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Concrete Thinking
for a sustainable world



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BETHEL COMMERCIAL CENTER

ARCHITECT

CLEARVIEW ELEMENTARY SCHOOL

BETHEL COMMERCIAL CENTER

NORTHWEST ILLINOIS RESIDENCE

SANCTUARY PLACE



+ ENLARGE
Bethel Commercial Center



+ ENLARGE
The reflective concrete ceiling, along with lightshelves and sunlight shafts, reduce energy use and air conditioning load.



+ ENLARGE
With Chicago's elevated train running less than 10 feet from the center, concrete helps reduce noise transmission.

PROJECT SUMMARY:

FIRM: Farr Associates

LOCATION: Chicago, Illinois

LEED CERTIFICATION: Designed to achieve a LEED Gold rating
GREEN DESIGN HIGHLIGHTS: Light shelves and sunlight shafts that reduce energy use and air conditioning load.

CONCRETE FEATURES: insulated concrete wall system that minimizes energy use, reduces noise transmission and creates a durable structure. Precast concrete planks that serve as the finished ceiling, eliminating the need for a drop ceiling. Concrete foundation that incorporates recycled material.



DOUG FARR

FIRMS



FARR ASSOCIATES

Through the use of concrete and other green elements the Bethel Commercial Center, a new, mixed-used transit center in a low income neighborhood on Chicago's west side, is expected to use 50 percent less energy than conventional construction. The building has been designed to achieve a LEED Gold rating.

Bethel Commercial Center depends on an insulated concrete wall system to minimize energy use, reduce noise transmission and create a durable structure. The walls are constructed from a core of expanded polystyrene (EPS) foam insulation, like styrofoam coffee cups, strengthened by a reinforcing grid. The foam insulation is then encased in shotcrete, concrete that is dispensed from a hose at a high velocity. The concrete covers the foam and hardens to form a reinforced wall with built-in insulation. It's all done without conventional formwork.

Such walls have high thermal mass, which limit temperature fluctuations through the day, reducing heating and cooling loads. Basically, the mass of the concrete acts like a holding tank, slowing down the passage of heat from inside to out and the reverse.

The wall system also contributes to the building's durability, decreasing air and moisture infiltration, and reducing the use of steel supporting lintels, which can rust. The walls have a two-hour fire rating, and resist water, mold, mildew and rot as well as insects and rodents. In addition, the walls reduce sound

transmission—especially important since Chicago's elevated train system runs less than ten feet from the building.

The underside of the precast concrete plank floor serves as the finished ceiling, eliminating the need for additional finishing and materials to construct a drop ceiling. Also, a reflective coating of white paint is applied to the smooth concrete ceiling, which increases the penetration of sunlight into the building. This facilitates the literal harvesting of daylight, reducing lighting energy and air conditioning loads. Concrete is a critical part of an integrated system that uses 50 percent less energy than a merely code-compliant building of the same program and configuration.

In addition, the cast-in-place concrete used in the foundation includes recycled fly ash, a byproduct of energy production that would otherwise fill landfills.

The building, which will house a childcare center, employment training facility, and transit-oriented retail stores, has a direct bridge connection to the city commuter train station. It will be completed this summer.

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