

**BEST OF  
2008  
AWARDS**

## Co-Cathedral of the Sacred Heart, Houston

**JUDGES AWARD:** Construction (tie)

**Completion of the Co-Cathedral** of the Sacred Heart capped eight years of collaboration between the general contractor and owner. Linbeck worked with the archdiocese and project consultants to analyze materials, building systems, schedules and costs to maximize the scope of the project.

The analysis required development and repeated refinement of many financial models. For each phase, Linbeck's conceptual financial models depicted alternatives that helped the owner make informed project decisions.

The project team's greatest challenge was the building shell's 80-ft-tall concrete walls that are as important for the building's acoustics as its structure. >>



### Key Facts

**Submitted by:** Linbeck

**Owner:** Archdiocese Galveston-Houston, Houston

**Construction manager:** Linbeck Construction, Houston

**Architect:** Ziegler Cooper Architects, Houston

**Civil engineer:** Walter P Moore and Associates Inc., Houston

**Geotechnical engineer:** Ulrich Engineers Inc., Houston

**Structural engineer:** CBM Engineers Inc., Houston

**MEP engineer:** CHP and Associates, Houston

**Acoustical consultant:** Kirkegaard Associates, Boulder, Colo.

**Steel erection:** Bosworth Steel Erectors Inc., Dallas

**Mechanical contractor:** MLN, Houston

**Plumbing contractor:** Mitchell Chuoke Plumbing Co., Galveston

**Electrical contractor:** Fisk, Houston



With no floors to work from, the walls had to be plumb for the application of exterior stone and interior stone and plaster. Every concrete pour had numerous angles and openings.

To avoid the nightmare of multiple scaffolding, the team invested more than \$1 million and an entire year erecting 78,000 sq ft of multilevel scaffolding inside and outside the shell. Scaffold builders were able to accommodate the

diverse height, width and weight requirements of the individual trades while also complying with state and OSHA regulations.

For the ceiling plaster application, two temporary wooden plank “dance floors” were built on top of interior scaffolds, one at 55 ft and another at 100 ft above the floor.

Approximately 48 mi of wiring went into the cathedral, much more than what is used in a typical sanctuary. To ensure superior electrical installations, the designers and contractors began discussing wiring two years before the technical equipment was installed.

The design of the building called for concrete structural walls with cement plaster applied directly to the concrete, which left no chase space for the mechanical or electrical infrastructure. Therefore, all conduits had to be placed

inside the concrete walls. This required knowing where the electrical device was going before the walls were formed and poured. Every conduit and audio speaker space was drawn into the plan and elevation views nearly two years before the first pour occurred.

Two 12-ft-tall, 13,000-lb sculptures hang 6 ft above the cathedral floor. An Italian engineer designed mounting plates on the back of the statues, but placing them on the walls of the co-cathedral was a complicated engineering feat.

Linbeck’s team designed a unique support system to stand up and then rotate the sculptures once they arrived in their crates. After performing a dry run with an 8,000-lb test weight, they found ways to modify and improve the process. Ultimately, the intricate mounting process took Linbeck workers two weeks.