

Twin Oaks Facilities International

SIPS

Preparation and Installation Guide

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1. Introduction

Twin Oaks Facilities International strives to be a leader in the SIPs planning and construction industry. Our panels are constructed using Magnesium Oxide board (MgO) instead of the traditional Oriented Strand Board (OSB) panels offered throughout the SIPs industry. When building with SIPs from Twin Oaks Facilities International, you can be assured that you are building with a fully licensed ICC approved panel from an ICC accredited manufacturing facility.

What's Included

- Blank, precut, or ready to assemble (RTA) panels.
- Engineering
- Clear and precise construction drawings
- Precision cuts
- All supplies needed for your project upon request.
- On time delivery
- Full installation support which includes phone access, training, supervisors, or installation crews.

Contact Information

If at any time you encounter a problem with your panels or project, we have experts on hand who can answer your questions and offer the best possible solution.

The best way to reach us is at sipsmadison.com and click on the contact us link.

Smart Jobsite Planning

Construction is a hazardous industry full of potential risks to workers. To prevent or avoid harm, workers need to make smart decisions and practice proper building methods. Building with SIPs is easy, however, workers need to practice jobsite safety and possess proper skills of the trade. Always make sure your jobsite is clean, organized, and free of potential hazards.

Twin Oaks Facilities International recommends following OSHA's standards for jobsite safety. Always follow the panel layout plan provided by Twin Oaks Facilities International. The connection details and panel numbering are specified on the drawings to make installation and assembly easy. Contact Twin Oaks Facilities International to discuss any questions or issues that may arise while building your project.

2. Planning

Types of Panels/ Panel Packages

Blank/ Stock Panels

Blank/ stock panels are simply 4'x8' or 4'x10' panels of whatever thickness MgO or EPS (foam) was ordered that haven't been altered in any way from the manufacturing facility. They are panels that you, the customer, will alter on site according to your specific needs. You will still need a set of basic tools to alter the panels in order to assemble them. You will need a workstation to keep them elevated off the ground, a foam scoop, hot knife skill saw with masonry blade and reciprocating saw. Twin Oaks Facilities International only warranties blank/stock panels in their unaltered state.

Pre-cut Panels

Twin Oaks Facilities International can pre-cut panels at the factory according to your specific needs and drawings. Twin Oaks Facilities International will work closely with you on your pre-cut needs. Pre-cut panels may need minor alterations in the field so a workstation will be required to better assist in the alteration process.

Ready To Assemble (RTA) Package

Twin Oaks Facilities International will take your predesigned set of plans or work closely with you to design the project of your dreams. Twin Oaks Facilities International will then build the panels according to the agreed upon set of plans. All panels will be built, cut, prepped, and labeled at the manufacturing facility and shipped to you, the customer, for assembly on site. RTA packages will come with all panels, splines, metal, screws, and detailed assembly drawings to complete your project. RTA packages may need minor alterations in the field.

Supplies and Tools needed for Assembly and Installation

- Panel screws
- Splines
- 18-gauge channel metal
- 2 x nominal lumber material
- 1 ½" metal hole saw
- Hammer drill
- Impact drill with #2 phillips bit
- Electric Foam Scoop
- Hot Knife
- Levels, tape measures, ladders, flat bars, and hammers
- Crane, telehandler, forklift, or other hoist options
- Come along and straps.
- Dolly for moving panels.
- **Reciprocating Saw**

Optional

- SIPs sealant tape
- Expanding Foam Sealer
- Foam safe construction adhesive

Pre-installation Planning

When receiving and storing panels there are a few things the builder should check for before the panels are delivered. Check to make sure the site is accessible and can be navigated easily by the delivery truck (semi-truck). Check to make sure the driveway is wide enough and not too steep for a delivery truck to navigate. Raise or remove anything hanging lower than 12' above the driveway. If these conditions can't be met, then please contact Twin Oaks Facilities International to set up an alternate delivery location.

There is a short window to unload the panels from the delivery truck. A forklift will speed up the unloading process. Panels can be removed by hand but will need to be done individually. Always exercise caution when unloading by hand as the individual panels are heavy.

Note: The truck driver may charge an additional fee if the unloading process takes too long. The driver is solely responsible for delivering the panels and unstrapping the material. **He will not help unload the panels.**

The panels come strapped on pallets and will need to be stored on dry level ground. If the panels need to be separated from the pallets, then they need to be stored on dunnage spaced every 4 feet or another pallet to prevent any damage to the panel. The panels need to be covered to minimize exposure to the elements or stored inside.

3. Pre-delivery Checklist

Site Evaluation

- Is the site wet or out of level?
- Are there long hanging power lines?
- Is there landscape interfering with moving equipment?
- Is there a septic tank and location known?
- Are there any restrictions or barriers that will prevent large vehicles from entering or maneuvering? (HOA's, gates, small bridges, sharp turns)
- Is there enough space to deliver all materials at once?
- Which piece of equipment will be best for unloading and assembling the panels? (Forklift, telehandler, crane, bucket lift)
- Is there space available for SIPs, heavy equipment, cutting area, materials, and vehicles?
- How far is the power source from the site?
- Is the site safe for leaving equipment and/or supplies overnight?

Before you get started

- Check that spaces are free and clear for materials and equipment.
- Make sure the foundation is dimensionally correct, level, and square.
- Mark or barricade any potential hazards.
- Hold a preconstruction meeting with employees so everyone is on the same page as far as order of procedure and assigned tasks.
- Make sure all scooped areas are deep enough for the splines and metal.
- Ensure channel metal is inserted into the proper panels and all electrical holes have been drilled.
- Ensure that all proper fasteners are used in the correct panel locations.
- Ensure all panels have screw locations properly marked.
- Always keep a clean workspace.

All panels will be labeled according to location and type of panel and will be pre-labeled where all fasteners are to be installed. Failure to install all fasteners according to manufacturer specifications will void manufacturer warranty. Failure to use proper size fasteners as specified by manufacturer will void manufacturer warranty.

Splines are 6" wide and are designed to connect two panels together. Spline location will be labeled on manufacturer's shop drawings that are sent to client/ builder for assembly.

4. Installing Panels

Walls

Once the foundation has been determined to be dimensionally correct, level, and square; it is time to lay out the walls. Start by marking the foundation with a chalk line to show where the walls will be located according to the floor plans. Next, place the bottom plate channel on the foundation where walls go and fasten according to engineered specifications. Be sure to allow at on bottom plate at least 3 ¼ inches of space for wall panels that contain channel metal. This allows the wall panel channel metal to sit directly to the foundation. After the bottom plate metal has been placed and fastened to the foundation, it is time to start placing wall panels. Always start placing wall panels in numerical order according to shop drawings. Shop drawings will have wall panels labeled with a “W” and the number order they are to be assembled. Example- first wall panel to be installed would be W1. The wall panel needs to be lifted by a crane, telehandler, forklift etc. using a strap, clamps or lifting eyes and carefully guided onto the bottom plate channel metal. The channel metal fits between the MgO board and EPS of the wall panels. It is very important that once the wall panel is placed on the bottom track that it is plumbed up, leveled, braced, and screwed off to prevent movement. The next step is to place the spline, making sure the electrical chases line up, inside the receiving area of panel W1 and screw the spline and panel W1 together. After spline has been properly installed, the next wall panel in sequential order (wall panel W2) can be placed on the bottom track and connected to the already placed wall panel W1. Wall panel W2 needs to be inserted onto the bottom channel track using the “SIP tilt” method. The “SIP tilt” method involves placing one corner of the wall panel on the bottom plate channel metal and the other bottom corner of the wall panel inserted over the spline inserted in the previously pre-installed panel. You simply tilt the panel vertically upwards toward the spline of the previously installed wall panel. You then simply complete this process for the remainder of the wall panels. The top plate channel metal will need to be installed once all wall panels have been installed. It is important to make sure the top plate channel metal is flush and level with the top of the panels and screwed according to manufacturer’s specifications.

2 Hour Rated Structural Firewall

The 2-hour structural firewall consists of using the standard 6 ½” SIP wall panels that are connected with a 6-inch spline that is made with 18-gauge channel metal wrapped around EPS foam. It has an extra layer of 12mm MgO board that is applied on each side of the panel in the field to give it the 2-hour rating. This extra layer is screwed to the panel according to manufacturer’s specifications.

Impact Rated Panels

Impact rated HVHZ panels are standard panels with an extra layer of 12mm MgO field applied to the panel and attached according to manufacturer’s specifications.

Header Panels and Cripple Panels

Header panels are the small, short panels that go above the door and window openings in the walls. Cripple panels are the small, short panels that are placed below the window openings in a wall. Header panels and cripple panels are installed like wall panels except for them not having spline material being used for connecting them to wall panels. Header and cripple panels are connected to adjacent wall panels using channel metal. The adjacent wall panels to a window or door opening are finished off with channel metal running from the bottom plate to the top plate. Next, a short piece of channel metal is attached directly to the wall panel metal and screwed according to manufacturer's/ engineering specifications. The length is the same measurement as the height of the header or cripple panel and placed above and below the opening of the location of the door or window on each adjacent wall panel. The next step is to place the header or cripple panel over the metal and fasten it according to manufacturer's specifications. Header and cripple panels should be lifted with care so as not to damage the panel or cause bodily injury.

Roofs

Roof panels are labeled like wall panels with respect to their location on the roof. Roof panels are labeled with a "R" and the number for with respect to the location of that specific panel according to manufacture shop drawings. Roof panels are connected using splines and metal or just metal according to engineering specifications. Roof panels must be lifted with a crane, telehandler, or forklift using a strap, clamps or lifting eyes. Once the roof panels are placed on the structure, they must be connected to the structure using long SIP screws supplied by manufacturer and screw spacing according to engineering specifications. Roof panel design will be designed by an engineer and may require other methods, such as beams, when larger spans are needed due to building design.

5. PLUMBING

When designing and building your SIP home, Twin Oaks Facilities International does not recommend placing plumbing chases in the exterior walls. Situations do arise in which it becomes necessary for a builder to consider options for chases in the exterior walls such as a kitchen sink next to a window or washer and dryer unit next to an exterior wall. This situation can be answered using a "Studor vent" or a "loop vent" through the floor to the nearest interior wall. If plumbing in the exterior wall is unavoidable, consider furring out the wall to create a chase, or you can stick frame the section requiring plumbing and insulate conventionally.

6. ELECTRICAL GENERAL GUIDELINES

1. Never cut long grooves in the facing of a SIP. Long grooves in the facing can seriously compromise the structural integrity of your SIPs.
2. Use an electrical fish tape to pull wires from one access opening to the next.
3. Use vertical chases and interior walls whenever possible for most of your wiring needs.
4. Use a remodeler's box that has flanges so the box can be fastened directly to the SIP facing.
5. Carefully cut all electrical openings to the exact size needed for electrical switch, outlet, and lighting boxes.
6. The electrical panel should be in an interior stick framed wall. If the panel design requires the panel to be in an exterior wall, then consider building a chase for the panel to be in or stick frame that section of exterior wall and insulate traditionally.

7. Mechanical Ventilation

Building with Twin Oaks Facilities International SIPs creates an airtight building which is typically tighter than traditional stick frame buildings. It is essential that SIP building utilize a mechanical ventilation system to maintain a healthy and moisture free environment. Traditional framing methods allow air to penetrate the building envelope through door and window frames, seams in walls, attic spaces, improper insulation installation methods etc. SIP buildings are tighter and require mechanical control of the flow of air into the building itself. This type of system will successfully deal with the moisture and humidity in the SIP building envelope by controlling the amount of fresh air entering the home. Venting systems should be matched to the size and utility of the building.

HVAC Design

The homeowner should work closely with a licensed HVAC contractor who is knowledgeable in super tight SIP building construction. Typically, a SIP building will require a smaller ton HVAC system due to how airtight the structure is. A blower door test is recommended once the HVAC system is installed to determine if the system is allowing the proper amount of air changes per code. SIP buildings usually require smaller HVAC systems because of the SIP energy efficiency which typically relates to lower energy cost and a lower cost system.