2008 Outstanding International Project

Garden Valley (Jardines del Valle) Housing

The Garden Valley ("Jardines del Valle" in Spanish) housing project is an ongoing residential housing project in the suburbs of Santiago, Chile. During 2007 and the first half of 2008, the first three phases of the project consisted of single-family homes ranging in size from approximately 600 to 1100 ft^2 (56 to 102 m^2). The homes were produced on a modular basis in a factory. The housing modules are fully finished in the factory and then trucked to the project site where they are assembled, or stacked, into finished homes. The in-factory portion of the entire production process requires approximately 9 days. The on-site stacking is accomplished in a matter of only hours.

Shotcrete was used in the patented Uni-Crete Cell™ system of molds to create the five-sided monolithic housing modules that form the structure of the houses. These modules, which represent the entire structure of the house, are created in a single day at the beginning of the overall process cycle. Each Uni-Crete Cell module yields approximately 160 ft^2 (15 m^2) of housing. An individual Tekrete™ home comprises two to seven such modules and one to three roof modules.

Before shotcrete is applied onto the five-sided mold, reinforcing bar and welded wire mesh are placed. At the same time, electrical conduit and junction boxes are installed onto the mold so that these features are built directly into the walls. Before shotcreting, frames for the doors, windows, and other required openings are installed so that once shotcrete is applied the module has all of these features built-in—all with a minimum of labor.

The roof modules are also made using shotcrete. Like the standard housing modules, reinforcing bar, welded wire mesh, window openings, electrical conduit, and electrical junction boxes are all placed onto the mold prior to application of shotcrete so that all of these features are built directly into the structure. Because the roof does not require supporting rafters or trusses, the resulting attic space is very useful to the homeowner, including having light fixtures and electrical outlets. In Chile, where homes do not have basements, this extra space has proven to be a tremendous selling feature. The homeowner can use it for an office, an extra bedroom, a play area, or simply for storage.

A steam-curing process is used to accelerate the curing of the concrete modules. The day after the shotcrete is applied, the modules are launched onto the production assembly line where they pass

A Uni-Crete-Cell™ module ready for the assembly line

In-factory window installation on a Uni-Crete Cell housing module

through seven stages until they are completely finished, including the installation of:

- Plumbing lines and fixtures, including sinks and bathtubs
- Electrical wiring and fixtures
- Kitchen cabinets and closet organizers
- Flooring (ceramic, carpet)
- Interior demising walls
- Interior wall finishes (wallpaper or paint, with ceramic in the kitchen and bathrooms)
- Stippling of the ceilings
- Windows
- Doors
- Insulation
- Exterior stucco and paint
- Roofing shingles

Shingled and insulated Tekcrete roof module ready for painting and window installation

A Tekcrete™ roof module—a monolithic structure

A fully finished Tekcrete roof module leaving the factory by flatbed truck

In-factory shingling of a Tekcrete roof module

A fully finished Uni-Crete Cell housing module ready to ship to site

Outstanding Shotcrete Project Award Winner

Once all of the finishing processes have been completed and the modules arrive at the end of the assembly line, they are transported to the housing project site by means of a flatbed truck. There, they are assembled, or stacked, on site by means of a mobile crane.

Shotcrete is the very essence of the project. The entire structures of the houses were created in our factory using shotcrete. The walls, floors, ceilings, and roof are all composed of shotcrete.

A line-up of Tekcrete homes in the Garden Valley (Jardines del Valle) Housing project

Outstanding International Project

Project Name
Garden Valley (Jardines del Valle) Housing

Project Location
Santiago, Chile

Shotcrete Contractor
Canadian Rockport Homes Int'l, Inc.*

General Contractor
Canadian Rockport Homes Int'l, Inc.*

Architect/Engineer
Canadian Rockport Homes Int'l, Inc.*

Material Supplier
Canadian Rockport Homes Int'l, Inc.*

Project Owner
Canadian Rockport Homes Int'l, Inc.*

*Member of the American Shotcrete Association

A fully finished Tekcrete home: seven modules, approximately 1125 ft² (105 m²)