CONSTRUCTION BUSINESS OWNER

Multitasking and SIPs

Integrated components simplify the building process.

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Despite the claims of ultra-caffeinated hipsters, brain scientists say multitasking is a myth—humans can really only do one thing at a time. So-called multitasking is just rapid switching between individual actions, none of which receives adequate attention.

In the construction industry, though, a different kind of multitasking is possible with certain building products. Consider specialized window glazing that lets in light and also blocks fire, or components that can eliminate separate, individual construction tasks. An example of the latter is structural insulated panels (SIPs). Such materials enable contractors to meet multiple building needs in one step.

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In the case of SIPs, the wall, roof and floor panels combine structural elements and insulation within one integrated component, thereby removing the need for separate work to install framing and insulation. As Sharon Bullock, project manager for Community Development Programs Center of Nevada (CDPCN), a developer of affordable housing, explains, SIPs streamline construction in several other ways: “The finished walls are also beautifully straight, which saves time on drywall installation, painting and other finishing work.” Additionally, contractors can order SIPs with pre-cut window and door openings, which may not require installation of separate headers (depending on the dimensions). Manufacturers will also pre-cut electrical chases in the panels, which eliminates the time and effort needed for onsite crews to drill through numerous wall studs for wiring.

For contractors unfamiliar with SIPs, the panels provide a simple and fast way to construct high energy efficiency building envelopes in commercial and government buildings from schools to hospitals, as well as apartments and single-family homes.

High-performance, Energy-efficient Envelopes

Although SIP technology has been around for several decades, the panels are receiving more interest in recent years because of their ability to dramatically reduce energy consumption. SIPs have continuous, high-thermal insulation across their height, width and depth, and since they don’t have studs that break up the insulation, they reduce thermal bridging. Because they come in large sections (up to 8 ft by 24 ft), there are also fewer gaps to seal, creating a tighter envelope. SIPs help reduce energy consumption for building heating and cooling by up to 60 percent and are commonly found in modern net-zero energy buildings.

In its evaluation of building technologies, the National Association of Home Builders (NAHB) Research Center says about SIPs, “The basic design concept for SIPs is elegant in its simplicity and offers several advantages for constructing walls and roofs. There is general agreement that SIPs provide better overall air tightness and practical thermal performance than conventionally framed walls.”

Commercial building professionals note similar energy saving advantages. For example, Doug Reimer, AIA, Senior Project Architect with Hennebery Eddy Architects, describes the role of SIPs in the Portland Community College Newberg Center, a project recognized as a “Top Ten Green Project of 2012” by the American Institute of Architects.

Commenting on the reason her organization chose SIPs for an 82-unit apartment complex in the Las Vegas desert, CDPCN’s Bullock said, “SIPs create a much tighter building envelope than is possible using other construction methods. We estimate an annual energy cost savings of 20 to 25 percent compared to stick-framed construction.”

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The energy savings from SIP construction are both immediate and long term. Research conducted by the EPS Industry Alliance demonstrates that "the average energy savings over 50 years were 9.9 times the energy invested when using SIPs compared to traditional stick framing for a home in he U.S." The bottom line is year-after-year energy savings for building users and an environmental benefit from reduced greenhouse gases.

All Together Now

The large sizes of SIP panels mean they not only reduce air leaks but also enable contractors to dry-in buildings quickly. "With the pre-built panels, you just have to piece the building together like a puzzle," noted Glen Kamerman, partner with Kamerman Construction, a contractor who has built numerous SIP commercial buildings and homes. "The SIPs were accurately constructed and went together well. Using Premier SIPs probably saved about 15 to 20 percent or better on the installation time." Speaking of his use of SIPs in a 35,000-square foot gymnasium and community fitness center in Montana, Kamerman added, "SIPs also eliminated the need to heat the walls during winter construction, as would have been necessary with concrete masonry units."

Contractors for the 70,000-square-foot Jacob E. Manch Elementary School in Las Vegas saved 60 percent of their time using SIPs. Compared to traditional building methods used by the school district, crews completed the building framing in 47 days versus the typical 121 days the district allotted.

Throw out the Dumpster

A fixture of many jobsites is the large dumpsters full of framing lumber scrap. With SIPs, crews do not need to cut numerous studs, joists and other structural members to size, so jobsite waste is much lower—up to two-thirds less than with stick framing. Three key benefits of reduced waste are the following:

- cleaner, more professional looking jobsites
- lower disposal fees
- potential to earn points under green building rating systems

Additionally, reducing or eliminating dumpsters helps with more orderly construction and material staging on tight jobsites.

Do More by Doing Less

As far back as the 1700s, Britain's Lord Chesterfield called multitasking into question when he provided this guidance to his son: "There is time enough for everything in the course of the day, if you do but one thing at once, but there is not time enough in the year if you will do two things at a time."

Applying this insight to the construction industry, it would be impossible for framers and insulation installers to do their work at the same time within one building. However, by reconsidering traditional materials, contractors can take one action that accomplishes multiple goals. "I like the fact that you can take care of five steps with this one product: framing, sheathing, insulation, vapor and sound control," said Frank McNeil, a builder with Vail Associates. "Once you familiarize yourself with the basics of panel construction, you realize the labor savings immediately."

Some resources for learning

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