Snap, Slip, Fasten and Layer

With Today’s EIF Systems, Modern Construction is Almost Like Child’s Play

Imagine the advantage of building with a prepackaged, over-sized Lego-Land kit. Any construction team, under the guidance of an architect, naturally could just snap, slip, fasten and layer a high-rise, a condo, a commercial building, or any other type of structure into shape like child’s play. A fantasy to be sure. Or is it?

Occasionally a project, seemingly blessed by the Muse, takes flight and magically materializes, flawlessly, quickly and easily. Such is the case with the construction of the 28-story Reno Circus Circus Hotel-Casino in Reno, Nevada; at least in the expediency of its completion. As for the Muse, well, here the ancient Athenian influence takes no credit for a mortal effort to achieve a record-breaking completion time of less than one year.

This feat is attributed to the precise planning of the general contractor, Marnell Corrao Associates of Reno, team-work and a timesaving construction process—exterior wall panelization. So says David Stoudenmire of Duo-Flex Corporation of Reno, Nevada. Duo-Flex is a subsidiary of Harold E. Shugart Co., Inc., of Glendale, California. Duo-Flex was responsible for the fabrication and application on the project’s panelized ISPO Inc., R-wall® Exterior Insulation Finishing System (EIFS), as well as interior walls and ceiling construction.

Panelization is not new. For years, contractors and architects alike have opted to use Exterior Insulation and Finish Systems over pre-cast concrete or glass skins because of its obvious advantages—better insulation for improved energy efficiency, lightweight...
qualities, cost factors and ease of application. 

Over the past several years, EIF systems have become increasingly popular throughout the country. An estimated 75 million square feet of walls were surfaced with EIFS in 1984. And market studies indicate that the use of EIFS will increase as much as 35 percent each year through the remainder of the century.

If all has been told and panelization is old hat, then why the hoopla over Circus Circus’ use of the ISPO R-wall system? In truth, it is the fast tracking of this particular job that merits such attention.

In The Beginning . . .

The story begins with the construction of the original hotel tower and casino for the Reno Circus Circus Hotel-Casino and its use of an EIF system. The building was designed by Architect Jeff Riniff of the California architectural firm of David Jacobsen Associates (AIA).

The original project called for a 23-story hotel tower with 620 rooms. Construction took 1½ years to complete. The exterior wall used was not R-wall, but another EIFS, Riniff says.

Three years later, Riniff again was commissioned by Circus Circus management to create yet another tower to match the original. This one was to stand 28 stories high, five higher than the original, and have 906 guest rooms.

Additionally, a six-story parking garage and tram system connecting the two towers were to be developed, as well as a series of 14 arches, each 24 feet in diameter and weighing 5,000 lbs., affixed to the top of the new tower. Again an EIF system was chosen, but this time ISPO’s R-wall was specified. Despite the size of the project, it took less than one year to finish. What happened to those seven or so extra months?

The Process...

Panelization is a five-step process, Stoudenmire explains. The first and most difficult phase is assembling the steel stud framing that forms the panel structure. Once constructed, the panel framework then is covered on one side with exterior-grade gypsum sheathing screw attached to the steel studs. For this project, the panels measured eight feet in width and 17.4 feet high. Each was large enough to cover two stories of the modular structure.

The system that covers the gypsum sheathed panel consists of four-components, including a Primer/Adhesive mix, an expanded polystyrene insulation board, reinforcing mesh and the acrylic finish.

To laminate the EPS insulation board to the gypsum substrate, the acrylic-based Primer/Adhesive mix with Type I Portland Cement is used. It is applied by hand and trowel and is stronger than cement, Stoudenmire says.

With the insulation board secured to the gypsum sheathing and after allowing approximately a 24-hour cure time, the application crew then applies the reinforcement layer. The fiberglass mesh fabric is embedded into the
Primer/Adhesive mix which bonds to the insulation, Stoudenmire explains. When the base coat is cured, typically another 24 hours, the composite panel is ready to receive the R-wall all-acrylic finish. The finish is applied with a steel trowel. It is generally only 3/16 of an inch thick. Once the finish has dried sufficiently, usually after 24 hours, the panel is ready to be shipped to the job site.

**Where It Happens . . .**

The entire panelization process takes place in an enclosed warehouse where the temperature can be maintained easily. These interior-controlled conditions make weather delays virtually non-existent. Panels, therefore, can be produced year-round.

There are panels in every phase of fabrication at all times. This enables applicators to maintain continuity and meet the demands of the general contractor, Stoudenmire says. This, coupled with the ability to produce the panels year-round, was a critical factor in the fast tracking of the Reno Circus Circus Hotel project. Furthermore, the two dozen men who produced the panels for the project “put in tremendous time and effort,” Stoudenmire adds, “and, despite the schedule and coordination, the workers were also a critical factor in the success of this project.”

**On-Site . . .**

On the Circus Circus job site, about 300 panels were delivered every two weeks in the sequence specified by the general contractor. Once the panels arrive at the site, they are hoisted, typically by crane, to their predetermined location on the building. Initially, the panels are aligned and tack-welded in place. After final alignment, clip angles are placed at every stud and the panels are fastened permanently to the structure. All that now is left is to see that the cap flashing is placed, joints are sealed and glazing is installed.

The significant advantage of using an EIF system and the fast-track construction on Reno Circus Circus was that the ground-breaking occurred in July 1984, and the hotel opened for business the following Memorial Day.

“That’s less than a year’s construction time,” Riniff says, “and is one of the fastest construction projects of its type on the West Coast. The results of the speedy opening speak for themselves.”

**EIFS Benefits . . .**

An EIF system was specified not only for its fast-track construction capabilities, but also because of the many other benefits of the EIF system. These benefits include:

—*Energy savings* because the building mass remains at a stable temperature inside the insulation envelope.

—*Space saving* because the outside insulation saves valuable interior floor space.

—*Lightweight* characteristics reduce foundation requirement.

—*Design flexibility* that allows...
systems to be attached to any surface or shape, in many colors and textures.

—*Competitive costs* that are less than other insulation methods, when finish and protection are included.

—*Availability* nationwide.

—*Performance warranty* because installation and workmanship are provided by manufacturer-trained contractors.

—*Code qualification* by all major authorities and federal regulations are standard.

—*Prefabrication capability* allows system to be constructed off site and without weather concerns.

—*Renovation/Retrofit capability* because the functional outside insulation meets new energy codes and conforms to new architectural styles.

According to William Brantley, southwest regional manager for ISPO, R-wall’s insulation value was equally important to its lightweight quality for the Reno Circus Circus project. “The climate in the Reno area,” he notes, “varies dramatically from day to evening. The variation is sometimes as much as 60 degrees, which can affect the building’s structure and efficiency.” As a result, Brantley says, “The R-wall system provides the necessary insulation factor and significantly reduces air infiltration through the wall.” The hotel/casino gained a lot of income by opening 10½ months after construction began. Reniss points out that, “Opening the hotel so soon also saved Circus Circus considerable construction costs.”

According to Stoudenmire, “The design, intricacy and color of this project’s panels have made the Reno Circus Circus Hotel unique among the many buildings in Reno that use EIF systems.” The project utilized multiple colors and finish textures within all the panel sections.

“To complete a project of this size and quality in that amount of time is unusual,” Riniff says. “A project like this normally takes a minimum of 14 to 15 months.”

Admittedly, constructing a 28-story hotel tower is a little more difficult than fitting Lego blocks together, but the ease and speed at which it can be done with an EIF system, along with an excellent construction crew, is not altogether dissimilar.