



# PRISON PROJECT LOCKS UP SAVINGS

*Federal Correctional Institute, Herlong, CA*





Change is never easy or comfortable, but Hensel Phelps Construction Company decided that the potential savings was worth the effort and elected to pursue alternative insulation products for site-cast wall panels on a prison project in California. They had to overcome owner reluctance and several attempts to overturn their decision by a competitive system but Hensel Phelps persevered and the project is realizing a saving in material costs due to competition for the order and the fact that the selected product – Owens Corning PINKCORE® extruded foam insulation – is working better than expected.

The project is a medium security Federal Correctional Institute (FCI) facility near Herlong, Calif. Scheduled for completion in May 2003, the \$120 million design-build facility includes 23 buildings with 636,000 square feet of structure. The project calls for 312,000 square feet of exterior site-cast wall panels. Nearly all of them will be insulated with PINKCORE extruded foam insulation.

According to Shawn Obrigewitch, the Hensel Phelps superintendent overseeing fabrication of the tilt-up walls, the Owens Corning system is delivering even more value than expected because crews are able to produce wall panels in the same amount of time as other projects using a competitive system despite the fact they are cutting basic insulation sheets to size themselves instead of using the pre-cut panels the company offers.

"On this job, the time window just wasn't big enough to allow for buying pre-fabricated foam insulation," said Obrigewitch. "We opted to get four-by-eight sheets and do the fabrication ourselves. I was looking at our production

units recently – man-hours per square foot – and the PINKCORE extruded foam insulation system and the competitive process are just about identical. We are cutting the foam ourselves and doing the whole production cycle in the same man-hours we used with the pre-cut material. The situation is also very comparable to one of our previous projects, where we had roughly the same square footage and a similar experience level with installing insulation in site-cast panels. We had to train new crews on each job to work with the systems."



Obrigewitch says most of the cost savings came from the pins. The patented connector ties used in the Owens Corning PINKCORE extruded foam insulation system are injection molded with a high-strength thermoplastic. The competitive system uses a more-expensive material and fabrication process.

"The pins are simpler and more efficient for the manufacturer to produce," said Obrigewitch.

According to Obrigewitch, resistance to change was the biggest hurdle his company had to overcome. "Anytime you've got a new product you've got to get people comfortable with it," he said. "With a good owner, once they see it, touch it, feel it and see it work, they can accept the change."

"The real proof of quality for me was when we started picking our large panels," continued Obrigewitch. "We're picking and carrying 100,000-pound panels – in some instances up to a quarter mile – with a crane. When you pick those panels off the casting bed, its got to break the bond with the casting bed. That's the major stress on the pins. That's more stress than the wind loads will place on them, or the seismic loads. That's the real proof, and everything is staying together."

To streamline the production process, Hensel Phelps is using a series of on-site casting beds for panel fabrication. The seven beds average just over 50 feet wide by 400 feet long and provide 150,000 square feet of casting space.

The panel fabrication process begins when the crew prepares the casting surface and pours the architectural wythe face down. At Herlong, the exterior layer is three inches thick and reinforced with wire mesh.

"And as soon as we strike off the concrete on the panel, we go in and lay the foam down while the concrete is wet," explained Obrigewitch. "We put the pins in and let them 'key' into the concrete. Then we let the concrete set up overnight."



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The Herlong project is using two-inch-thick Owens Corning *PINKCORE* extruded foam insulation with the patented connector ties.

“We go in on top of it the next day, do our layout on the panel, install our reinforcing bars – our embeds – and then pour the six-inch-thick structural face,” he continued. “The architectural face is keyed into one end of the pins and the structural face is keyed into the other end of the pins, and that’s how the pins lift up the architectural face of the panel.

“We make sure the pins are on a 16-inch square pattern, as Owens Corning requires for the panel sizes we are making. We make sure we have enough pins around all the openings – doors, and so forth.

Hensel Phelps started casting insulated walls in September. They expect to finish casting in the first week of March.

#### **PINKCORE Extruded Foam Insulation**

The *PINKCORE* extruded foam insulation system makes a foam sandwich using concrete for the slices of bread. Poured-concrete walls are made on the ground at the job site and then tilted into place. Using *PINKCORE* extruded foam insulation and patented connector ties, the poured-concrete wall panels are insulated during casting, prior to erection.

Before this system was developed, concrete wall panels were insulated after casting and erection. Now the insulation can be integral to the wall for faster, easier construction. And since the insulation is sandwiched between two layers of concrete, the panels maintain a hard, durable surface, both inside and out.

For architects and engineers, the system provides a step-by-step process for designing durable, energy efficient buildings. They have the means to design-in the thermal performance of the building, a benefit that can bring lower operating costs throughout the life of the structure.

What’s the secret to efficient insulated tilt-wall construction? “Pre-planning and organization,” said Obrigewitch. “Plan your work and work your plan. That’s the whole key. Making sure you’ve got all of your trades set up with a good work flow, and that they’ve got work in front of them, so they can keep their crews consistent. And that means the next trade can do the same thing.

“We are happy with the quality and value of the Owens Corning *PINKCORE* extruded foam insulation system,” he continued. “It’s a good, simple system. It was new to us and



#### **PINKCORE Extruded Foam Insulation System Benefits at Herlong**

- **Material cost savings**
- **Fast, efficient, cost-effective construction process**
- **Strong walls insulated during forming**

we weren't sure we would be able to install it with the same man-hours per unit, but we are. In addition, we're cutting our own foam on site and installing it for the same cost we were installing the pre-cut material on a previous job.

"The savings are a benefit to contractor, owner and taxpayer," concluded Obrigewitch. "We are always looking for fair market competition through alternate products that will provide savings without lessening the value of what we are providing to our clients. That's exactly what happened in this situation."

It seems the only people not happy with the Herlong project are the prisoners who will live inside those very strong walls.



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**Project:**

Federal Correctional Institute  
Medium-security prison  
Herlong, Calif.

**Owner:**

Federal Bureau of Prisons  
320 First Street NW  
Washington, DC 20534  
202-307-3198

**Design/Build Contractor:**

Hensel Phelps Construction Company  
420 Sixth Avenue  
P.O. Box 0  
Greeley, CO 80632  
970-352-6565

**Insulation System Supplier:**

White Cap Pro-Contractor Supplier  
1830 East Lincoln Way  
Sparks, NV 89434  
775/353-3333

**Lift-and-Brace Engineer:**

Weiler Smith Bowers (WSB)  
3855 Henning Drive, Suite 118  
Burnaby, BC  
CANADA V5C 6N3  
604-294-3753

*With more than \$2 billion a year in construction projects, Hensel Phelps is no stranger to prison projects. The company is currently building an identical FCI project in Victorville, Calif., plus a U.S. penitentiary there that is about the size of the Herlong project. They are also building FCI projects in Petersburg, Va., and Salters, S.C. In recent years, Hensel Phelps built state and federal prison facilities throughout the U.S.*



**OWENS CORNING WORLD HEADQUARTERS**

ONE OWENS CORNING PARKWAY  
TOLEDO, OHIO, USA 43659

1 - 8 0 0 - G E T - P I N K

www.owenscorning.com

*Insulated concrete panels are more comfortable than exterior concrete walls that are not insulated. Also, insulated panels help reduce heating and cooling costs by minimizing heat gain during the day and heat loss at night. With Herlong, Calif., located near the east side of the Sierra Nevada mountain range, there will be substantial temperature swings.*