



VERISTEEL™

**VERICLAD™ COMPOSITE
STRUCTURAL PANEL
INSTALLATION MANUAL
V3.6**

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GENERAL

Panel Description

VeriClad™ panels are composite structural panels designed to be used as a structural flooring system or roof system in commercial and residential factory-built structures. VeriClad™ panels consist of galvanized steel skins with a lightweight core of extruded polystyrene foam or phenolic resin impregnated paper honeycomb. The skins are bonded to the core with a one-part moisture-cured polyurethane adhesive. The panels are 4-1/16 inches thick and 4 feet wide. Lengths vary depending on the type of application and are available in lengths of 6 to 18 feet in 1/16 inch increments.

General Panel Drawings

Veristeel, Inc. manufactures two configurations of the VeriClad™ structural panels to allow integration into various types of install configurations. The Z and C configuration refer to the type of end cap that is secured to the ends of the panel (Figure 1 and Figure 2). The Z panel has an end cap that has a Z profile and overhangs the panel by 1.25 inches at either end. The C panel has an end cap with a C profile that is flush with the ends of the panel. Both configurations can vary in length from 6 to 18 feet depending on customer specifications. Z and C configured panels may contain either a honeycomb or a foam core.

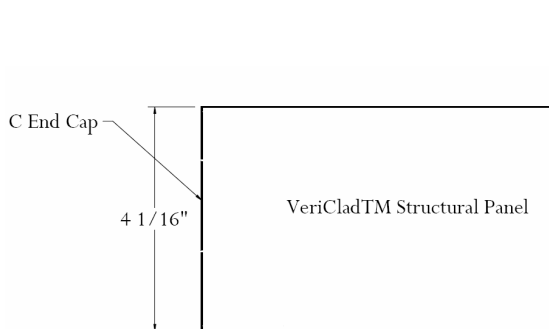


Figure 1: C End Cap
("Flush End Condition")

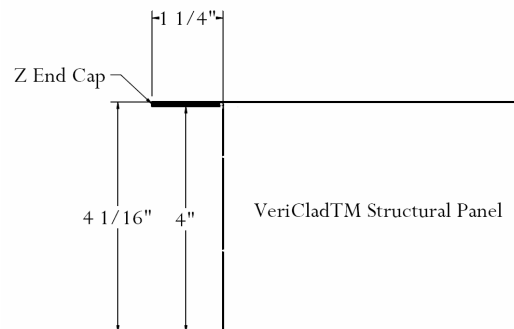


Figure 2: Z End Cap
("Overhang End Condition")

HANDLING

Panels are shipped horizontally on flatbed trucks and covered with tarps. Depending on the panel size and order quantity the panels may be shipped up to two pallets high in stacks of ten, on either double or single pallets. Double pallets consist of two side by side stacks of ten panels on one large pallet. Panels are banded to the pallets with steel banding and cardboard edge protectors.

Unloading and Storage

Unloading of the pallets from the truck can be done with a forklift. Pallets should be unloaded one at a time. The forks on the fork lift should be at least four and six feet long for single and double pallets respectively. Before unloading the pallets the forklift driver must be aware of the type of pallet he/she is unloading. When unloading single pallets be aware of the fork length and location of material on the other side of the truck. Forks that are longer than the pallet width may puncture panels on the other side of the truck or cause pallets to shift and fall off the truck.

Before panels are installed, the banding and edge protectors must be removed. Steel banding can be cut with hand operated metal snips. The steel banding is under tension and can cause injuries to the person after the band is cut. The person cutting the banding should wear gloves and eye protection while removing the banding. Once the banding is cut from a pallet it should not be moved. If the pallet of panels must be moved after the banding is removed, be aware that the panels may slide during sudden movements.

When panels are being installed they should be moved one at a time to the install location. Individual panels may be moved with a forklift or a Veristeel Panel Grabber. Contact Veristeel for more information on the Panel Grabber. Do not use straps to move the panel because they may damage the tongue and groove edge profile.

If panels are to be staged outdoors before use they must be protected from the elements by a suitable weather barrier. Panels should remain banded to their pallets and should not be stacked more than three pallets high during staging or storage.

INSTALLATION TOOLS AND MATERIALS

VeriClad™ panels require standard tools, fasteners and sealants to complete an installation. Refer to the list below for details:

Tools:

- Corded Drill 1500-2500 RPM
- Tyrex Tool D600-AC (optional tool for collated cement board fasteners used to fasten mineral board sheathing to the panels)
- TRUFAST SIP Shorty Tool (optional tool that allows consistent counter sinking of the TRUFAST fasteners into the panel skin)
- Torx T-30 drive bit
- Circular Saw
- Circular Saw Blade: Ceremet Tipped 32 Tooth Metal Cutting Blade or Carbide Tipped Metal Roofing Blade (MK Morse CSM72550SC Metal Devil Circular Saw Blade 7-1/4" 50 teeth, Makita A-93815 7-1/4" 36 Tooth Ceremet-Tipped Metal Cutting Blade, Malco MCCB7 7-1/4" 56 Tooth Metal Cutting Saw Blade for Standing Seam Roof Panels)
- Metal cutting hole saws (Bi-Metal hole saw with carbide teeth)
- Hammer
- Steel Punch
- Tape Measure
- Chalk Line
- Caulking Gun (Battery powered or pneumatic guns are recommended)

Hardware:

- Fasteners for floor panel or roof panel to structural steel supporting members: TRUFAST SIP-HD 6000
- Fasteners for roof panel to light gauge steel or wood supporting members: TRUFAST SIP-LD 5000
- Mineral board sheathing fastener: TyRex Collated Cement Board Screw CHN8125D or Pro-Twist FCBDS114 #8 x 1-1/4" cement board fastener with wings and nibs. Veristeel recommends the TyRex collated fastener and D600-AC screw gun to increase the speed of installation for Mineral Board sheathing.

- Sheet metal panel edge sealing caps (L or U configuration, not necessary for “nested” perimeter installations)

Sealant & Adhesives:

- Polyurethane adhesive/sealants for panel joints: 3M ScotchSeal 540 or 560, Sonneborn NP1, Tremco Dymonic, Tremco Vulkem 116, Bostik LoVOC Seal, 3M Scotch-Seal 540. **ScotchSeal 560 must be used when Veristeel’s tested diaphragm loads are to be used, contact a Veristeel engineer for details regarding diaphragm loads.**
- Adhesives for bonding sheathing to panel skin: Mapei Ultrabond ECO 150, ITW TACC MH-7000, OSI QB-300, PL200 Construction Adhesive, PL200 Low VOC, PL400 Low VOC Sub-Floor & Deck Adhesive.
- Adhesives for bonding floor coverings to mineral board sheathing: use appropriate pour grade adhesives for VCT, carpet, and ceramic tile per manufacturers’ recommended application techniques.
- Use expanding polyurethane foam for sealing penetrations through the panels. Examples: Dow Enerfoam, Touch’nSeal, Great Stuff Pro

Sheathing Options:

- Mineral Board/Magnesium Oxide sheathing. Contact the Veristeel Engineering Department for material specifications.
- 19/32” wood structural panel.
- Minimum 1/2" gypsum wall board (for ceiling and wall installations only).

FLOOR PANEL INSTALLATION

General Floor Installation Notes

- **ALL VERICLAD™ PANELS MUST BE INSTALLED ON STRUCTURAL MEMBERS THAT HAVE A MINIMUM BEARING SURFACE OF 2.25". FASTENERS MUST BE A MINIMUM OF 1.5" FROM THE EDGE OF THE PANEL.**
- **ALL PANEL JOINTS AND GAPS AROUND THE ENDS OF THE PANELS MUST BE SEALED WITH A GUN GRADE POLYURETHANE SEALANT!**
- **ALL FLOOR SHEATHING MUST BE GLUED AND SCREWED AS INSTRUCTED IN THIS INSTALL MANUAL.**
- **PENETRATIONS MUST BE PROPERLY SEALED WITH EXPANDING POLYURETHANE FOAMING SEALANT AND APPROPRIATE GUN GRADE POLYURETHANE ADHESIVE/SEALANT.**
- **NEVER CUT PANELS WITH A CUTTING TORCH!**
- **DO NOT CUT PANELS WITH RECIPROCATING SAWS!**
- **DO NOT WELD TO THE PANEL SKINS!**
- **PANELS MUST BE PROTECTED FROM WELDING OR FLAME CUTTING OPERATIONS BY COVERING THE EXPOSED SURFACE OF THE PANEL!**
- **DO NOT REMOVE FASTENERS WITH PRY BARS OR CLAW HAMMERS! FASTENERS MUST BE REMOVED BY UNSCREWING THE FASTENER.**

Nested Panel Install

A nested installation of VeriClad™ panels allows the panel to nest inside a perimeter frame while being supported by a 3" x 3" x 1/4" angle shelf (Figure 3). The perimeter consists of channel members with the channel facing out. The angle supports the panel at its ends and the panel spans its length across the width of the frame. Both Z and C panels may be used for a nested install. If the Z panel is used the top of the angle must be located 4 inches from the top of the perimeter frame member. If the C panel is used, the top of the support angle must be located 4-1/16 inches from the top of the perimeter frame member (Figure 4). Panel length should be slightly shorter (typically 1/8"-1/4" on either side) than the actual inside dimensions of the frame to account for subtle variations ("walk") in structural steel members and the welds at the intersection of the ledger and the perimeter member, if not completely flush, can cause the panel to ride up above the

top flange of the perimeter member (Figure 3 and Figure 4). High loading conditions and long spans may require additional support at the panel mid-span, or additional longitudinal supports at 48" o.c. or 24" o.c. depending on the design criteria.

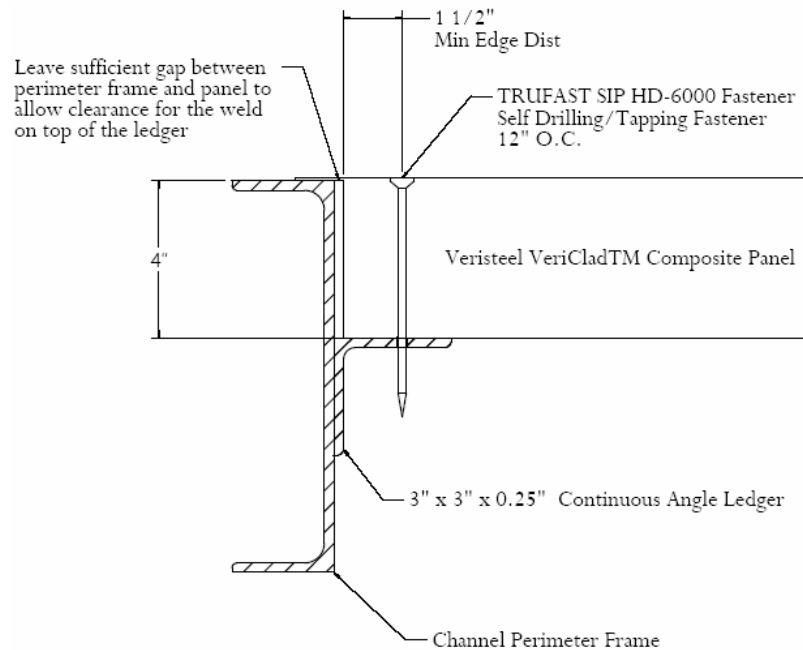


Figure 3: Nested Install Z panel

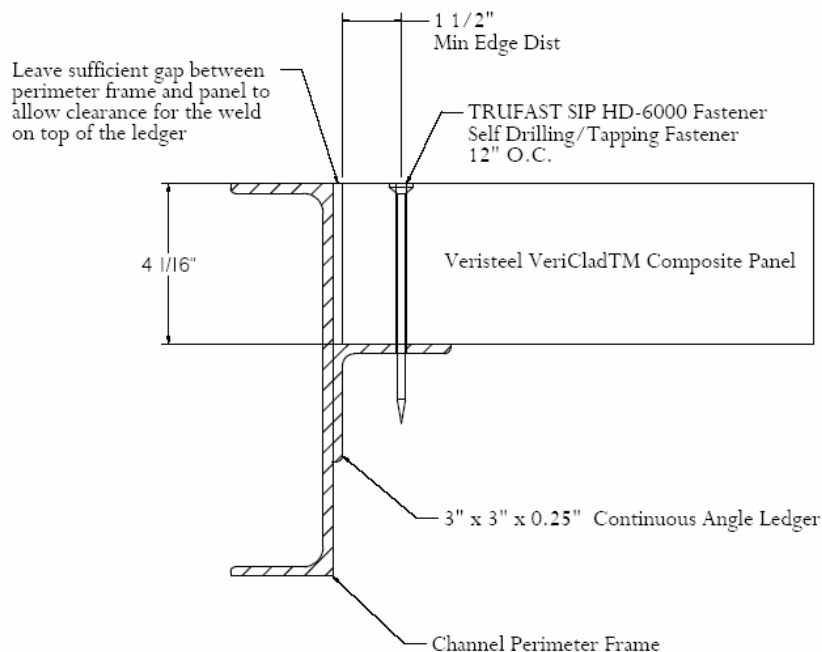


Figure 4: Nested Install C Panel

Top-of-Flange Panel Install

C-end style panels may be installed on the top of a frame member that provides support at the ends of the panel or offset from the edge of the panel (Figure 5 and Figure 6). If using a frame consisting of structural channel members, the channel may face in or out.

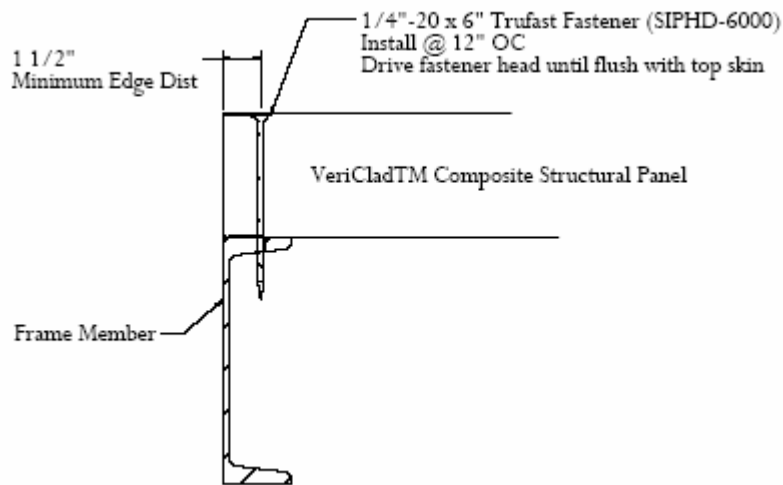


Figure 5: Top of Flange Install w/ Supported Edge

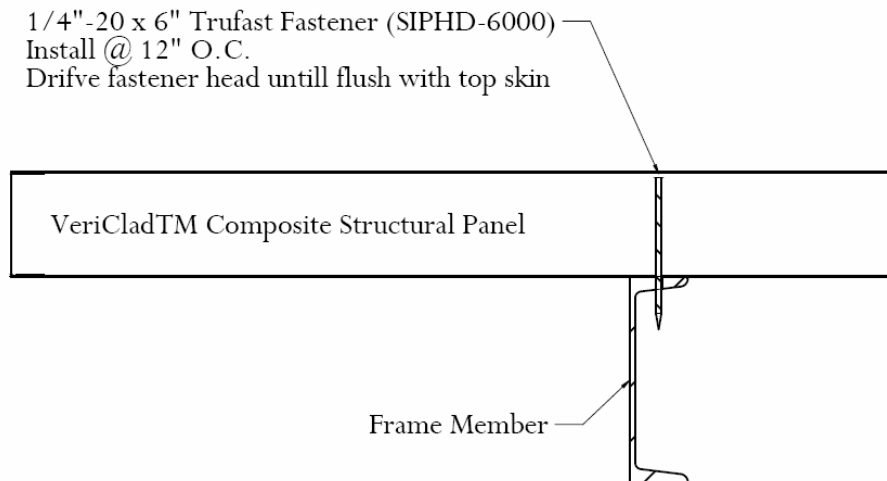


Figure 6: Top of Flange Install w/ Offset Frame Member

Mid-span Support

When floor loading requires mid-span structural beams the panels must be fastened to the beams with a minimum of 2 fasteners at 24" O.C. per panel (Figure 7). For mid-span members that are 18 gauge or thicker use the SIP-HD 6000 fastener. For mid-span members that are wood or 18 gauge and thinner use SIP-LD 5000.

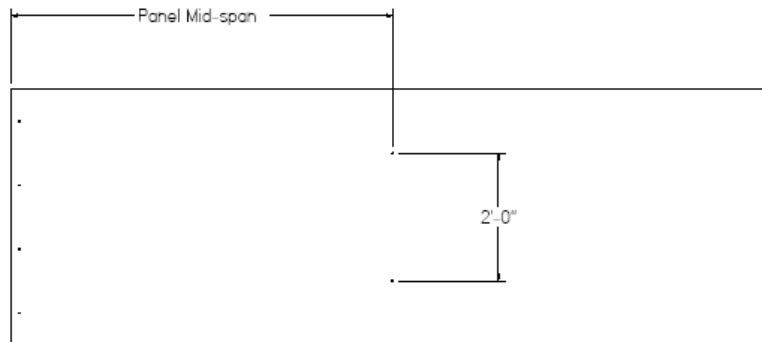


Figure 7: Mid-span fastening

Joint Sealing

The joint between each VeriClad™ panel must be properly sealed with a polyurethane adhesive/sealant to ensure proper resistance to air and moisture intrusion (Figure 8).

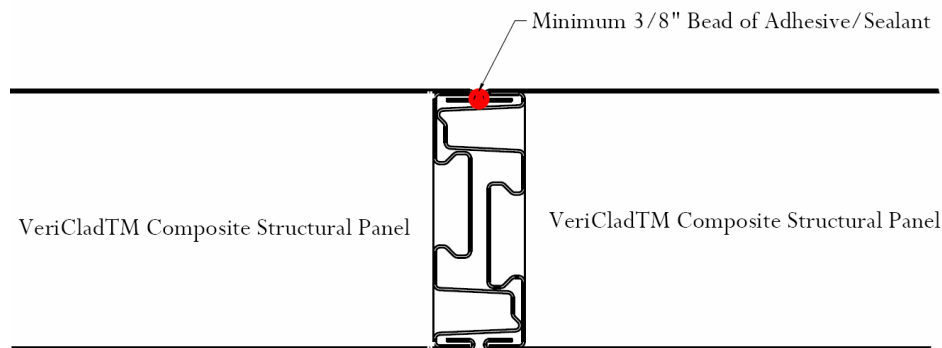


Figure 8: Floor Panel Joint Sealing

VeriClad™ panels that are installed into a perimeter frame must be sealed at the panel joint and between the ends of the panels and the perimeter frame members (Figure 9).

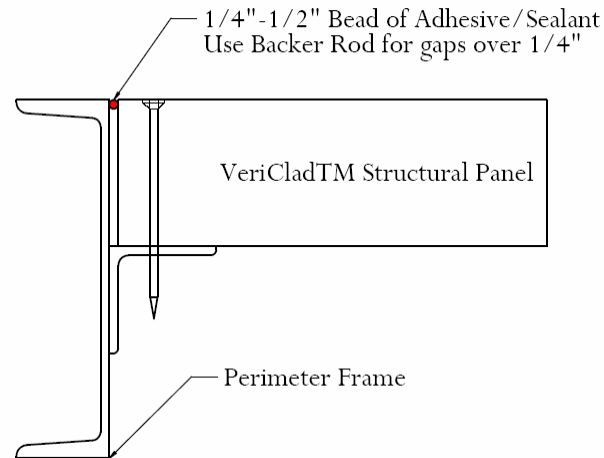


Figure 9: Panel sealing around perimeter

Edge Profile Sealing

Panels that are installed on an outrigger or “top of flange” frame must use either a U or L shaped sheet metal panel edge sealing cap (Figure 10 and Figure 11) to seal end joint at the end of each panel. **The U or L shaped edge cap is not necessary for “nested” perimeter frame installations.**

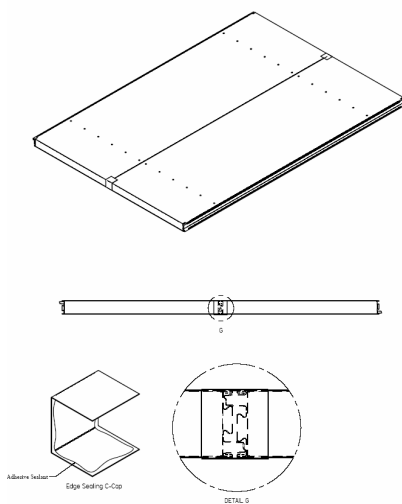


Figure 10: U Cap

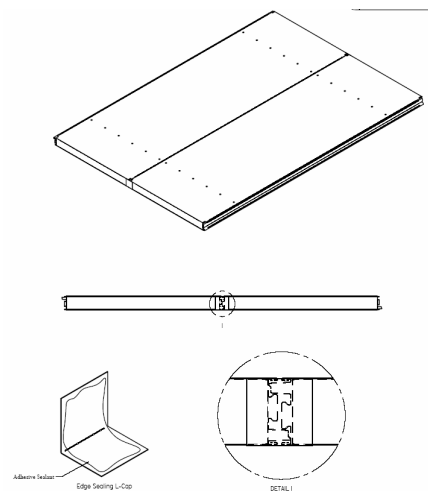


Figure 11: L Cap

Floor Sheathing

Sheathing must be applied over VeriClad™ floor panels. VeriClad™ foam core panels must be separated from the interior of a building by a 15 minute thermal barrier as defined in IBC Section 2603.4 except when the foam core panels are used as floor panels and: a) the building is only one story in height, and; b) the building has a complete NFPA 13 sprinkler system installed (note: the NFPA 13 system must be complete; no partial NFPA 13 or 13R or 13D systems are deemed acceptable for the purposes of eliminating the thermal barrier requirement). For structural floor applications VeriClad™ panels may be covered with either 1/4" or 7/16" mineral board or 19/32" wood structural panel bonded and fastened with appropriate construction adhesive and fasteners (see materials list for recommended adhesives and fasteners).

Floor Sheathing Installation

Sheathing joints must be staggered to avoid coinciding joints with VeriClad™ panel joints. Sheathing may be placed with the long joints parallel or perpendicular to the VeriClad™ panel joints. Compliant mineral board can be purchased from Veristeel. The recommended fastener pattern for the mineral board and wood structural panel is displayed in Figure 12. Mineral board must also be glued to the panels by applying a bead of adhesive around the perimeter of the board and then an X pattern from corner to corner. If a pourable adhesive is used follow the manufacturer's recommendation for application. Contact a Veristeel engineer with any questions about how to fasten and glue sheathing products prior to installation.

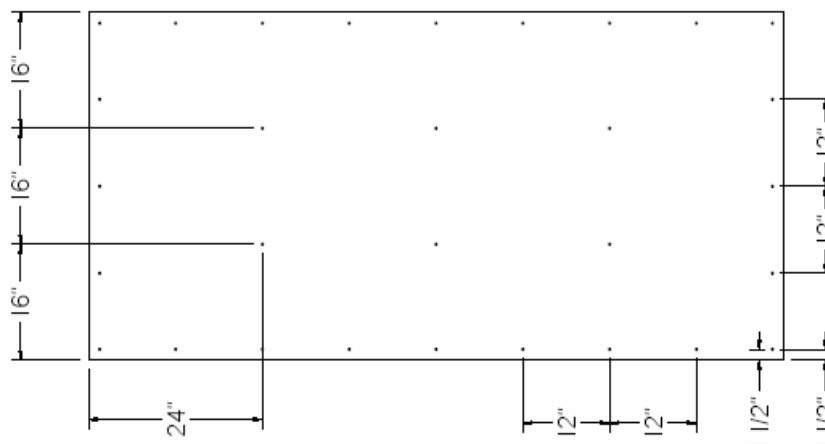


Figure 12: 1/4" or 7/16" Mineral Board or 19/32" Wood Panel Fastening

Mate Line Hold Back

Sheathing materials should be held back at least 6" from each side of the mate line. The mate line can then be finished on site with the correct thickness of bridging material, which can include floating the seam between holdbacks. Consult a Veristeel engineer for any questions on how to handle a mate line during installation.

Floor Panel Penetrations

Penetrations may only be cut perpendicular to the panel surface at a minimum of 6 inches from panel end (48" side), and 3 inches from the panel edge (long side). Circular penetrations are cut with a drill and a metal cutting hole saw. The center of the penetration should be pre-drilled through the thickness of the panel before cutting the hole. **The penetration must be drilled from both sides of the panel.** The penetration **CANNOT** be drilled from the top surface only. Drilling from the top surface can cause the bottom skin to delaminate. **IMPORTANT: DO NOT USE RECIPROCATING SAWS TO CUT PENETRATIONS!** Square penetrations can be cut with a circular saw fitted with one of the metal cutting blades listed in the Installation Tools section. Please consult a Veristeel engineer to confirm that intended penetrations are acceptable. Improper penetrations will automatically void the product warranty.

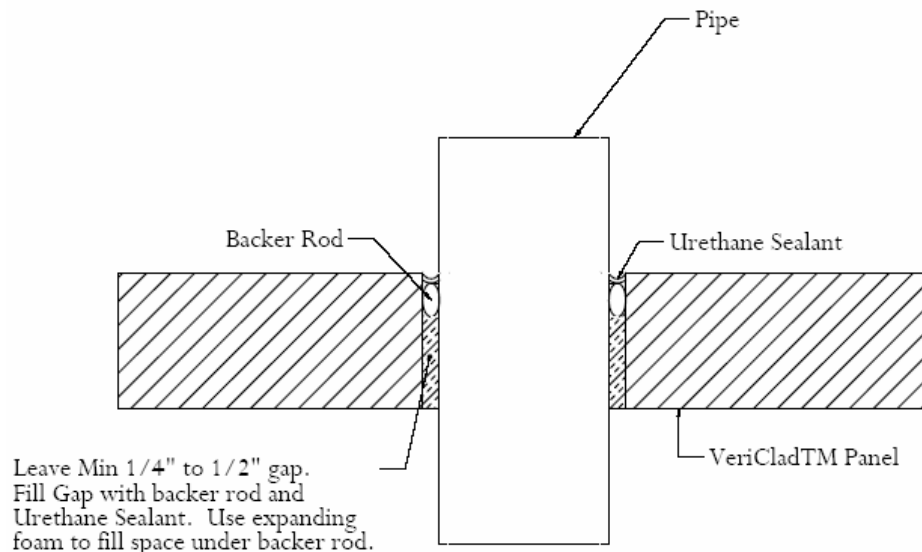


Figure 13: General Penetration Detail

Bottom Plate Fastening for Walls

Wall bottom plates are fastened to VeriClad™ panels with standard sheet metal screws. Bottom plates can be installed to the top skins of the panels or onto the sheathing in installations where sheathing is used. Consult a Veristeel engineer to determine which method best fits the intended application.

Wood Construction

Wood bottom plates can be fastened to the top skin of VeriClad™ panels with wood to metal screws at appropriate spacing to meet code. Be careful not to over-drive the threaded fasteners.

Steel Construction

Steel bottom plates can be fastened to the top skin of VeriClad™ panels with #10 self-drilling sheet metal fasteners at appropriate spacing to meet code. Be careful not to over drive the fasteners.

ROOF PANEL INSTALLATION

General Roof Installation Notes

- **VERICLAD™ PANELS USED AS ROOF PANELS MUST BE INSTALLED TO ALLOW FOR DRAINAGE WITH A MINIMUM SLOPE OF ¼ INCH PER FOOT (2 PERCENT SLOPE).**
- **BOTH INTERIOR AND EXTERIOR PANEL JOINTS MUST BE SEALED WITH A POLYURETHANE SEALANT.**
- **THE PANELS MUST BE COVERED BY A ROOFING SYSTEM WHICH COMPLIES WITH THE CODE.**
- **THE UNDERSIDE (CEILING FACE) OF FLOOR/CEILING AND ROOF PANELS MUST BE COVERED WITH MINIMUM 1/2" GYPSUM WALLBOARD TO MEET THE 15 MINUTE THERMAL BARRIER REQUIREMENT. THE ½ INCH GYPSUM BOARD MUST BE GLUED AND SCREWED TO THE PANELS WITH TYPE S DRYWALL SCREWS AT 12" ON CENTER EACH WAY.**
- **THE PANELS MUST BE SUPPORTED BY STRUCTURAL FRAMING MEMBERS WITH A MINIMUM BEARING LENGTH OF 2.25".**
- **THE PANELS MUST BE FASTENED TO THE SUPPORTING STRUCTURE USING SELF-DRILLING SCREWS (CONSULT VERISTEEL ENGINEER FOR CORRECT FASTENERS). THE FASTENERS MUST BE INSTALLED THROUGH EACH PANEL, FROM THE TOP, AT A MAXIMUM SPACING OF 12" ON CENTER. SCREWS MUST BE INSTALLED WITH A MINIMUM EDGE DISTANCE OF 1" AND A MINIMUM END DISTANCE OF 1.5".**

Sealing Roof Panels

VeriClad™ roof panel joints must be sealed with a polyurethane sealant on both the interior and exterior surfaces (Figure 14).

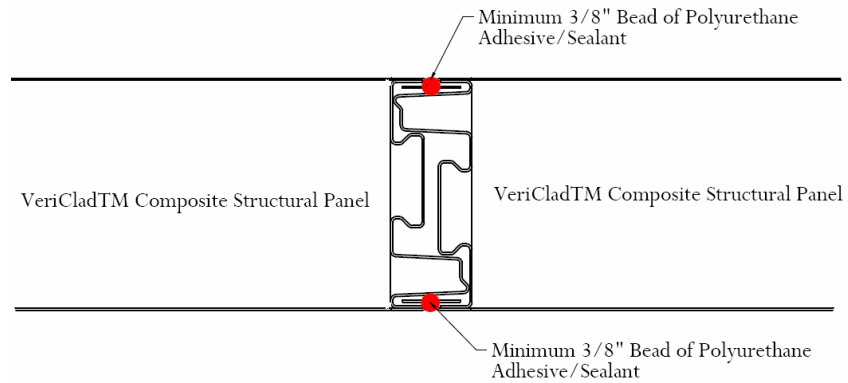


Figure 14: Roof Panel Sealing

General Panel Layouts

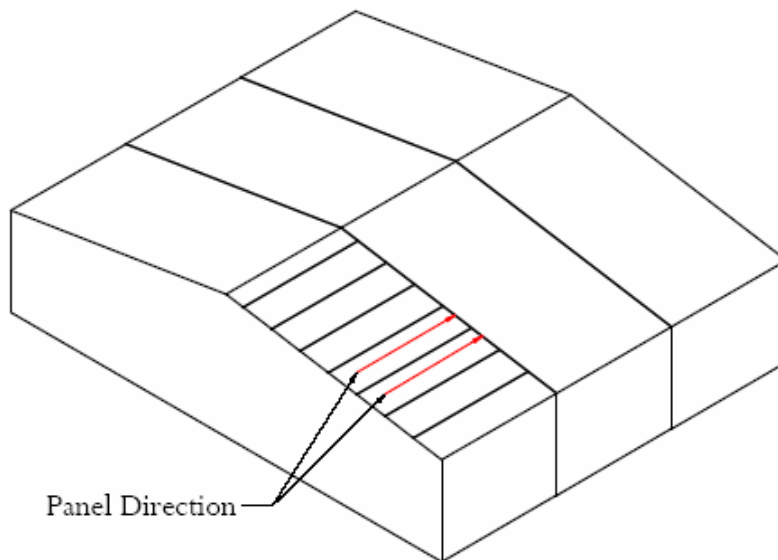


Figure 15: Double Pitch Roof

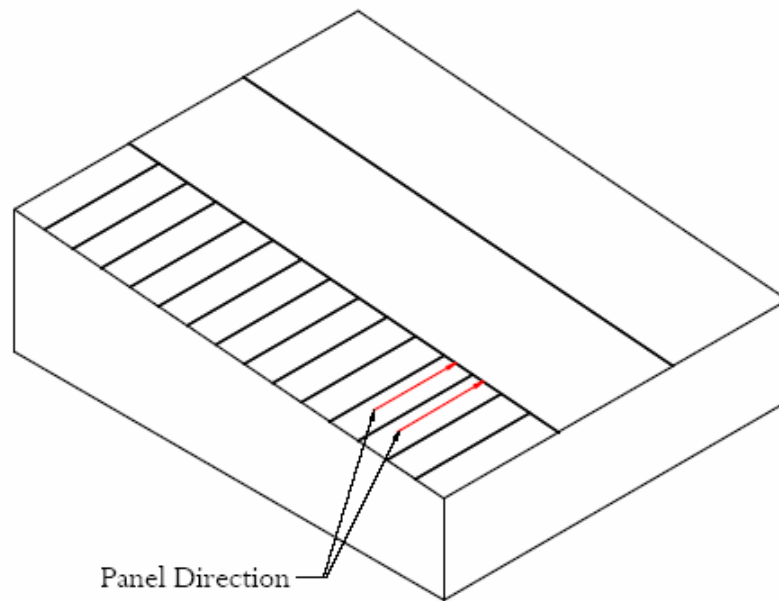


Figure 16: Single Pitch Roof

Fastening Roof Panels to Structural Steel

VeriClad™ roof panels may be fastened to structural steel supporting members with the TRUFAST SIPHD 6000 fastener. The fasteners are spaced at a maximum of 12 inches O.C. Prior to laying panels on the structural members a continuous bead of polyurethane sealant must be applied to prevent air and moisture intrusion into the building (Figure 17).

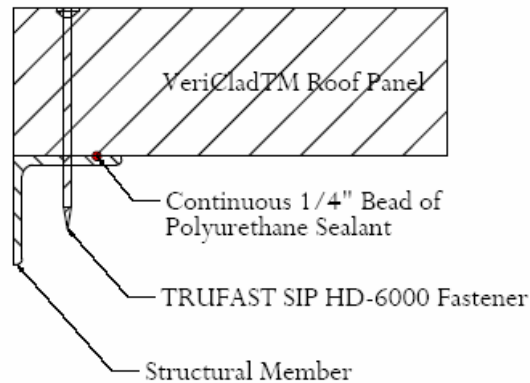


Figure 17: Fastening Roof Panel to Structural Steel

Fastening Roof Panels to Light Gauge Steel

VeriClad™ roof panels may be fastened to light gauge steel supporting members with the TRUFAST SIPLD 5000 fastener. The fasteners are spaced at a maximum of 12 inches O.C. Prior to laying panels on the structural members a continuous bead of polyurethane sealant must be applied to prevent air and moisture intrusion into the building (Figure 18).

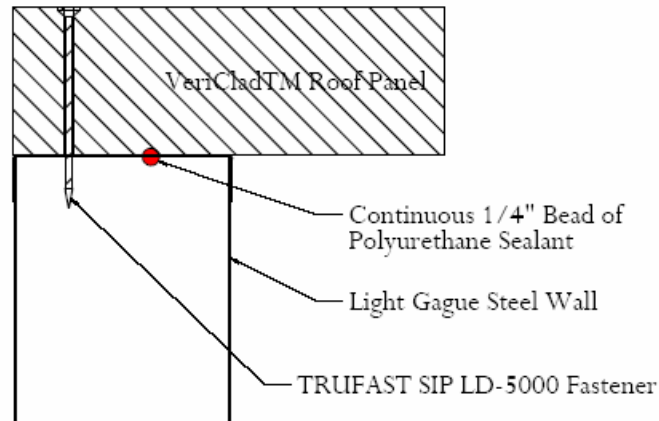


Figure 18: Fastening Roof Panel to Light Gauge Steel

Roof Panel Mate-lines

Gaps in the roof mate lines should be filled with expanding polyurethane foam sealant.

Ridge Sealing

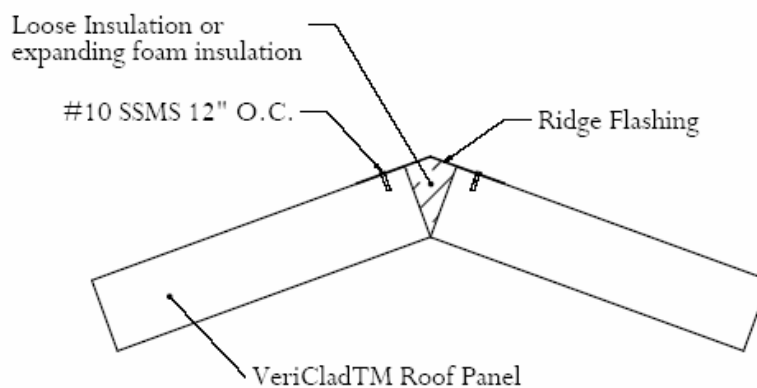


Figure 19: Roof Ridge Sealing

Roof Coverings

Conventional roof systems including asphalt, single-ply (EPDM, TPO and PVC) and sprayed polyurethane foam roofing are acceptable systems to be used over VeriClad™ roof panels. Prior to installation of the roof system, the installer must seal VeriClad™ panel joints with an approved polyurethane adhesive/sealant. Roof coverings may be mechanically attached, fully adhered, or ballasted. Hot asphalt, torched roof systems, or any hot applied roof systems are prohibited unless authorization is given by a Veristeel engineer.

Roof Insulation

Insulation boards may be applied over VeriClad™ roof panels. Insulation boards may be fully adhered or mechanically fastened.

Mechanical Attachment

The method of attaching roof coverings, cover boards and insulation boards to VeriClad™ roof panels must be in accordance with the roof covering manufacturer's method for installation over steel decking.

Roof Panel Penetrations

Roof penetrations may be cut through a panel at a minimum of 6 inches from panel end (48" side), and 3 inches from the panel edge (long side). Circular penetrations are cut with a drill and a metal cutting hole saw. The center of the penetration should be pre-drilled through the thickness of the panel before cutting the hole. **The penetration must be drilled from both sides of the panel.** Drilling from only one side can cause delamination of the steel skin from the foam core. **IMPORTANT: DO NOT USE RECIPROCATING SAWS TO CUT PENETRATIONS!** Square penetrations can be cut with a circular saw fitted with one of the metal cutting blades listed in the Installation Tools section. Please consult a Veristeel engineer to confirm that intended penetrations are acceptable. Improper penetrations will automatically void the product warranty.

Penetrations should be oversized by ¼" to ½" and then foam filled once the pipe is in place. Rubber roof jacks made for use with metal roofs should be used for proper weather protection around the penetration after the pipe is foamed (Figure 20).

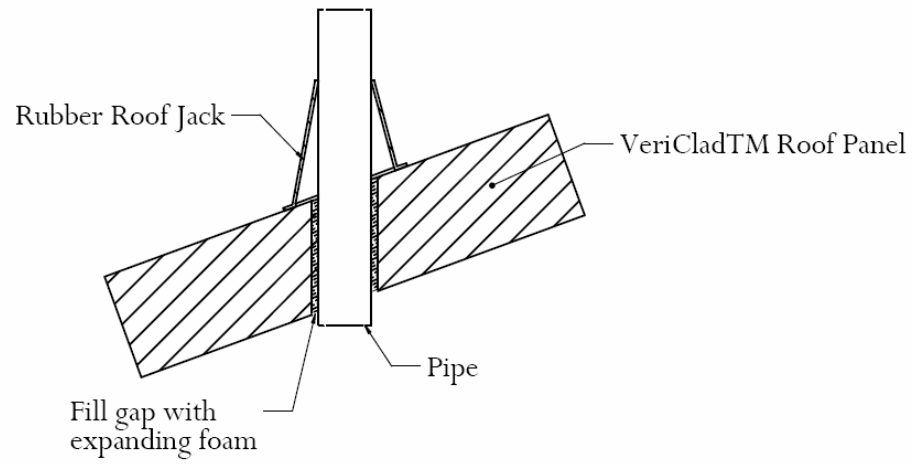


Figure 20: Roof Penetration

PANEL MODIFICATIONS

In some situations panels may be cut to accommodate structural members or non-standard installation dimensions. **NEVER CUT THE PANELS WITH A CUTTING TORCH OR RECIPROCATING SAW!** Please consult a Veristeel engineer for proper cutting methods and tools, and to review intended panel modifications before they are made. Improper panel modifications will automatically void the product warranty.

TECHNICAL ASSISTANCE CONTACT

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