Specifying Interlam IDF/MDF Panel Products
Art Diffusion / Elements by Interlam
Division 6 (6400 Architectural Millwork)

Interlam has a standard lead time of 2 to 4 weeks for the majority of our custom produced Interlam Designed Fiberboard (IDF/MDF) panel products. Specific lead times are determined upon receipt of both the deposit and approved shop drawings. Lead times are based on a "first come first served" basis and are solely dependent upon our current workload. Interlam does not charge nor accept additional charges for rush orders. All orders will be manufactured as fast as possible in the order they are received.

The carved IDF/ MDF panel product offers the customer an extremely broad variety of patterns (including the possibility for custom patterns), materials, finishes and installation options. In order to translate a customer requirement into an accurate product specification, it is important to understand all of the product options and terms used to describe these options. Product specification terms and options are discussed below along with helpful illustrations.

It is important to first select a core material based on specific project needs, such as contribution towards "Leed" credits, FSC Certified fibers with COC, Class A fire rating, radius applications, interior or exterior applications, formaldehyde emissions or moisture resistance. Core materials are available to fit most special needs such as radius or serpentine installations, opaque wall dividers or exterior applications. Not all core materials are available in all sizes, finishes and or patterns. Consult the specific pattern page to determine available thickness and sheet size for each individual core. Lead times will be increased if a non-standard sheet size or thickness is required for any given job.

1. **Core material options:**

IDF: ***"Interlam® Designed Fiberboard"*** Our advanced refining process and high quality wood fibers offer excellent surface qualities for deep profiling of carved MDF panels and components. This core option is our standard and is proprietary to the Interlam brand. We have spent years collaborating with the mills to provide a core option that presents the most consistent density profile from core center to face allowing a uniform aesthetic appearance of the surface of the finished carving. This core provides the highest quality finish of any of our available core options.

NAF: No Added Formaldehyde: This core option is available as a special option and also includes products that are ULEF (Ultra low emitting formaldehyde) and NAUF , No added urea-formaldehyde. California Air Resources Board (CARB) exempt (NAF,ULEF) products have no added formaldehyde (NAF) and or/ultra-low emitting formaldehyde (ULEF) and have been exempted from third party certification requirements of CARB ATCM 93120. NAUF products, as defined by the U.S. Green Building Council's LEED Standard, may be used for low-emitting materials credit under LEED 2009 for Commercial Interiors and LEED 2009 for new construction and Major renovations for projects registered by October 31, 2016. Projects registered to LEED v4(as of November 20, 2013) will offer credit to IEQ 4.4: Low-emitting Materials for NAF and ULEF CARB compliant panels. LEED v4 does not recognize NAUF. This core provides a finish that is more textured and open celled as compared to the IDF listed above. Please ensure that you request finish samples of the specified core prior to specifying and ordering.

Class A Fire rated: Interlam's MDF treated with fire-retardant [3] (FR) additives are certified by Underwriters Laboratories to have a Class A or Class I flame spread rating and must be specifically ordered as an available option with an up charge.

NOTE:
Flame Spread Performance of MDF / IDF Wood Panels:
Unless otherwise stated, Interlam's standard IDF or Carved MDF wood panels are not certified for a specific flame spread rating. Untreated [2] MDF has been tested for flame spread by a number of different manufacturers and the results met the Class III or C rating. The Department of Housing and Urban Development(HUD) in their Manufactured Home Construction and Safety Standards(Section 3280.203) accepts MDF 3/8 inch and thicker as having a flame spread rating of 76 to 200 for general use. The American Wood Council (AWC) of the American Forest and Paper Association (AF&PA) has published information in their "Design for Code Acceptance" series (DCA1) relating to Flame Spread Performance of Wood Products. The document can be found at www.awc.org. Table 1 in that document places MDF in the Class III or C rating. Likewise, Table 2 in that document places factory finished products (i.e. printed or with overlays) containing untreated particleboard and MDF substrates in the Class III or C flame spread rating. Smoke data specific to every product is currently not available; however other manufacturers have found typical values of 100-200 for smoke developed. The AF&PA document states that "a smoke-developed index was measured for some of the wood products listed in Tables 1 and 2". None of the products tested exceeded 450, a limiting value commonly used in building code regulations.

[2] Without a fire-retardant additive
[3] Trade names: Premier® FR, VESTA FR MDF

Moisture Resistant MDF: An excellent core choice for interior applications with high humidity and or accidental moisture exposure. This core provides a finish that is more textured and open celled as compared to the IDF listed above. Please ensure that you request finish samples of the specified core prior to specifying and ordering.
An exterior alternative is available in EXTIRA®. (Special sizes and finishing requirements apply)

Forescolor: Through-colored engineered wood dyed at the fiber level using organic dyes and then pressed into boards. Available in 9 colors and 2 thicknesses, Forescolor is an innovative product that combines the natural features of wood with the brightness of colors. Forescolor panel products are manufactured from recycled/recovered forest products; therefore due to the color of the raw material, the raw unfinished panel products will have variations in color and fiber.

FSC®: FSC certification provides a credible link between responsible production and consumption of forest products, enabling consumers and businesses to make purchasing decisions that benefit people and the environment as well as providing ongoing business value. Interlam's FSC certificate is available for download direct from our website.

Celtec and Acrylic: Available NON-Wood cores are available for specialty radius applications as well as other more design oriented motifs. Contact Interlam direct to discuss the available options.

Color Consistency of IDF, MDF, SDF, FR & Forescolor Products:
Our Carved IDF/MDF panel products are manufactured from recycled/recovered forest products; therefore due to the color of the raw material, the raw unfinished panel products will have variations in color and fiber. This condition is relevant when the designer wishes to clear coat or install raw product. The end result will be a natural variation of color and fiber found naturally within the fiber used for the manufacturing of the board products. Interlam cannot guarantee a color match of raw boards. Interlam currently utilizes three mills for the fabrication of raw products, each of which contain distinct variations. This variation is especially noticeable when a class A fire rated board is used. The mills have begun to die the center core a pale orange color to distinguish it from other board products. Due to previously stated variables, we do not offer stain as a stock finish.

2. **Pattern Number**:

Every pattern has an identifying number or name such as “SOT-001”, “W1208” or “Facets”. The pattern choice is the second step after choosing a material for the core. A full page is dedicated to each pattern online at www.interlam-design.com complete with pattern characteristics and photos of the actual product. This page will also include information about which finishes are available for the specific pattern. Not all finishes are available for all patterns. It is important to order sample to verify the scale of the pattern before specifying the product. While a hand has been included in most pattern shots for use as scale, this alone cannot give a true representation of the pattern appearance.

Panel Size:

The standard panel size is 48” x 96” (4’ x 8’). Custom panels can be produced up to 60” wide and up to 120” long. Not all core materials are available in the larger sizes. Not all patterns can be created in custom sizes. Consult the pattern page for that information. Please contact Interlam to determine material availability for custom projects. For multiple panel cut-to-size projects, please forward a layout with overall dimensions via e-mail to kevin@interlam-design.com in any of the following formats: .DXF, .DWG, or PDF files. DWG files are preferred.

Panel Thickness:

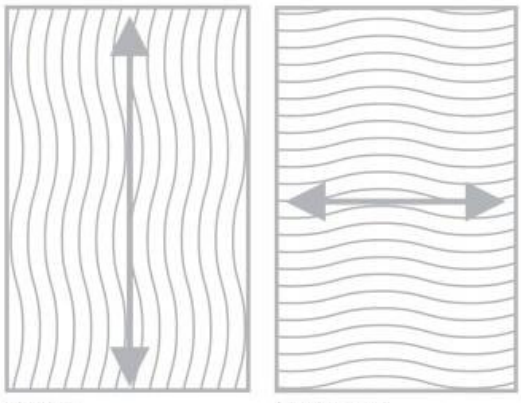
Panel thickness refers to the thickness of the raw stock prior to machining. After machining, the thickest area of the panel will be slightly less than this nominal panel thickness. Panel stock thickness ranges from 1/2” to 3”. Interlam (at it’s sole discretion) may laminate raw stock to achieve the final desired thickness. Many factors will determine the final panel thickness such as pattern choice, installation methods and material availability. See “Installation Methods” for further information on thickness specifications.

Pattern Depth:

The pattern depth refers to the deepest cut that is made in the raw stock in order to produce the pattern. Most patterns are offered in only one depth; however a few have multiple depth options as indicated on the specific pattern page. Installation methods specified may also dictate pattern depth and panel thickness.

Pattern Direction: EXTREMELY CRITICAL!!!

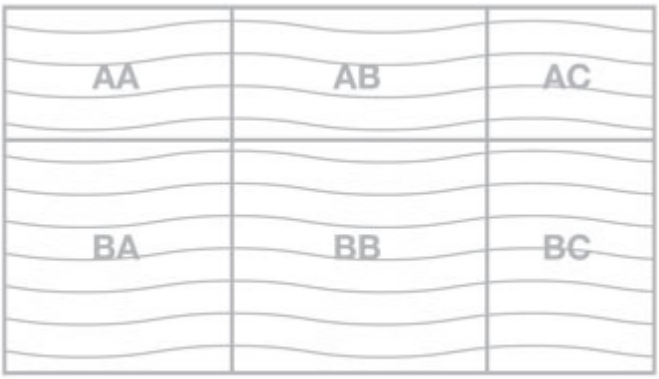
Most patterns can be produced in either vertical or horizontal orientation. Referring to the illustration, a pattern is said to be horizontal if the tool marks run generally in the short direction and vertical if the tool marks run generally in the long direction. Please note that the vertical and horizontal designations have nothing to do with the installed orientation. For multiple panel layouts or panels that are approximately square, orientation should be indicated in an attached layout sketch. The direction of some patterns is not always obvious, so please refer to individual pattern photos in the catalogue to determine the preferred orientation.



Pattern Repeat Type:

Most patterns can be manufactured so that the pattern continues smoothly from panel to panel in all directions creating a monolithic appearance. Depending on the pattern and customer requirements, this continuity can be achieved in a number of different ways. The way in which the pattern continues from panel to panel is called the pattern "repeat type." The repeat type for each pattern is indicated in the pattern detail section of the catalogue. The different repeat types are discussed below. Please consult the pattern page online to determine if this can be achieved on custom size panels for your project specifically.

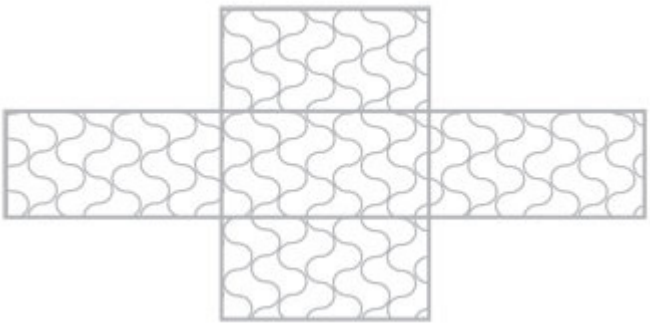
Continuous Flow Pattern Type - A continuous flow pattern does not necessarily repeat in any direction. This type of pattern is generated by computer to flow over a project area of any size and requiring any number of panels. Each panel is unique and is labeled in order to simplify assembly in the field. When joined together the panels create a monolithic appearance.



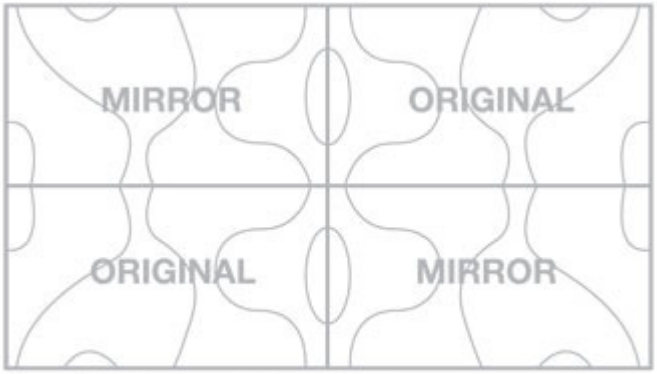
Example of continuous flow over a six panel project area

When ordering continuous flow panels, the customer must provide a layout indicating the dimensions of the project area as well as the dimensions of all of the individual panels. Most patterns are available as continuous flow. Contact kevin@interlam-design.com for specific applications.

Repeating Pattern Type - Repeating patterns allow the customer to fill a project area of any size using identical standard 4' X 8' panels. The standard panels fit together top-to-bottom and left-side to right- side creating a monolithic appearance. In the illustration below, 5 identical repeating panels are shown to match on all edges. The orientation of all panels must be maintained in the same direction to allow repeat. Repeating panels are only available in full 4' X 8' sheets AND A LIMITED NUMBER OF PATTERNS IN 5' X 8'. If nonstandard panel sizes are required, even for a repeating pattern type, panels must be ordered as continuous flow at an additional cost.



Single Panel Pattern Type - Single panels are available as shown in the catalogue photos, or as a mirror image. By mirroring across the panel seams, a continuous project area can be filled with a pattern reminiscent of book matched veneers. Single panels are available in standard 4’ X 8’ sizes. Many patterns can be mirrored for custom applications. Contact Interlam Corp. for specific applications.



Example of a four panel mirrored pattern

Fixed Set Pattern Type - Fixed sets are two or more non-repeating 4’ X 8’ panels that fit together only one way. Single panels may be selected out of a set, or the entire set may be used in a project. Fixed set panels may also be mirrored.

A-B Repeat Type - This type of pattern repeats every other panel. Because of this an “A” and a “B” version of the pattern is manufactured and labeled accordingly. The two versions of the panel are then alternated in the final installation in order to achieve a monolithic appearance.

Minimum Recommended Thickness - The minimum thickness given for each pattern refers to the thinnest material from which the pattern can be carved. Panels of minimum thickness should be specified only when panels are to be attached directly to a sound surface using the direct screw method or when panels will have a plywood backer attached by Interlam.

3. **Finish**:

The final step in specifying these panels is to select a finish. Please consult the pattern specific page to see the list of available finishes for your specified pattern. Interlam offers a wide variety of finishes including:

- Factory Sanded and Primed: If you prefer to field finish your panels, we highly recommend that you have the factory sand and prime your panels. Our expert finish team hand sands every square inch of each panel including the edges. A factory sanded and primed finish will go through 2-3 rounds of hand sanding and primer application (latex or lacquer per the specification). Primer is sprayed from multiple directions for an even coverage over the peaks and valleys of the pattern. Edges are always finished as well. **It is critical that a machine sander IS NOT USED as they will damage the profile of the pattern**. Interlam will also seal the back of the panel to help prevent any warping.
- Factory Sanded/Primed/Painted to the color of your specification: this includes the Factory Sanding and priming finish (see above), plus 2-3 rounds of light hand sanding and application of the finish paint specified for the project. Interlam uses Benjamin Moore and Sherwin Williams paint. We do not recommend a semi gloss or high gloss finish.
- Factory Specialty Paint: The same process as Factory Sanded/Primed/Painted listed above. Please see website (https://interlam-design.com/finishes) for images of metallic paint, antiqued paint, oxy paint, and tortoise shell paint.

- Non-gloss Foil/High Gloss Foil: A membrane film can be bladder pressed onto most patterns. Various wood grains, patterns, and solid colors are available. A protective peel coat is applied to high gloss foils for protection before product ships out.
- Overlay: Choose from an assortment of high pressure laminates from Lab Design Laminates (https://www.labdesignlaminate.com/) to be applied to the core substrate of your specification prior to carving. The core material is revealed allowing for a diverse range of color combinations to suit your needs.

Installation Methods:

The following information is a compilation of published information pertaining to the use and application of carved MDF/IDF products. This publication is intended to serve as an informative tool and a "sharing of information" rather than a strict directive. Each application will have unique circumstances and varied site conditions resulting in an assortment of available techniques and practices to achieve the same result. MDF/IDF products have a possible linear expansion of +/- .33%. Wood is a hygroscopic material, and under normal use conditions all wood products contain some moisture. Wood readily exchanges this molecular moisture with the water vapor in the surrounding atmosphere according to the existing relative humidity. In high humidity, wood picks up moisture and swells; in low humidity wood releases moisture and shrinks. As normal minor fluctuations in humidity occur, the resulting dimensional response in properly designed construction will be insignificant. To avoid problems, it is recommended that the relative humidity be maintained within the range of 25-55%. Uncontrolled extremes – below 20% or above 80% relative humidity-can likely cause problems. Immediately upon receipt of your order, the panels should be placed in a climate-controlled environment and allowed three days to acclimate to the existing relative humidity (within the above stated ranges) This level of humidity should be the level that will be maintained after occupation of the space. It is very important to note that the panels must be stored flat and face up to reduce the bowing and warping. When MDF/IDF panels are carved, the face of the panel is removed and creates an "unbalanced panel effect". The level of this effect varies depending upon pattern and board thickness. Plywood backers can be added to the panels to assist in reducing this effect and aid in the installation process. The natural "bow" or "warp" is common to all MDF products and not inherent specifically to our products. This condition can be compensated by proper installation techniques, some of which are discussed in this bulletin.

Our Carved MDF/IDF wood products are manufactured from 100% recycled/recovered wood chips dried to appropriate average moisture content of 4-6% and maintained at this condition up to time of shipping. Interlam cannot control the conditions the panels are exposed to during the storing and shipping process. Subsequent dimensional change in MDF/IDF is and always has been an inherent natural property of composite panels. These changes cannot be the responsibility of the manufacturer.
Specifically:

- Responsibility for dimensional change problems in IDF/MDF resulting from improper design rests with the designer/architect/specifier.
- Responsibility for dimensional change problems in IDF/MDF resulting from improper relative humidity exposure during site storage and installation rests with the General Contractor.
- Responsibility for dimensional change problems in MDF resulting from humidity extremes after occupancy rests with engineering and maintenance.

All orders finished "In House" will have a clear lacquer sanding sealer on the back of the panel and the specified finish in either a lacquer or latex finish on the face and all edges. All orders placed as "prime and sand" only will have a lacquer based primer applied as a standard unless otherwise noted at the time the deposit is received. Sealing the back is imperative to reduce the possibility of excessive bowing and warping. **All panels ordered as**

raw or unfinished, MUST BE SEALED OR BACK PRIMED prior to installation!! Failure to seal the back will allow moisture to be released and or absorbed from one side, resulting in excessive warping.

Due to the manufacturing methods used, most panels will present "bow" or "warping". This condition is considered normal and can be removed using the installation methods below. If a higher degree of flatness is required, Baltic Birch Plywood can be bonded to back of panels prior to manufacture. This reduces but will not completely eliminate warping. The maximum size of Baltic Birch is 5' x 10'.

Z-Clips:

Z-Clips may only be used if there is sufficient material thickness to allow screw attachment of the clips to the panel. Ideally, the panels should be specified thick enough or with a thick enough backer to accommodate the screws that are to be used. Panels of minimum recommended thickness can be used for Z-Clip installation, but the installer must first glue wood screw cleats to the back of the panel. Z-Clips should run the full panel width to insure adequate support across the entire panel. A minimum of three (3) rows of z-clips are required per 8 foot high panel. Adding a fourth row may be required depending on the pattern and panel thickness specified. The rows should be situated at the extreme top and bottom of the panel with the remaining rows centered. The z-clips should run the full width of the panel. Plywood or solid wood "in-wall" blocking is required with metal stud construction and recommended with wood framing. Z-clips are available for purchase from Interlam. Estimate 4pcs (8 foot lengths) per 4 x8 Art Diffusion panel. The z-clip is shipped in 8' lengths without bored holes.

Construction Mastic:

A high quality construction mastic such as "Liquid Nails" or a "PL" Mastic such as "PL Premium Polyurethane" can be applied to the back of the panels and then pressed onto a structurally sound surface * A structurally sound surface for the purposes of this installation would be a wall skinned in 12mm Baltic birch plywood. Interlam does not recommend using this method to apply directly to drywall or painted surfaces. (follow construction mastic manufacturer's application instructions). Panels must be mechanically held in place until mastic is completely set. The installer MUST insure the panels are completely flat and aligned prior to the mastic curing. Improper placement using this method will result in a permanent incorrect installation with bowing or cupping on all sides at joints. This method is not recommended for panels thicker than ¾".

Direct Screw Attachment:

Carved IDF/MDF panels may be attached to a supporting structure by screwing directly into the panel back. As is the case with Z -Clip installation, the panels should be specified thick enough or with a thick enough backer to accommodate the screws that are to be used. Construction mastic should also be used in conjunction with this technique. If attaching directly through the face of the panel into a substrate or batten preferably "in –wall blocking", the hole should be predrilled and countersunk and filled with a non-shrinking type of filler such as "Bondo" or similar auto-body filler. If this installation technique is used on prefinished panels, then it will need to be touched up in the field after installation. **If this technique is utilized, the back must be sealed/back primed prior to installation.** Bondo or similar auto-body fillers, wood putties or wood fills ARE NOT RECOMMENDED for the filling of seams between each panel. If the designer is attempting to achieve a monolithic appearance of the panels, a flexible seam fill or caulk should be applied in the seams prior to finishing. The selection and type of a particular seam fill should be compatible with the specified finish. The seam fill should only be applied in the seam taking care to prevent the seam fill from being applied to the face of the panel. Using blue painters tape on each side of the seam should aid in this step. Failure to follow this step will result in large visible striping that will become visible after the application of the final finish. Consult the specified finish manufacturer for compatible "Flexible seam fill options". Based on the inherent linear expansion properties of MDF/IDF products, flexible seam fillers must be utilized in the absence of a designed reveal or quirk line to allow for movement. With the proper technique, the seam will be less noticeable; however it will never be invisible.

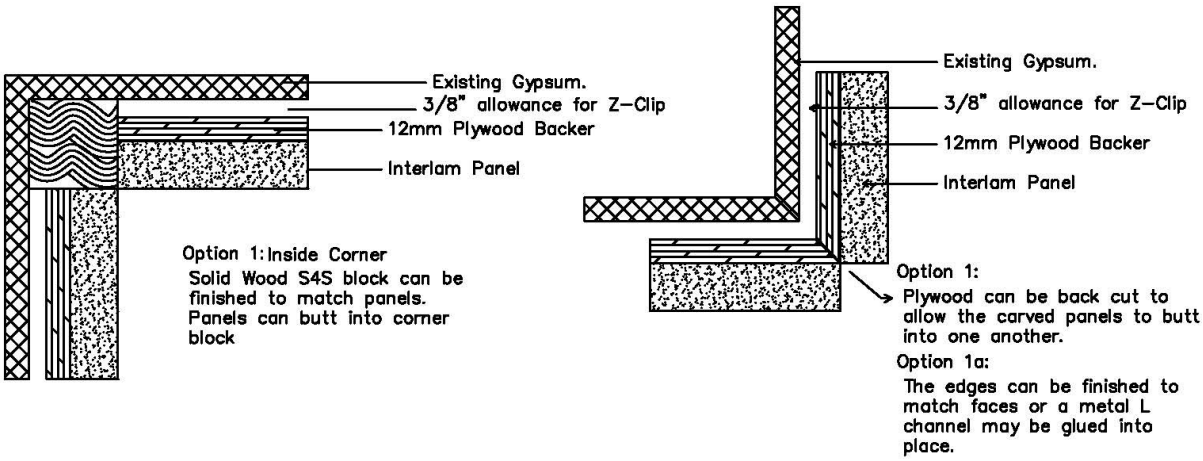
Seams:

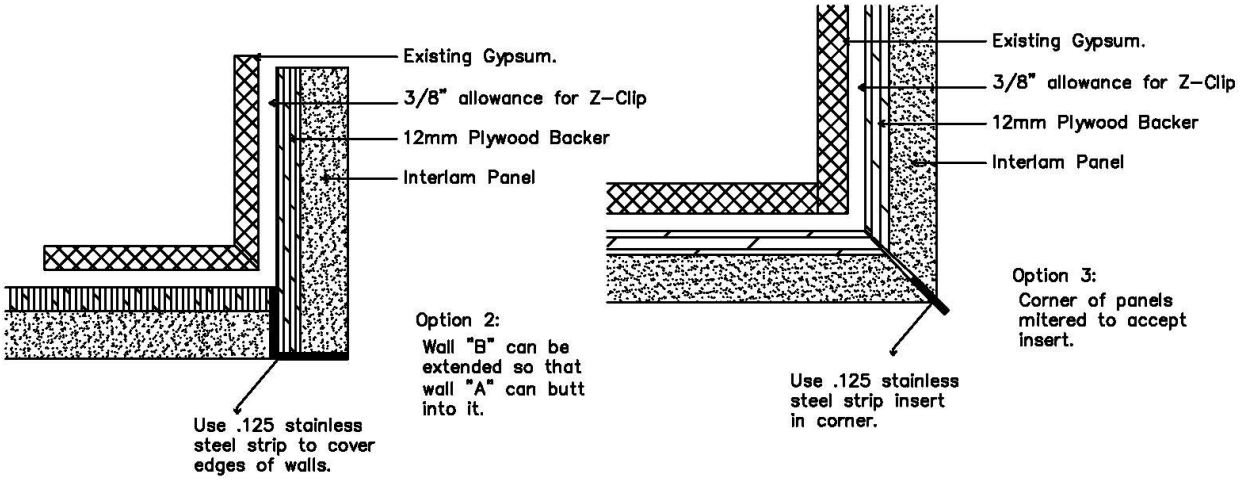
Prefinished panels will have noticeable seams due to the finish buildup on the edge of each panel. The pattern will continue perfectly from one to another, however depending upon the pattern and pattern direction relative to the seam location, the severity of the seam visibility will vary. Some patterns allow the seam to be less noticeable within the patterns, while others may require the seam to be placed against the direction of the pattern and be more noticeable. It is recommended that the designer contact Interlam Corp. prior to specifying a pattern or specific installation technique to achieve the highest level of design intent. During this contact, the specifier should provide the following information:

- Complete layout in AutoCAD of the specified area only, including plan, elevation and section
- A selection of patterns being considered with *desired pattern direction*
- Desired finish
- Installation technique being considered
- Site conditions
- Specific core requirements I.E. fire rating, LEED's, CARB etc….
- Corner conditions- Sample illustrations are shown

NOTE: This written document overrides any verbal communication directly with Interlam or any Interlam Distributor or Representative.

Although techniques exist to greatly mitigate the visibility of panel seams, too many varying factors exist for Interlam to guarantee a specified outcome. Site conditions, in wall blocking, uncontrolled relative humidity and the experience of the installation team, the specified installation method , etc…. all play a role in the final installed appearance of the product seams.





Consideration of all the aforementioned elements will allow Interlam to determine a suggestion for optimal placement of material seams and methods of installation.

The installation of our panel products requires more than a basic knowledge of rough carpentry and should only be performed by a certified AWI millwork company. Special conditions such as miter corner conditions, radius applications, custom shapes etc... should be addressed during the initial design phase.

FURTHER QUESTIONS SHOULD BE DIRECTED TO: kevin@interlam-design.com