THE SIPS ADVANTAGE

WHY USE STRUCTURAL INSULATED PANELS?

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You may have already noticed that Structural Insulated Panels (SIPs) are gaining traction in residential and commercials construction for some very good reasons. Contractors, energy auditors, and building efficiency experts have long recognized that *insulation* and *controlling air leakage* are two of the most effective ways to boost energy efficiency. Now is a good time to review these advantages before you plan your next project. Panel construction isn't a new technology, but what is new is the ease of having your architectural plans converted into ready-made, high precision panels that can be delivered to your site and assembled in a fraction of the time it takes for traditional 2 x 4 stick construction.

SIPs are a manufactured high-performance building system for residential and commercial construction. The panels consist of an insulating EPS (expanded polystyrene) foam core sandwiched between two structural facings, typically oriented strand board (OSB) skins on both the interior and exterior sides

Among many benefits, SIPs are at least three times stronger than traditional wood frame construction. Industry experts conclude that in some cases SIPs can be up to ten times stronger. For example, after the Kobe earthquake in Japan, there were documented instances of SIP structures left standing intact surrounded by the rubble of non-SIP buildings.

A second argument in favor of SIP construction is their exceptional insulating value. We expect the construction industry will be dealing with energy efficiency issues for a long time, and SIPs provide a cost-effective solution. There are numerous case studies where SIP roof panels that are 8-1/4" thick (R value of 32), and walls are 6-1/2" thick (R value of 25), form top-to-bottom insulation that translates directly into lower fuel bills. The energy efficiency of buildings built with the SIP system consistently out-performs buildings constructed using traditional wood-framed wall and roof systems in three main areas:

- SIP wall and roof assemblies contain less dimensional lumber. In wood-framed construction a thermal bridging is created between the exterior of the building and the finished interior when insulation is interrupted by wood studs, which often leave more than 20 percent of the wall area uninsulated. SIP wall and roof assemblies provide higher R-values than typical wood-framed construction alternates as there are significantly fewer thermal bridges.
- The real benefit of SIPs is that there's no break in the insulation. In typical framing there's a stud every 16 inches in the wall, and the R value of a stud is lower than the R value of the insulated walls beside them. You add up all the studs in a wall, and that lowers the R value of the wall overall. With SIPs there's nothing given up to framing members, just a spline every 24 feet as opposed to a stud every 16 inches, and there's none of the framing lumber around windows and doors. The difference in performance is really dramatic. This continuity of the insulation greatly improves the overall thermal performance of the building envelope as compared to stud frame construction. These properties make SIPs ideal for constructing tight, energy-efficient buildings.
- For wall applications, the SIP must be finished on the interior with drywall or other code approved 15-minute thermal barrier that protects the foam. These panels have been evaluated to be compliant with all code requirements. The standard OSB skin thickness is 7/16". The interior and exterior skins are typically the same thickness. SIPs are available from a variety of manufacturers in standard overall thicknesses of 4-½", 6-½", 8-¼", 10-¼" and 12-¼". Most roof ceiling applications also require drywall or other code approved thermal barrier. Consult your local code for requirements related to your application. There may be exceptions in the codes that can be reviewed if it is an important design criterion.

READY-TO-ASSEMBLE PANELS

SIPs construction method is an industry leading ready-to-assemble (RTA) system that gives builders a real competitive edge over traditional stick-frame construction. The RTA process reduces construction time and improves efficiency. Blueprints for your home are loaded into a computerized factory equipment where SIPs are manufactured to your exact specifications, then delivered to your location as a ready-to-assemble building system.

- RTA Panels reduce construction time in the field.
- Improves efficiency in construction scheduling.
- Integrates all architectural and structural elements.
- Reduces construction costs in labor and loan financing time.
- Wall and roof assemblies built with the SIP system result in a

Close-up of the 12-inch SIP roof panel being hoisted into place.

Compared to traditional stick-frame construction, assembly of the panels on-site saves enough time and labor to make SIP a competitive cost-effective solution.

40-60 percent reduction in heat loss when combined with other energy-efficient components such as windows, doors, and a properly designed HVAC.

A Summary of Features and Benefits SIPs Provide Before, During and After Construction

- Solid foam core construction available in Polyurethane, EPS, and XPS that offers superior energy efficiency and excellent structural properties.
- Wide selection of R-values designed for specific climates and assures substantially lower energy bills than traditional construction.
- Comprehensive range of thicknesses and lengths. Suitable for a wide range of projects and applications SIP's are also available in a variety of skin configurations and finish ready surfaces.
- Built-in electrical chases for ease of electrical wiring reducing subcontractor time on site.
- Excellent endurance properties and durability over time. Class I fire rating assures homeowner peace of mind.
- Ideal for any Green building projects and qualifies for points under the LEED and NAHB certification programs.
- Factory CNC precision cutting reduces installation time and virtually eliminates on-site material waste.
- Environmental stewardship because it is made only of wood from fast-growing renewable sources.
- Home builders are eligible for a $2,000 tax credit when they build a new energy efficient home that achieves 50 percent energy savings for heating and cooling over the 2004 International Energy Conservation Code (IECC). At least one-fifth of the energy savings must come from building envelope improvements - an area where SIPs can play a primary role.

To learn more about SIP's visit www.sips.org or write the Structural Insulated Panel Association (SIPA) at P.O. Box 39848, Ft. Lauderdale, Florida 33339.