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ENGINEER'S CORNER

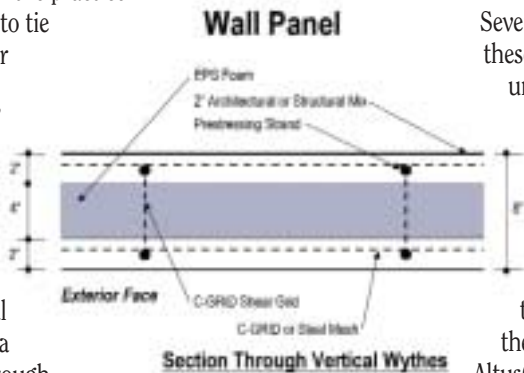
by Ken Baur
 Director of Research & Development

C-GRID—Innovative and Insulating

One of the products which we have been testing over the past several years is an

industrial wall panel with two concrete wythes separated by a layer of insulation (see illustration). It has been the practice in the precast industry to tie the two wythes together using metal ties and a number of "hard spots" where the concrete is monolithic between the inside and outside wythes. The disadvantage to this system is that the metal ties and hard spots are a source of heat loss. Through extensive testing, we have been able to remove the "hard spots" and to replace the metal ties with C-GRID carbon fiber

ties, thereby eliminating this heat loss and greatly improving the insulating value of the panel, which results in a panel with composite characteristics at a reduced cost. Panels of this thickness can be fabricated up to 44' in height and 12' in width.



Several projects using these panels are now under construction for school classrooms and warehouse/manufacturing projects. CarbonCast panels are now available throughout much of the country from the AltusGroup. Call us at

866-GO-ALTUS if you would

like us to provide technical or pricing assistance for your next project.

Construction TRENDS

Despite all of the variables in the economy that can affect construction, optimism for a strong rebound in the new year remains for the North American construction industry. Industry analysts and economists gathered to present their outlooks for 2004 and beyond at Reed Construction Data's North American Construction Forecast conference.

Gordon Mills, chairman, CEO, Durrant, sees much opportunity for growth in 2004, exceeding that of 2003. Criminal justice, community colleges and healthcare are a few of the strongest market sectors expected for 2004. Business area transformations that are being seen include integration of design and delivery, where there is close collaboration of everyone involved in the process to aid in the transfer of knowledge.

Reed Construction Data



HIGH Standards

News From High Concrete Structures, Inc.

WINTER 2004

altusgroup

carboncast™

New Innovative CarbonCast™ Technology

One of North America's most fragmented and regionalized industries—precast concrete—has a new national powerhouse with the formation of the AltusGroup™ (www.altusprecast.com), a first-ever national partnership of precast companies.

Conceived to manufacture and market the breakthrough CarbonCast™ technology for precast concrete as well as future precast innovations, AltusGroup provides an unparalleled national network of manufacturing plants, sales personnel, engineers and technical support that ensure the consistent production and application of advanced precast products.

The founding members of AltusGroup are comprised of: **Oldcastle Precast Inc.**, **Building Systems Division** (Edgewood, Md.); **High Concrete Structures, Inc.** (Lancaster, Pa.); precasters **JW Peters** and **Iowa Prestress of Cretex Companies** (Elk River, Minn.); **Metromont Prestress Co.** (Greenville, S.C.); and **Rocky Mountain Prestress** (Denver, Co.). Combined, the companies have more than 25 manufacturing and sales locations in the United States and more than 200 specification-oriented sales, marketing and engineering professionals.

"This is undoubtedly one of the most significant developments in the building products industry in the last 50 years," said William Dausch, Esq., Chairman, AltusGroup. "Through a single point of contact, our customers can achieve their design, construction and operating objectives through innovative, high-quality products backed by outstanding technical expertise that can save them time and money."

CarbonCast (www.carboncast.com) represents the first of many new technologies for which AltusGroup was created to develop and market. With pooled research resources, knowledgeable manufacturing engineers, a national network of plants and sales support staff, and university collaborators, AltusGroup is poised to bring precast innovation to the construction market faster and more effectively than any single precaster or industry association.

In addition, precast technologies developed collectively—and vetted by some of the best-known professionals in the precast industry—will likely gain more rapid, widespread acceptance among architects, engineers and developers.

The CarbonCast system replaces the secondary steel reinforcing elements in precast concrete with a high-strength composite carbon grid. CarbonCast's combination of corrosion resistance, light weight and strength make it ideal for applications such as architectural wall panels, hardwall panels, double tees for parking decks, bridge decks and supports. It can reduce the weight of architectural structures like wall panels up to 66% while also offering improved insulating properties and finer finishes. The reduced weight contributes to lower shipping and erection costs as well as possible substructure savings.

CarbonCast technology uses C-GRID™ composite carbon fiber technology from TechFab, LLC, Anderson, S.C. (www.techfabllc.com), also an AltusGroup founder. AltusGroup members have an exclusive license to use patented CarbonCast technology and C-GRID in precast products.

More information about AltusGroup and CarbonCast is available at (866) GO-ALTUS.

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Letter from the President



We emphasize the “news” in newsletter with this edition of High Standards. The first piece of news is the development of a

family of Precast Concrete products reinforced with Carbon Fiber instead of steel mesh. This family of products will be called CarbonCast™. The benefits of this switch from steel to Carbon Fiber are huge. The superior strength and resistance to corrosion of Carbon Fiber allows us to offer a more durable, lightweight product that will enable you to take certain unseen costs out of your projects, add insulation in the concrete when required, and offer a product that has lower maintenance costs than current products. The more you learn about Carbon Fiber, the more you will relegate steel to the status of the 8-track tape. I'll leave the full explanation of the benefits of Carbon Fiber to the experts and the folks from Architectural Record, who named it a 2003 Product of the Year.

The second piece of news is the creation of a new, national Precast Concrete Company called AltusGroup. Five of the biggest Precast Concrete companies in America joined forces to create AltusGroup, which is focused on the development of a family of Carbon Fiber Precast Concrete products. We have already developed a Carbon Fiber Architectural Panel and Wall Panel and are working on other products, such as Double Tees and Bridge Decks. While that is exciting in itself, the engineering know-how and manufacturing strength of these five companies, of which High Concrete Structures, Inc. is a founding member, will enable us to create manufacturing standards to ensure that each of the over 25 manufacturing plants in this company will make each product the same way.

AltusGroup is dedicated to innovation, as is High Concrete Structures, Inc. While our R&D department will continue to develop new ideas for precast concrete products as part of High, we will also devote a large amount of time and effort working with our cohorts at the other four AltusGroup companies to expand and improve our family of CarbonCast products. We look forward to showing you the possibilities of working with the CarbonCast products and would welcome any ideas or comments you have regarding this exciting improvement in Precast Concrete.

Sincerely,

Tom McEvoy
President

New Robot Takes Welding Into the 21st Century

A typical precast project may consist of a couple hundred individual concrete members that are connected together to form the superstructure and/or façade of a building. It can be a daunting task to coordinate the fabrication and erection of all those pieces. It becomes even more Herculean when you consider the coordination and fabrication of the individual hardware embedments that are cast into all those members. The embedments are the elements that are used to connect the concrete members together at the jobsite. Typically, they consist of a plate, angle or tube with rebar and/or studs attached to them. A project may require over 10,000 individual embedments to be cast in the concrete members. With project schedules tight, High Concrete is faced with the tough task of finding a way to manufacture all these elements in a timely fashion so as not to impact the casting of the concrete members. In October of 2002, High Concrete put together a task force to see how the manufacturing process of the hardware embedments could be improved with an emphasis on streamlining the time for fabrication.

With upward of 80% of the hardware repetitive on projects, the task force came back with a simple answer: robotics. Could the same machines that have come to

dominate such manufacturing segments as the automobile world come into play in precast manufacturing? With that question in hand, the task force approached a number of robotic vendors to brainstorm our problem. After months of time studies and payback analysis, HCSI contracted with Motoman, Inc. of Dayton Ohio to provide a robotic welder to assemble and fabricate all our standard hardware items. The whole process required a lot more work though. Even though HCSI had standard parts, the engineering team was asked to take this to a higher level and standardize even more so as to gain the maximum efficiency for the robot. For example, one piece of hardware may have a #4 rebar welded to it whereas the next piece has a #5 rebar. Once all the hardware was reviewed, Motoman, Inc. could make the fixtures, or the devices that hold the hardware together until the parts were welded.

Lastly, the robot and the fixtures were delivered to HCSI in August of 2003. After programming the robot, documenting weld procedures and obtaining certification, High Concrete's robot came to life this past October. Though the journey was long, we are already seeing the benefits in our speed of assembly and quality of welds. So if you have the chance, stop in at our fabrication facility and introduce yourself to our new employee, our robot.

High Concrete Awarded Governor's Safety Award

The use of employee teams to identify and correct potential safety hazards is among strategies that helped High Concrete Structures, Inc. emerge a winner in the 2003 Governor's Award for Safety Excellence competition. The program offers Pennsylvania employers a chance to showcase best practices in occupational safety and health and earn recognition for their efforts.

Safety has always been a top priority at High Concrete, says safety and health coordinator Jason Witmer. But over the past two years, the company has stepped up its efforts, particularly in the area of employee involvement. “Each of our safety task teams involves about four or five co-workers who bring safety issues to the table, and discuss corrective actions. This not only reduces risks, but empowers workers to solve problems on their own,” adds Witmer.

Representatives from the Governor's Award team were also impressed with a High Concrete

program known as SWETT, for Safe Working Environment through Training. The initiative matches each new hire with a training mentor, an experienced employee who works closely with the new arrival to assure that he or she is instructed in relevant safe work practices.

SWETT also includes a recognition component that rewards individuals and departments for working safely without logging OSHA recordable incidents. As well, each participating department

designates a SWETT safety representative whose job is to speak with at least one member of the department daily about safety. This could be a conversation about a potential hazard, or a request for feedback on a new policy or procedure. The results have been excellent. “This year, we had about half the number of recordables we had last year—we've gone from around 90 in 2001 to just over 20 this year,” states Witmer.





Gary Graziano,
AIA Sr. Director,
Marketing & Planning

Catching the Next Big Wave

In running to catch the latest breaking waves of an incoming economic tide, a marketing mindset can help you pick the best ones to ride. Whether you are a professional service firm, a contracting firm, or a developer, you can pick the best waves, and ride them, if you:

- **Focus.** Pick one or a few things that you can do really well. If your firm tries to be everything to everyone, it will be of no interest or value to anyone.
- **Define your target markets and customer group(s).** Conduct research to determine which of them hold the most potential. Then, choose your customers. Learn which prospects or customers in the markets you've selected can be served most profitably—and better—by you than competitors.
- **Develop unique, valuable and branded offers.** These are products, and services that are in some way unique to your firm and can be tied to its name. Your core offers should be the things that you can deliver better than anybody else. And, they should be hard

for competitors to copy. In developing offers avoid the generally unprofitable trap of solving problems customers don't know, and don't want to know, are available to them.

- **Help your customers understand how you can help them.** Communicate your offers through messages, promotional materials and presentations that are outcome-oriented, such as "saves money." Features and functions don't interest customers if they deliver unwanted outcomes.
- **Check up on your customers regularly.** Conduct periodic customer satisfaction surveys during and after the sale to determine a) if customers are satisfied, b) what else you need to do to satisfy them, and most importantly, c) if they are willing to recommend you to others. After all, it's what they tell others about you that will make or break your reputation, your brand, and your business.

At High Concrete, a marketing mindset has helped us become the nation's largest single-site precaster of its kind by focusing on:

- Challenging commercial, institutional, educational, industrial and multi-unit residential projects where design, details,

appearance, schedule and performance matter, and where we can add value with our information, products, and services.

- A set of flexible, high-quality precast components including architectural and structural wall panels, MEGA-SPAN™ "Total Precast" systems, stairs, stadium risers, architectural accessories and our whole new line of lightweight, C-GRID reinforced CarbonCast™ components.
- Information for every member of the project team—so you have what you need for design, cost, schedule or performance requirements. For instance, we have a new brochure that makes it easy to understand what you can do with precast. We've also launched a semi-annual Innovation & Answers seminar series where architects and engineers can earn 7.5 CEUs by attending a full-day session. And, soon we'll be turning 1.800.PRECAST into the industry's first Concrete AnswerLine™, with a trained professional always available to get you the concrete answers you need—right away.

So, please, call **1.800.PRECAST** today, or send an e-mail to concrete.answers@high.net and let us know how we can help you with "concrete innovations and answers."

High Concrete a Sure Bet for New Employee Garage

The new Borgata Hotel, Casino & Spa in Atlantic City offers visitors a glitzy experience, complete with plush surroundings, exciting shows and elegant restaurants. Less likely to command the spotlight, but of great value to Borgata's 4,000-person staff, is a handsome new employee parking deck. The garage was a design/build project by a team that included High Concrete, Walker Parking Consultants and Baumgardner Construction Co.

The four-level deck provides about 1,200 spaces. According to Walker Parking design engineer Jim Pudleiner, "The structure had to be functional, attractive and durable. And when we have something that needs to look good and be durable, we always choose precast."

Challenging aspects of the project brought out the best in the design/build members and led to creative solutions. The garage was built on the site of a former landfill. The team devised a plan to establish the structure on epoxy-coated, concrete-filled steel piles. Also, High Concrete MEGA TEEs™ were laid on the ground precast tier, a unique design, which enhanced ventilation. The plan saved the casino owners money, and helped speed the project along, says Pudleiner.

Passive security is another notable feature of the garage. The stairs are not enclosed, and are built between the double-tees. The only elevator lobby is located on the top floor and is constructed of glass to increase visibility. Efficiency of access and egress is aided by a speed ramp system, which also uses the Mega-Tee.



Borgata employee parking garage provides safe parking for Borgata's 4,000-person staff.

The 1,200-square-foot structure is aesthetically pleasing, with brown spandrels and dark shear walls with varying degrees of sandblasting.

High Concrete was selected to construct the Borgata visitor parking garage as well. The two low-rise decks, completed in various sandblast finishes, complement the glass high-rise hotel, without competing for attention with the real star of the show.

Borgata, which opened on July 3, 2003, was the first new hotel/casino to open in Atlantic City in 13 years. It features a 135,000-square-foot casino, 11 restaurants, 11 shops, a 50,000-square-foot spa, 70,000 square feet of event space and a 1,000-seat theater.



The Borgata Casino parking garage was also a High Concrete project.