joint spacing and avoid overlapping of panel clips at adjacent panels. Joint size for the Clip & Caulk installation system is set at 1/2" to accommodate thermal movement of panels. Panel joints are finished with silicone caulk. The panel system is captured at terminations and transitions using J-Moldings (Part No. 4515X), Termination J-Moldings (Part No. 4565X), and Termination Z-Moldings (Part No. 4575X). Inside Corner (Part No. 4525X) and Outside Corner (Part No. 4535X) moldings are available for turning vertical building corners.



IMPORTANT NOTICE

The partial installations shown for the "Foam Tape & Adhesive Layout" on page 19 and "Panel Installation" on page 20 are NOT comprehensive for installation, bidding, or design. The complete CAD details are REQUIRED to be used in conjunction with this guide. Visit LaminatorsInc.com for the latest documents regarding this panel system.

NFPA 285 compliant installations require specialized detailing including fabricated panel edges above window openings. Refer to the NFPA 285 requirements in the CAD details available at LaminatorsInc.com.

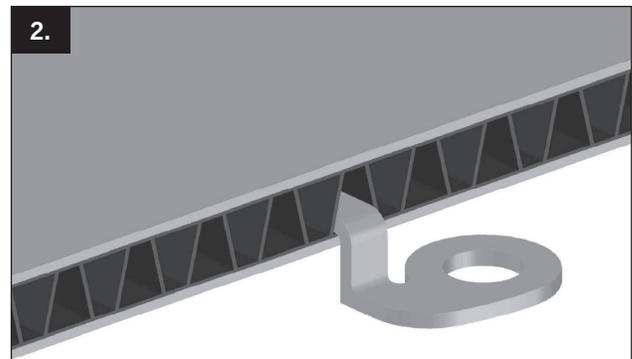
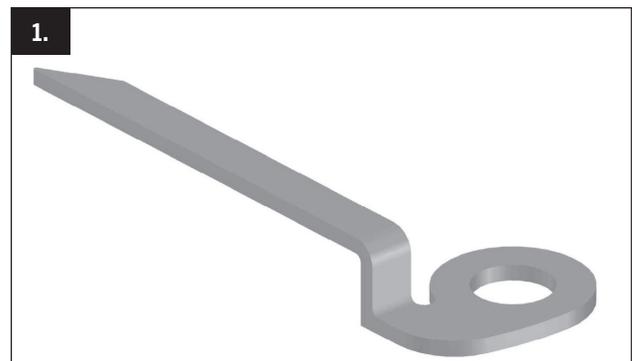
PANEL CLIP INSTALLATION

1. Insert Clip & Caulk panel clips (Part No. 50299FLAT) into panel edges around full perimeter of panel. Refer to CAD details available at LaminatorsInc.com regarding spacing of panel clips.
2. Insert clips so that the fastener hole is oriented to the left of the insert leg with the 90-degree bend in the clip leg wrapping to the back of the panel.
3. For installation along the fluted edges, only insert clips into flutes where the wider end of the trapezoidal cross-section is oriented toward the back of the panel.

For installation along the edges perpendicular to the panel flutes, push the clips through the flute sidewalls until properly seated per step 2 or pre-drill 1/8" dia. holes at each clip location.

4. Stagger clips on adjacent panels to avoid overlapping of panel clips and drainage gaps in sub-framing members during installation.

 **NOTE:** Panel sides to be captured by moldings should not have panel clips installed.



CLIP & CAULK SYSTEM INSTALLATION

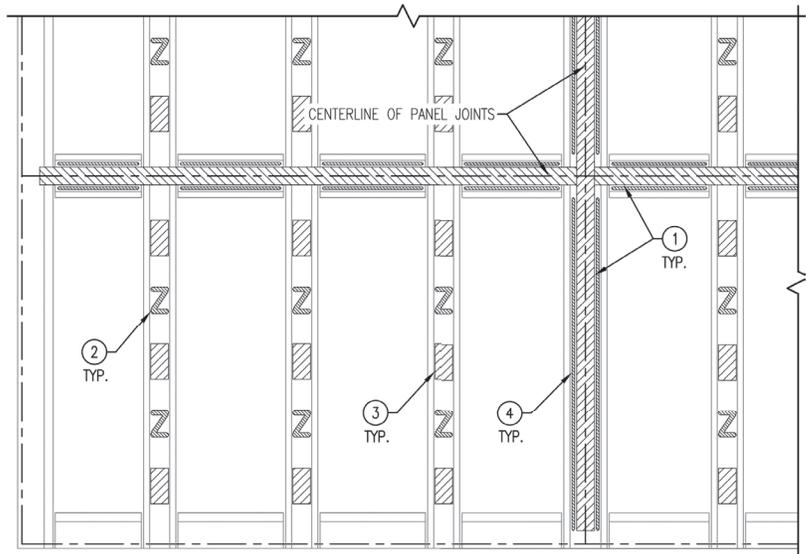
FOAM TAPE & ADHESIVE LAYOUT FOR STRUCTURAL SUBSTRATES

1. Install continuous foam tape along centerline of vertical and horizontal SH sub-framing members.

 **NOTE:** Provide bridging tape (Part No. 48BDV-BRIDGING TAPE) along centerline of discontinuous horizontal SH sub-framing members to support horizontal foam tape where crossing drainage gaps.

2. Apply Laminators approved panel adhesive to face of AH sub-framing members in Z-formation at required spacing.
3. Install 4" long strips of foam tape centered along vertically oriented AH members between adhesive Z locations.
4. Apply continuous lines of Laminators approved panel adhesive to face of SH sub-framing members along each side of foam tape at panel joints. Horizontal adhesive lines will be discontinuous at drainage gaps in sub-framing members.

 **NOTE:** Sub-framing members must be free of dirt and debris prior to application of foam tape and panel adhesive.



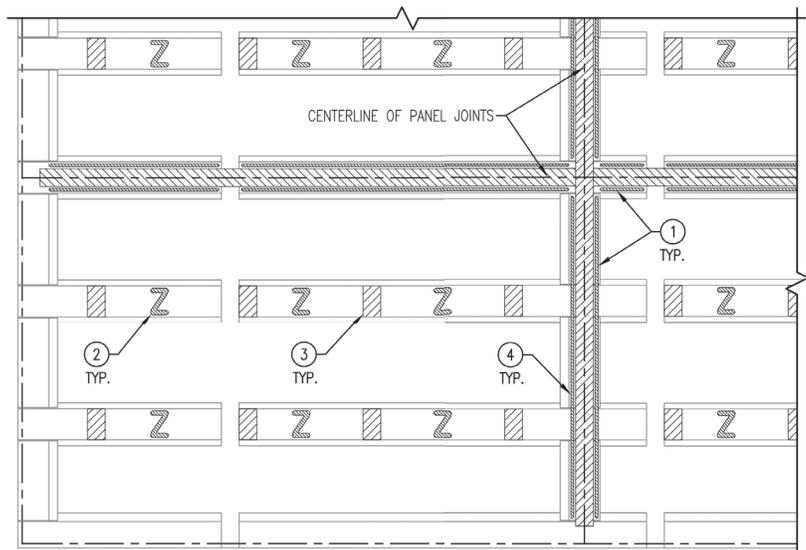
FOAM TAPE & ADHESIVE LAYOUT FOR GLASS-MAT FACED GYPSUM SHEATHING & ALTERNATIVE CONTINUOUS INSULATION SYSTEMS

1. Install continuous foam tape along centerline of horizontal SH and vertical FV sub-framing members.

 **NOTE:** Provide bridging tape (Part No. 48BDV-BRIDGING TAPE) along centerline of horizontal sub-framing members to support horizontal foam tape where crossing drainage gaps.

2. Apply Laminators approved panel adhesive to face of horizontal SH sub-framing members in Z-formation at required spacing.
3. Install strips of vertically oriented foam tape across face of horizontal SH members at approximate midpoints between adhesive Z locations.
4. Apply continuous lines of Laminators approved panel adhesive to face of SH and FV sub-framing members along each side of foam tape at panel joints. Horizontal adhesive lines will be discontinuous at drainage gaps in sub-framing members.

 **NOTE:** Sub-framing members must be free of dirt and debris prior to application of foam tape and panel adhesive.

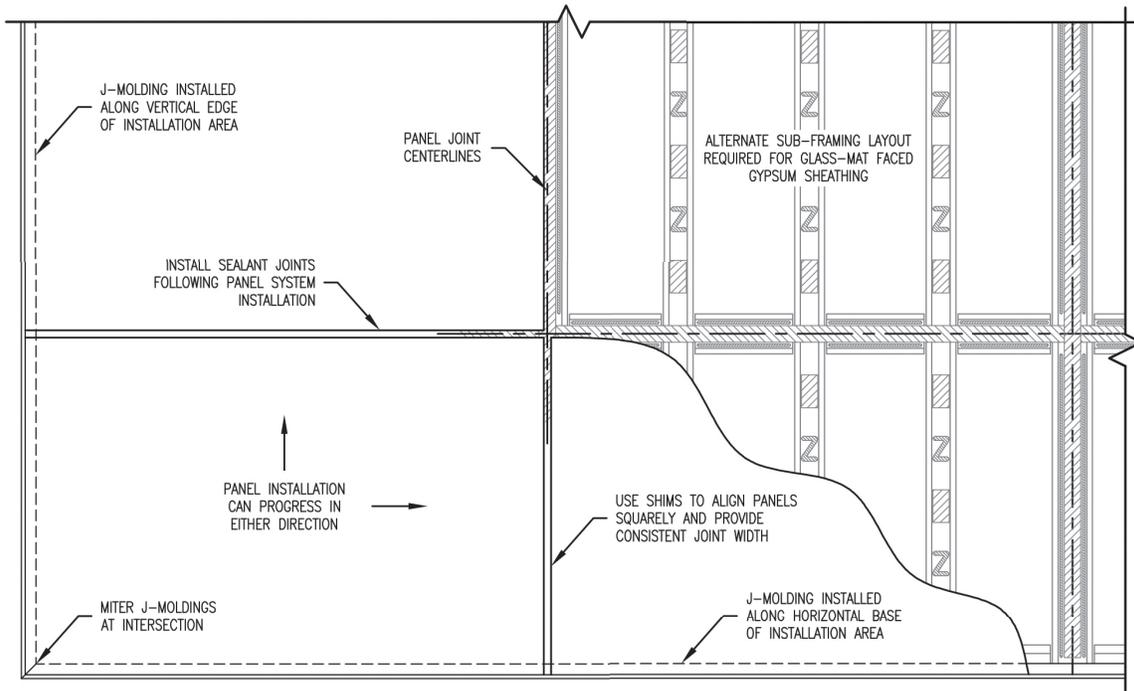


CLIP & CAULK SYSTEM INSTALLATION

PANEL INSTALLATION

Panels may be cut to desired size in advance of installation or as installation progresses (refer to “Material Handling & Maintenance” on page 7 for additional information on equipment requirements for cutting operations). Laminators recommends cutting panels to size as installation progresses to allow for flexibility in adjustment of final panel cut size to accommodate field conditions.

NOTE: Refer to CAD details at LaminatorsInc.com for panel sizing guidelines.



1. Verify that panel edge-sealing and core venting requirements are satisfied (refer to “Edge-Sealing & Core-Venting Omega-Lite Panels” on page 14 for additional information).
2. Fasten horizontal J-Molding as required along sub-framing at base of installation area. Maintain 1/4" (min) gap between J-Molding and base wall flashing.
3. Fasten vertical J-Molding as required along sub-framing at edge of installation area.
4. Provide butt joint or 45-degree miter (shown) for moldings at intersections.
5. Apply 1/4" bead of Laminators approved caulk within the recessed channel of the vertical and horizontal J-Moldings where panel is to be seated.

NOTE: Only apply caulk within moldings to extent of where next panel is to be seated.

6. Verify panel clips are installed properly (refer to “Panel Clip Installation” on page 18) on first panel to be installed. Peel masking back approximately 2" to 3" from panel edges.

NOTE: Apply continuous masking or painter's tape along panel edges to protect finish in preparation of joint treatment.

7. Apply panel adhesive and foam tape to sub-framing as required (refer to "Foam Tape & Adhesive Layouts" on page 19).
8. Taking care not to contact panel adhesive previously applied to sub-framing members, lift panel and slide edges into horizontal and vertical J-Moldings one at a time. Use shims to maintain approx. 1/8" gap between base of J-Molding and edge of panel when seated in molding.

NOTE: Some caulk squeeze-out is expected. Mineral spirits or isopropyl alcohol may be used sparingly to remove uncured caulk (refer to “Maintenance of Omega-Lite Panels” on page 7).

9. Fasten panel clips to sub-framing members as required to hold panel in place but allow for adjustment.

NOTE: Edges of panels at joints should be 1/4" off of the joint centerline with clips fastened directly through the foam tape.

10. Use 1/2" shims to achieve consistent joint size and alignment with adjacent panels.
11. Check panel alignment and complete fastening of clips to sub-framing.
12. Repeat steps 2 through 11 to continue panel system installation.
13. Install sealant joints (refer to “Joint Treatment” steps 1 through 4 on page 21).

CLIP & CAULK SYSTEM INSTALLATION

JOINT TREATMENT

1. Comply with sealant manufacturer installation requirements, ASTM C920 Standard Specifications for Elastomeric Joint Sealants, and ASTM C1193 Standard Guide for Use of Joint Sealants as applicable to project conditions and specified materials.
2. Verify foam tape installed along joints is free of debris. The foam tape will serve as a bond breaker to prevent a 3-sided bond of sealant material.
3. Verify joint sealant completely fills panel joint and provides a uniform cross-section of material.
4. Tool sealants according to requirements in project specifications immediately after sealant application and before skinning or curing begins.

TERMINATING THE SYSTEM

The last panels along the top and right side of any installation area are finished using Termination J-Moldings or Termination Z-Moldings.

ESSENTIAL EQUIPMENT & MATERIALS

Essential Equipment

- Aluminum brake capable of bending 0.060" aluminum
- Laminators router bit (Part No. RB 1/2)
 - Custom-designed carbide router bit with 1/2" shank only available from Laminators
- Miter saw or chop saw with 12" (min) diameter blade rated for cutting non-ferrous metals
- Circular saw or table saw with carbide-tipped blade (60-tooth min) rated for cutting non-ferrous metals
- Caulking gun (automatic gun recommended for consistent application)
- Screw gun/drill
 - 1/8" dia. drill bit (any length)
 - 1/8" dia. x 36" long drill bit (Part No. DRILL BIT 36")
- Deburring tool (Part No. DEBURRING TOOL)
- Aviation snips or heavy-duty scissors
- Plastic putty knife to remove excess caulk and adhesive from panels
- Protective gear (safety glasses, gloves to handle panels, etc.) *Jobsite safety is the responsibility of the panel installer.*

Essential Materials

- Omega-Lite panels
- Omega CI rigid insulation panels (Part No. OCI-2.1-48)
- Omega CI fasteners (Part No. OCI-FASTENER-4"WOOD/STEEL-X)
- Clip & Caulk panel clips (Part No. 50299FLAT)
- NFPA 285 Joint Clips
 - For installation over Omega CI (Part No. 50295)
 - For installation over gypsum sheathing (Part No. 50298)
- Panel moldings
 - J-Molding (Part No. 4515X)
 - Termination J-Molding (Part No. 4565X)

Essential Materials (cont'd)

- Inside Corner (Part No. 4525X)
- Outside Corner (Part No. 4535X)
- Termination Z-Molding (Part No. 4575X)
- Back-Drained and Ventilated sub-framing members
 - SH member (Part No. 48BDV-SH)
 - AH member (Part No. 48BDV-AH)
 - EJ member (Part No. 48BDV-EJ)
 - FV member (Part No. 48BDV-FV)
- Tapes
 - Closed-cell, PVC foam tape (Part No. 12847)
 - Bridging tape (Part No. 48BDV-BRIDGING TAPE)
- Mesh vent material (Part No. 48BDV-MESH VENT)
- Soffit Vents (Part No. 50280-X)
- Reinforcement angle (Part No. 44DS-ANGLE)
 - Only required if fabricating panel corners and soffit transitions
- Self-adhering membrane flashing (Part No. OCI-MEMBRANE FLASHING)
- Color-matched flat stock aluminum for fabrication of flashings and copings
- Fasteners (**refer to Laminators CAD details for fastener size, spacing requirements, and part numbers**)
- Silicone caulk*
- Fabrication sealant*
 - Only required if fabricating panel corners and soffit transitions
- Panel adhesive*



**For the most current list of approved silicone caulks, fabrication sealants, and adhesives, visit LaminatorsInc.com.*



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