

One Big Step for Humanity

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Shortly before the summer of 2006 faded into memory, Habitat for Humanity of Westchester County, New York, broke ground in Yonkers (just north of New York City) on the second set of smaller-scale residential units featuring the next generation of CarbonCast prefabricated concrete technology from the Lancaster, Pa.-based AltusGroup. More importantly, the pair of duplexes — four owner-tenant units in all — at Purser Place could represent a significant change in the way Habitat carries out its home construction in the future.

The 1,800-sq.-ft., two-story duplexes are scheduled to be erected this fall and ready for occupancy sometime in January 2007. They will have an appearance consistent with other homes in the neighborhood, thanks to numerous architectural features, but it's the precast components of the homes that separate them from the structures nearby.



The CarbonCast technology uses embedded carbon-fiber grid reinforcement that promises to deliver improvements in long-term performance and value over conventional wood-framed housing. In addition, these homes will provide increased durability, since the reinforcement does not corrode like steel mesh, and it resists insects, vermin, mold and fire. The exterior walls deliver an R-24 value and reduce heating costs. But the aspect of the CarbonCast homes that residents of the recently completed Willow Street lot talked most about was unexpected.

“We talked a lot to them about fire safety, pest resistance, heating expenses,” says Harold Messenger, vice president, Oldcastle Precast. “But the first thing they noticed when they walked in was how quiet it was. The combination of air, foam and concrete deadens sound a great deal. There were no requirements for sound reduction; that was just a pleasant bonus.”

FIRST TIME AROUND

The single Willow Street duplex was occupied in September 2006 (although it was erected in July 2005). But, it was actually meant to be the location of the second set of Yonkers Habitat homes. “The first site was a disappointment in terms of the time saved,” explains Messenger. “There was a property line dispute that delayed the beginning on construction. I told Habitat to find us another site. The delay gave us time to study the CarbonCast technology and make changes, although we had cast many of the pieces already at that point. Once we had the new site finalized, it only took us two or three days to build the insulated shell from foundation to roof. And the Purser Place site is actually what was to be our original location for the first duplexes.”

As with most Habitat homes, once the shell is up, volunteers come in to install windows (donated by Oldcastle Glass) and begin finishing the home's interior. Messenger says that since the shell is insulated and watertight, volunteers could come in right away regardless of the weather. “They just have to set up heaters, and the insulation does the rest,” he adds.

Oldcastle Northeast Precast has been involved with Habitat for Humanity since about 2002, according to Messenger, working on five or six projects in areas including the Bronx. But the company was only contributing “parts and pieces,” he explains, such as retaining wall blocks, not entire homes and or 100 percent precast dwellings like the two Yonkers projects.

In 2004, the AltusGroup partnership was founded to develop, manufacture and market precast technology using a coast-to-coast network of plants, technical staff and sales personnel. Not surprisingly, Oldcastle Precast was a founding member, along with High Concrete Structures of Denver, Pa., and Metromont Prestress Co. of Greenville, S.C. Each contributed to the first Yonkers Habitat home, and will do so again with the Purser Place project.

Oldcastle Precast has delivered the foundation and insulated wall panels for the three duplexes, while High Concrete has handled flooring and roof deck components. **The architect on both developments is Equus Design Group of Belmont, Mass., which was also the lead designer of all-precast Melrose Commons complex in the Bronx, the New York City borough bordering Yonkers.**

LEARNING FROM THE PAST

Thanks to an extended break between the first duplex and the latest two, the AltusGroup partners were able to examine the way they manufactured and erected product to make the process more streamlined and easier for the volunteer builders. “We definitely made adjustments in the casting and installation between the two jobs,” says AltusGroup spokesperson Michael Drabenstott. “This is the first residential project of this smaller scale that our group has been involved. We're used to larger condo buildings over 30 stories high. But Harold had discussions with the builders about this technology, so there was something of a learning curve between the first and second project.”

“We put post-type footings under the ends of every panel,” adds High Concrete Vice President of Planning, Product and Promotion Gary Graziano, AIA. “The first duplex was set on gravel, which is certainly stable, but when dealing with volunteer labor, they're not always as precise about getting things as level as a professional would. Having pads cast made us more sure of getting things level on all corners. The way we attach wall panels to the deck also will be changing, and we've made adjustments in product handling. What we learned between the first and second units has more to do with erection and handling and their economic connection.”

Messenger notes that Oldcastle primed above-grade panels before shipping to eliminate the added step on site and make painting simpler. “We also put more of a thermal break between the concrete and the interior wall before it gets on site. It's maybe one and three-quarters of an inch wider, but now everything between the outside wall is isolated from anyone inside attempting to drill or mount something on that wall.”

“The Habitat projects confirm the reliability of CarbonCast technology for residential building,” says Drabenstott. “And as a result of this work, Habitat Westchester has talked to the national group about this process, which could be big for them and us.”

“As we saw with our Willow Street homes, this construction method will allow us to more quickly place families into homes that will last much longer than a wood-frame structure,” adds Jim Killoran, director of Habitat for Humanity of Westchester County. “This could revolutionize the way we build homes locally and nationwide.”