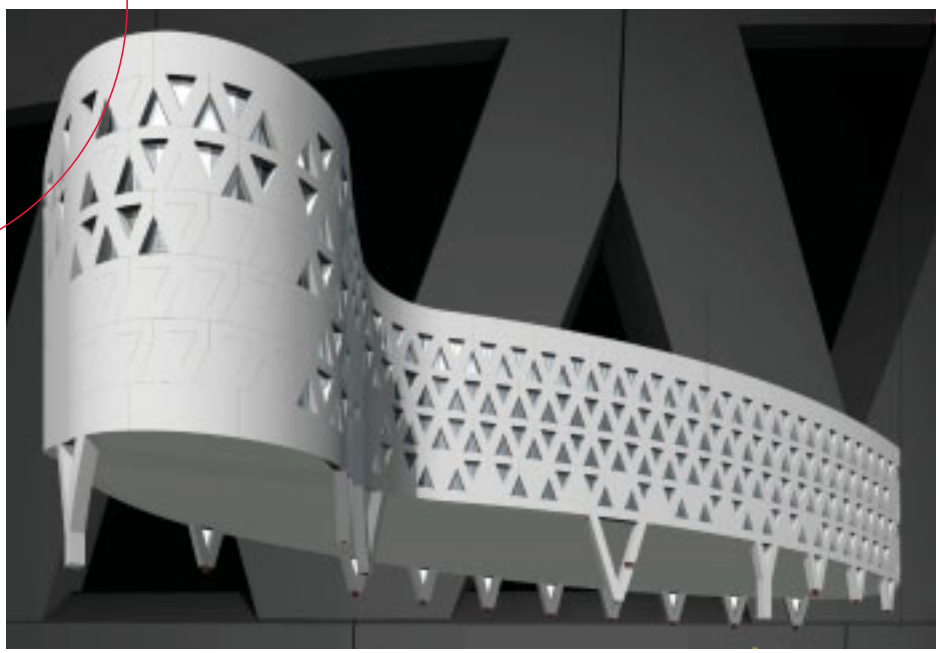
CONCRETE
INNOVATIONS & ANSWERS

News from The High Concrete Group Companies

Issue number 5



A Geometric Design

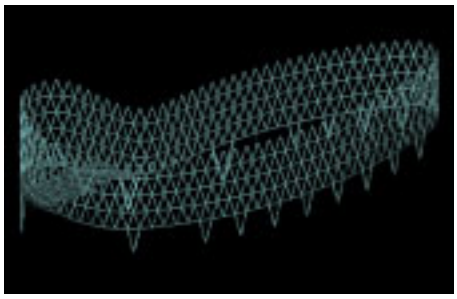
In March 2004, High Concrete Technology, LLC began a most unusual project. Team members began pouring precast panels for the University of Cincinnati Varsity Village building, located in Cincinnati, Ohio.

Building this facility, the University of Cincinnati's new Athletic Center, enables the University to upgrade and combine all athletic offices, practice/training/medical facilities, Athletic Club. This facility also allows for the addition of a multi-purpose lecture hall and more classrooms.

Gerald Cummings, the HCT Project Engineer on this job, Leonard Going, Design Engineer, and Nathan Swigart, CADD Drafter, agree that this project is the most complex taken on by HCT. The exterior of the building consists of eight different radii. It has six convex, two concave, and eight compound transition curves. The only straight lines on the precast panels are vertical. An extremely complex steel truss structure supports the precast panels and is assembled in a series of Xs. The complicated precast panel geometry, with recessed triangular window returns that penetrate into and through the steel frame, could only be defined by a 3D computer model.

It takes coordination and teamwork to pull together a project with many trades involved. HCT was instrumental in helping to overcome certain project challenges. One example was the tight construction site, the large number of layout points, and the curving layout involved. HCT developed a system for the erector to accurately locate the face of the panel and centerline of the joints around the perimeter of each floor. Designed and furnished by HCT, the system utilizes a special layout tool and survey points that are marked on each floor. This was a tremendous help in installing the panels and greatly reduced the need for extra workers on the ground to guide the pieces into place.

The precast erection was completed in August 2005. The overall project is scheduled to be completed in March 2006.



We are pleased to announce the promotion of Tom Holmes to VP Sales and Marketing of the High Concrete Group. Tom has moved back to our Denver, Pa headquarters and will now be responsible for the Sales and Estimating Departments out of all five High Concrete plants.

Gary Graziano has also been promoted to VP of Product, Planning and Promotion, with responsibility for our strategic plan, product development, market research, technical support, and advertising functions. Gary is also our principal liaison to and Board Secretary of the Altus Group, the developer of CarbonCast Products.

Our goal is to make it easy for you to specify and use precast concrete in your building projects. Please let Tom, Gary or me know how we can help your team.

PRECAST NEWS

When times are good, our customers usually ask, "Do you have the capacity to handle my work?" Our answer is, "Yes, and we're increasing capacity". While we're doing everything we can to increase capacity, there things you can do to make even more of it available.

As you know, High Concrete Group has five plants. We've increased manpower, forms and land, and now produce seven days a week at Denver, PA—the nation's largest precasting facility. The Williamsport and Lebanon PA plants supplement Denver production. Lebanon is huge, and everything from aggregate storage, to finished product storage, is under roof. All-indoor operation will improve quality—and increase architectural and CarbonCast™ capacity. Additionally, plants in Ohio and Illinois can supply East coast demand—or be supplemented by PA plants.

Now, how can you help increase available capacity?

- **Get HCG sales and engineering involved early. We know design "secrets" that can speed precast concrete production and reduce cost, and we're happy to share.**
- **Execute signed contracts early—at least 2–3 months before your job produces. We need shop drawings plan efficient manufacturing, and can't invest in shop drawings until we have a signed contract.**
- **Be realistic about when you really need precast delivered to the jobsite. We understand that bankers, lawyers, government officials, tenants, weather and rocks make scheduling uncertain, but we need realistic delivery dates. When schedules slip we have idle capacity. This adds to our costs—and yours—and could bounce your job to the next available manufacturing "slot", perhaps 10–12 weeks away.**

As always, we appreciate your business and look forward to working with you—as part of your team—to design projects that meet your cost, schedule and performance objectives.

Best Regards,

Tom McEvoy
President

Hyper-Fast, Tekla-Enabled 3D Modeling

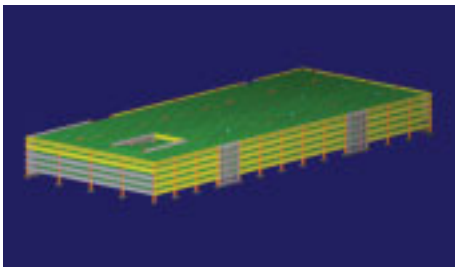
Recently, High Concrete used a cutting-edge 3-D, Tekla-enabled, parametric model to win a 700,000 square foot, six-level parking structure adjacent to a Penn National Gaming, Inc. casino in Charles Town, WV.

Using hyper-fast, Tekla-enabled 3D modeling for large and complex structures, such as parking garages, provides the design team with a clear picture of what is being proposed so that they can share a common vision, spot problems early, and make changes quickly. Ultimately, it will reduce lead times for precast product delivery.

Just how fast is Tekla? A preliminary model for the Charles Town project was completed in only 8 hours by modifying an earlier model of a similar project. Then, after an initial review by the design team, revisions from the architect and engineer, Urban Design Group, Inc., and Gregory P. Luth & Associates, were completed in a matter of days. The revised model was delivered just-in-time via the Internet for a key architect/client/contractor project review and de-scoping meeting. The entire process, from start to finish, took less than a week. According to AJ Sassaman, High Concrete's sales representative for the project, "Tekla illustrated and clarified the scope of work for the project team so that everyone was comfortable with what needed to be done. Without Tekla, the clarification process could have taken several weeks or more."

Data supplied by Tekla models can be used by estimating, scheduling, engineering analysis and job costing software as well as production equipment programs for rebar bending and laser projection. Other benefits of using the software include more accurate cost estimates, streamlined procurement of component parts, improved quality and reduction of rework costs due to engineering errors.

For more information about having your project modeled with Tekla, contact Gary Reed at 1.800.PRECAST.



Recently Awarded Projects

Medallion Parking Facility—Scranton, PA
Architect: Burkavage Design Associates, Inc.
Engineer: Cagley Harman & Associates
General Contractor: Scranton Parking Authority

Harrah's Chester Casino—Chester, PA
Architect: SOSH Architects
Engineer: Cagley Harman & Associates
General Contractor: T.N. Ward Company

Xanadu Bldg Garage—East Rutherford, NJ
Architect: Adamson Architects
Engineer: McNamara Salvia
General Contractor: Whiting Turner Contracting Co.

Two Christina Crescent—Wilmington, DE
Architect: Moeckel Carbonell Associates, Inc.
Engineer: Timothy Haahs & Associates
General Contractor: Pettinaro Construction Co., Inc.

PA Judicial Parking Garage—Harrisburg, PA
Architect: Vitetta Group Architects, Inc.
Engineer: Vitetta Architects & Engineers, Inc.
General Contractor: Alexander Building Construction, LLC

St. Margaret Mercy Healthcare "C" Building—Dyer, IN
Architect: Frega & Associates, Ltd.
General Contractor: Tonn and Blank Construction

Elkhart County Correctional Complex—Elkhart, IN
Architect: DLZ Indiana, LLC
Engineer: DLZ Indiana, LLC
General Contractor: Stress-con Industries, Inc.

Roberts Paideia School
Architect: McGill Smith Punshon, Inc.
Engineer: M Engineering
General Contractor: Monarch Construction

Recent Projects

MillionAir Terminal Building

Location:
Teterboro, NJ
Architect:
David Zugale Architect
Construction Manager:
Fitzpatrick and Associates

Heldrich Plaza Parking Structure

Location:
New Brunswick, NJ
Architect:
James R. McAuliffe Architects
Engineer:
DeSimone Consulting Engineers
General Contractor:
Keating Building Corporation

MARKETING AND INNOVATION

Gary Graziano, AIA—Vice President of Planning, Product and Promotion

High's Concrete's Innovations & Answers help achieve project objectives

What do MillionAir Terminal—a private terminal in a large metropolitan area, and Heldrich Plaza—a mixed use retail and hotel project have in common? Both were built with innovative, patented C-GRID carbon fiber reinforced CarbonCast panels. These panels, developed by High and AltusGroup, Inc., are lightweight—up to 66% lighter than conventional precast panels, insulating and extremely durable.

CarbonCast panels ship more efficiently, cost less to erect, and can be made thicker to feature deep window recesses and reveals without adding much weight or cost, and can often be made larger and even more watertight than conventional precast (because they have fewer between-panel joints) in projects where crane capacity would normally limit panel size. Integrally insulated CarbonCast panels, with values up to R-16, also eliminate many of the mold-related "concerns common to cavity wall construction.

In addition to CarbonCast, Heldrich Plaza also uses High's innovative EcoMix™—concrete reinforced with recycled carpet fiber to improve initial appearance and long-term performance by reducing shrinkage and temperature-induced cracking. And, the panels are finished with High's innovative EcoBlast™ system which uses 99% recyclable steel shot, instead of sand media, for surface finishing. Although fiber-reinforced concrete has been around for some time and works well, it is not widely used for architectural work because it leaves concrete looking as if it "needs a shave". But not EcoMix. The super-fine recycled carpet fibers in EcoMix are virtually invisible to the naked eye.

Want to know more about how CarbonCast panels can help achieve your project objectives? Call 1.800.PRECAST and ask for Gary Reed.

AltusGroup™ Announces New Members

R-Control, by AFM Corporation and Degussa/Master Builders join AltusGroup, Inc. as Industry Members. Other new members include Gate Precast and Heldenfels Enterprises. Altus Group's founding members are Oldcastle Precast, High Concrete Group, Metromont Corporation and TechFab, LLC. AltusGroup is the first-ever national partnership of precast companies and was founded to develop and market precast innovations such as the breakthrough CarbonCast™ line of products. For more information call 1-866-GO-ALTUS or visit us online at www.altusprecast.com.

StructureCare™

Franc Genoese—Sr. Director of Project Management

What can be done to protect your parking garage joints?

Parking garage floor joints can be the "Achilles Heel" of a garage when sealants are not properly installed or maintained. This is why the Precast/Prestressed Concrete Institute (PCI) has formed a committee to review precast joint designs because leaky deck joints can damage precast connections or infiltrate cracks and cause concrete to spall.

Improper installation usually becomes apparent in the first year of a structure's life. Deck joints move a great deal due to thermal expansion caused by large temperature swings. They can be punctured by traffic and accumulated debris and are susceptible to UV degradation, which can make them change color, become brittle and crack. As a result, in the northern climates non-sag or self-leveling Multi-Part Urethane Caulks are recommended because they withstand up to 50% movement and usually have a minimum 5-year warranty.

A properly installed joint must be bonded on two opposite sides. A backer rod or polyethylene tape should be used to prevent three-sided bonding. And, according to most manufacturers, the joint should be no less than a 1/4" inch thick, with a 2:1 width-to-thickness ratio (i.e., a 1" wide joint should be approximately 1/2" thick).

Improper maintenance usually occurs in the winter. So, it's a good idea to review snow removal procedures with your maintenance staff and vendors every year before the snow flies. Steel-edged snow plows can damage both precast concrete and joint sealants, especially on roofs. To avoid damage, a rubber edge should be used and, whenever possible, plowing should be done in the same direction as the joints. This is because most damage occurs when plows run against the joints.

What else can you do to control unwanted water penetration? Make sure the right sealants are used and that the installation is done properly. And, then, check and repair joints each spring as part of an annual structural/systems inspection and power washing. Joint sealants are an integral part of a well designed structure and good joint maintenance will not only keep your garage looking good, but it will prolong the life of your investment.

Need help inspecting the Sealants in your garage? Call Franc Genoese at 1.800.PRECAST to ask how the StructureCareTM team can provide a program to help maintain your garage.

HIGH CONCRETE GROUP

PCI-Certified Precasters

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See us in the 2005 Sweets Catalog!

CONCRETE ANSWERS

Dave Schneider—PE, Senior Director of Engineering

IBC 2003 — Shaking Things Up

In the now widely-used International Building Code 2003 (IBC 2003), reinforcing requirements for buildings are based on use, seismicity and soil conditions. Buildings situated on sites with poor soils could conceivably be assigned to a high seismic design category. When a high seismic design category is assigned, the Seismic-Force-Resisting System reinforcement requirements become more stringent and require special seismic detailing.

The new code has driven special reinforcement details for both Concrete Shear walls and Concrete Masonry Unit (CMU) walls when seismic design is mandated. We have heard many complaints about the increased field labor costs resulting from the CMU details needed to meet these requirements—as well concerns about the workmanship, weather delays and number of inspections needed. The requirements for precast are also increased, but we are not finding them to be unreasonable because the solutions which have been used in precast structures for many years still apply.

High Concrete recently completed a parking structure where prestress strands were used as the connection system for the shear walls. This method was validated by seismic testing completed at Lehigh University's Advanced Technology for Large Structural Systems (ATLSS) lab, as well as through the Precast Seismic Structural Systems (PRESSS) testing at the University of California, San Diego. This method has been found to be less costly and easier to build than traditional designs.

The 6th Edition of the PCI Design Handbook is now available and has an expanded chapter on Seismic Design of Precast Structures for use as a design aid. PCI is also sponsoring design seminars throughout the US to assist with understanding the new code requirements and methods available to facilitate with precast design and construction.

In making structures safer, IBC 2003 has shaken up the way we think about Seismic-Force-Resisting Systems and construction economics. As the dust settles, it is easy to see how it can make more sense than ever to use precast concrete in the design of hotels, condominiums, dorms, schools—or any building that required a Seismic-Force-Resisting System to meet any seismic design criteria.