



WALLS & CEILINGS

Las Vegas apartments use SIPs for energy-efficient, rapid construction.

Only a few years after Benjamin ("Bugsy") Siegel opened the famed Flamingo Hotel and Casino in Las Vegas, entrepreneur Sarann Knight Preddy became the first African-American to receive a Nevada gaming license. From owning the Tonga Club to dealing cards in Jerry's Nugget to leading a range of community service projects, Preddy has been a pioneer in opening up opportunities for all Las Vegas residents. Today, a multi-family housing complex named for her incorporates structural insulated panels to provide energy-efficient, affordable housing for residents of Las Vegas' Westside neighborhood.



HIGH-PERFORMANCE BUILDING ENVELOPE



Community Development Programs Center of Nevada is a non-profit corporation that seeks to promote community and economic development and affordable housing in the state. As the builder, developer, and owner of the Sarann Knight Apartment complex, they needed to use materials and methods that would reduce their building and operating costs in order to keep the units affordable. Critical to this goal is keeping energy costs low in the occupied units since CDPCN itself pays all utility bills.

"Reducing heating and cooling costs played a major role in our decision to use SIPs," says Sharon Bullock, CDPCN project manager. "They create a much tighter building envelope. We estimate an annual energy cost savings of 20 to 25 percent with the Premier Building Systems SIPs compared to stick-framed construction."

The rigid foam core inside each SIP provides continuous insulation across the panels' width and length, avoiding the thermal bridging created by wall studs. Also, because they come prefabricated in large-sizes (up to 8 feet by 24 feet) SIPs have significantly fewer joints that require sealing.

In blower door tests, the U.S. Department of Energy's Oak Ridge National Laboratory found that rooms built with SIPs have 90 percent less air leakage than stick-framed spaces. The lab also evaluated the whole-wall R-values of SIPs vs. stick framing, taking into account energy loss through the structural members, corners, joints, and around windows. They found that a 3½-inch-thick core SIP had a whole-wall R-value of 14.09 compared to a 9.58 R-value for walls framed with 2x4 studs at 16 inches on center—47 percent more effective insulation from SIPs. The SIP wall also outperformed a wall framed with 2 by 6 studs at 24 inches on center, which had a whole-wall R-value of 13.69.

FAST INSTALLATION

A second key to maintaining affordability of the Sarann Knight Apartments was to complete the construction quickly. While loan-carrying costs are critical to the financial feasibility of any project, for a non-profit owner/developer it is especially



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important to begin leasing units as soon as possible.

The builders were able to dry-in the 82-unit complex's four floors in only 80 days, substantially faster than typically required for a comparable stick-built apartment. In that time, they installed approximately 100,000 square feet of SIP walls.

"Compared to stick framing, SIP walls go up much faster since they can be installed in large sections and eliminate the need for separate on-site framing and insulation work," says Bullock. "The finished walls are also beautifully straight, which saves time on drywall installation, painting and other finishing work."

Other ways SIPs help speed construction is that they come to the jobsite with pre-cut window and door openings, which saves on framing time, and depending on the dimensions, may not require installation of separate headers. They also have pre-cut electrical chases that eliminate the labor needed to drill through studs for wiring.

LONG-TERM DURABILITY

CDPCN developed the Sarann Knight Apartments as a tax credit project. As such, Nevada State law requires them to maintain the units' affordability for 50 years. "We need to build our projects correctly from the start," says Bullock. "We can't afford to do major overhauls every decade, so we must have buildings that hold up for the long-term."

Because SIPs are comprised of full oriented strand board panels, they provide a solid surface across each wall's entire face. SIPs stand up well to the bumps and damage that can occur when families with small children regularly come and go in multi-family housing. "SIPs are strong—you can't damage them as easily as conventional framing," adds Bullock.

The Sarann Knight Apartments are one of several housing developments CDPCN has built with structural insulated panels. "SIPs are a win-win all around given the reduced construction time and costs, as well as high energy efficiency," notes Bullock. W&C

Sidebar: Project Summary

Building Type: Multi-family housing complex

Size: 82 units, four floors, 126,700 total square feet

Location: Las Vegas

Date Completed: December 2009

Project Team

Architect: Winston Henderson Architects

Engineer: Avant Architecture & Engineering

Builder: National Construction Providers

Owner/Developer: Community Development Programs Center of Nevada

Green Products

100,000 square feet of SIP walls

SIPs Manufacturer: Premier Building Systems