



INNOVATIONS IN PRECAST CONCRETE TECHNOLOGY

Precast Profile

Greenville Schools go to head of the class with high performance precast wall system

Greenville County's (SC) massive school program, valued at \$910 million, includes some 70+ schools that are being built, renovated, or expanded in a period of 5 years. It will provide new or renovated facilities with a capacity of 71,096 students and will lower the average age of the Greenville County schools in the program from 38 years to 9 years.

With a program this dynamic, it was clear that conventional thinking would not get the job done. Of the new schools, 10 have used precast concrete walls reinforced with C-GRID™ carbon fiber mesh, produced by TechFab, LLC, in nearby Anderson, S.C.

For many of the school's insulated wall panels, carbon fiber grid was used for shear transfer, connecting the inner and outer wythes to yield a 100% structurally composite panel. And because carbon fiber is virtually non-conductive, the panels provide an even insulation profile; they do not have problems with hot spots or cold spots, creating a more comfortable and energy efficient school.

Improved thermal efficiency and reduced energy expenditures, combined with a 100% structurally composite panel, are just a few benefits the school district received by using C-GRID reinforced precast.

Combine these with precast's speed of installation, improved fire and safety performance, reduction of moisture penetration (reducing mold potential) and increased security, it is easy to see why the designers chose C- GRID reinforced precast for many of the Greenville Schools.

The vertically installed Wall Panels were used for load bearing and non-load bearing applications, with heights up to 45' and widths up to 13'. The panels typically have 2-1/2" inner and outer wythes which encase foam insulation for R-11 performance.

The panels further provided a beautiful facade with the use of integrally cast thin-set brick, sandblasted finishes, reveals, medallions, and colored concrete mixes.

CarbonCast panels can be considered as an alternative to conventional precast, tilt-up or masonry construction. In addition, CarbonCast technology can also be used in architectural panels, double tees and a variety of multi-family residential uses. More than 30 projects nationwide totaling over 5 million square feet have used CarbonCast.

The CarbonCast panels were fabricated and installed by AltusGroup founding member Metromont Corporation.

Quick Facts

Project: Greenville County Schools

Location: Greenville, S.C.

Type of CarbonCast: Insulated Wall Panels

CarbonCast surface area: 1,082,000 sq. ft.

Program Manager: Institutional Resources

Architectural Firms: Arcadis/Facility Group; McMillan Smith and Partners; Durrant; Craig Gaulden Davis, AIA; Michael Keesheem and Associates; Neal Prince and Partners, AIA; LS3P

Lead GC/CM Firms: Turner Construction Company; Suitt Construction Company; Melloul-Blamey, Ltd.; Brantley Construction Company; BCE, Inc.; Oscar J. Boldt Company

Precast Company: Metromont Corporation, Greenville, S.C.

About Altus Group
The first-ever national partnership of precast companies, AltusGroup was founded to develop, manufacture and market precast innovations such as the breakthrough CarbonCast™ line of products. With more than 20 structural and architectural locations in the United States, AltusGroup companies have an unparalleled national network of manufacturing plants, technical staff and sales personnel to ensure architects, engineers and contractors that they will get the help they need—and the quality and performance they expect—when they select C-GRID reinforced CarbonCast products.

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CarbonCast Insulated Wall Panels make a splash at Adventure Aquarium

Adventure Aquarium in Camden, N.J., can keep its underwater residents and visitors comfortable for less thanks to fully composite, carbon fiber reinforced, CarbonCast Insulated Wall Panels.

The CarbonCast exterior walls at the 90,000-square-foot Adventure Aquarium replace conventional shear reinforcement with non-corrosive, high-strength C-GRID carbon fiber grid. The 41-foot panels have three-inch outer and inner wythes enclosing four inches of foam insulation to deliver a healthy R-16. The high R value—provided at the same cost as conventional precast with R-12 or lower—significantly reduces Adventure Aquarium's heating and cooling costs, an important factor for delicate aquatic life.

C-GRID carbon fiber grid connects the inner and outer wythes of CarbonCast panels to yield a 100 percent structurally composite panel. And because carbon fiber is virtually non-conductive, the panels provide an even insulation profile; they do not have problems with hot spots or cold spots that can plague other wythe connection options.

The exterior of the panels have a steel form finish with reveals. The panels were painted with a whimsical aquatic scene for stunning visual appeal. The interior has a one-time pass with a steel trowel for a smoother finish.

The load bearing and non-load bearing panels were engineered to incorporate man doors, double doors and window openings.

As an alternative to conventional precast, tilt-up or masonry construction, CarbonCast Insulated Wall Panels install quickly and require only minimal space on the job site during erection. CarbonCast precast technology can also be found in architectural panels, double tees and a variety of multi-family residential applications.

The CarbonCast Insulated Wall Panels were fabricated and installed by AltusGroup founding member Oldcastle Precast, Building Systems Division.



Quick Facts

Project: Adventure Aquarium

Location: Camden, N.J.

Footprint: 90,000 sq. ft.

Type of CarbonCast: Shear Grid

CarbonCast surface area: 38,000 sq. ft.

Architectural Firm: Granary Associates, Philadelphia, Pa.

Lead GC Firm: Whiting-Turner Contracting Co., Towson, Md.

Precast Company: Oldcastle Precast, Morrisville, Pa.

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Budweiser keeps consistently cool with CarbonCast insulated wall panels

The exterior walls of the new 138,000 square-foot Budweiser Distribution Center use CarbonCast, an innovative precast concrete technology that replaces conventional shear reinforcement with a non-corrosive, high-strength carbon fiber grid supplied by TechFab, LLC.

The panels' thickness ranges from 12" in the storage area to a conventional 8" thickness in other sections of the building.

The panels have 2-1/2" inner and outer wythes which encase 7" of foam insulation for R-26 or a 2-1/2" inner wythe and 2" outer wythe which encase 4 1/2" of foam insulation for R-15. Furthermore, the thermal mass effect of the panel could result in even better R-values for the structure.

The high R-value creates a consistently cool warehouse. Budweiser had tried using masonry-based systems for other distribution buildings, but found that the insulation qualities of the carbon-fiber-reinforced panels provided a lower-cost option.

In the Budweiser project's insulated wall panels, C-GRID™ carbon fiber grid was used for shear transfer, connecting the inner and outer wythes to yield a 100 percent structurally composite panel. And because carbon fiber has extremely low thermal conductivity, the panels provide an even insulation profile; they do not have problems with hot spots or cold spots that can plague other wythe connection options, creating an ideal, even refrigeration essential to keeping products fresh. The added insulation value can lead to performance up to R-37, depending on thickness.

CarbonCast panels can be considered as an alternative to conventional precast, tilt-up or masonry construction. In addition, CarbonCast technology can also be used in architectural panels, double tees and a variety of multi-family residential uses.

The CarbonCast panels were fabricated and installed by AltusGroup founding member Metromont Corporation.



Quick Facts

Project: Budweiser Distribution Center

Location: Greenville, S.C.

Footprint: 138,000 sq. ft.

Type of CarbonCast: Insulated Wall Panels

CarbonCast surface area: 124,500 sq. ft.

Architectural Firm: AIA – Roebuck Builders, Roebuck, S.C.

Lead GC/CM Firm: Roebuck Builders, Roebuck, S.C.

Precast Company: Metromont Corporation, Greenville, S.C.

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Cabela's gets attractive facade, high R-values with CarbonCast Insulated Wall Panels

Cabela's – The World's Foremost Outfitter – went hunting for a building exterior that would save time and money. It found CarbonCast™ Insulated Wall Panels: fully composite, carbon-fiber-truss reinforced precast concrete walls.

In CarbonCast Insulated Walls Panels, conventional shear reinforcement is replaced with non-corrosive, virtually non-conductive, high-strength C-GRID® carbon fiber shear trusses. The 1mm thick C-GRID trusses connect the inner and outer wythes to yield a 100 percent structurally composite panel. And because epoxy-coated carbon fiber is a poor thermal conductor, the panels provide an even insulation profile; they do not have problems with hot spots or cold spots that can plague other wythe connector options.

The load-bearing panels on the Cabela's projects feature a 2.5-inch outer wythe and 2-inch inner wythe enclosing 7 inches of EPS foam insulation to deliver an R-value in excess of 25.

The high R value—provided at the same cost as conventional precast which would deliver R-12 or lower—significantly reduces Cabela's heating and cooling costs—an important factor for such large buildings deep in heart of Texas.

Panel heights range from 21 feet for a majority of the retail space to 41 feet for a two-story restaurant and additional showroom space. A medium sandblast finish is used on four foot squares covering the buildings, both of which are over 145,000 square feet. Raised stars are featured on top corners.

As an alternative to conventional precast, tilt-up or masonry construction, CarbonCast Insulated Wall Panels install quickly and require only minimal space on the job site during erection. CarbonCast precast technology can also be found in architectural panels, double tees and a variety of multi-unit residential applications.



Quick Facts

Project: Cabela's

Locations: Dallas and Buda, Tex.

Footprint: 182,300 sq. ft.; 145,700 sq. ft.

Type of CarbonCast: Insulated Wall Panels

CarbonCast surface area: 75,500 sq. ft.; 67,000 sq. ft.

Architectural Firm: Crabtree, Rohrbaugh and Associates, Mechanicsburg, Pa.

Lead GC Firm: Kraus-Anderson Construction Company, Duluth, Minn.

About AltusGroup™

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Cardinal Health reduces heating costs through innovative wall paneling

It's easier for Cardinal Health to control temperatures and reduce HVAC costs thanks to ground-breaking precast concrete technology from AltusGroup.

The exterior walls of the new 332,000-square-foot Cardinal Health office-warehouse uses CarbonCast, an innovative precast concrete technology that replaces conventional reinforcement with a non-corrosive, high-strength carbon fiber grid. The 51-foot panels have a four-inch outer wythe and a four-inch inner wythe enclosing four inches of foam insulation to deliver a healthy R-16.

The high R value—provided at the same cost as conventional precast with R-12 or lower—significantly reduces Cardinal Health's costs to heat and cool the warehouse. The panels feature 1/2-inch horizontal reveals throughout the facade, while the office exterior also incorporates several colors and articulations for stunning visual appeal. The load-bearing panels also support the structure's roof.

In the Cardinal Health project's insulated wall panels, carbon fiber grid was used for shear transfer, connecting the inner and outer wythes to yield a 100 percent structurally composite panel. And because carbon fiber is virtually non-conductive, the panels provide an even insulation profile; they do not have problems with hot spots or cold spots that can plague other wythe connection options. The added insulation value can lead to performance up to R-37. They can be considered as an alternative to conventional precast, tilt-up or masonry construction. In addition, CarbonCast technology can also be used in architectural panels, double tees and a variety of multi-family residential uses.

The CarbonCast panels were fabricated and installed by AltusGroup founding member Oldcastle Precast, Building Systems Division.



Quick Facts

Project: Cardinal Health Office/Warehouse

Location: Baltimore, Md.

Footprint: 332,000 sq. ft.

Type of CarbonCast: Insulated Wall Panels

CarbonCast surface area: 124,500 sq. ft.

Architectural Firm: Randall-Paulson Architects Inc., Roswell, Ga.

Lead GC/CM Firm: Conlan Construction, Marietta, Ga.

Precast Company: Oldcastle Precast, Building Systems Division, Edgewood, Md.

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Magic Theatres reduces energy bills with innovative precast insulated wall panels

Magic Theatres can keep its patrons comfortable for less thanks to fully composite, carbon fiber reinforced, insulated wall panels.

The exterior walls of the 69,000-square-foot Magic Theatres use CarbonCast, an innovative precast concrete technology that replaces conventional shear reinforcement with a non-corrosive, high-strength carbon fiber grid. The 46-foot panels have a three-inch outer wythe and inner wythe enclosing six inches of foam insulation to deliver a healthy R-16.

The high R value—provided at the same cost as conventional precast with R-12 or lower—significantly reduces Magic Theatres' heating and cooling costs, creating affordable comfort for moviegoers.

The panels feature 1/2-inch horizontal reveal and parapet with alternating beige and taupe finishes for stunning visual appeal.

In Magic Theatres' insulated wall panels, carbon fiber grid was used for shear transfer, connecting the inner and outer wythes to yield a 100 percent structurally composite panel. And because carbon fiber is virtually non-conductive, the panels provide an even insulation profile; they do not have problems with hot spots or cold spots that can plague other wythe connection options. The added insulation value can lead to performance up to R-24. They can be considered as an alternative to conventional precast, tilt-up or masonry construction. In addition, CarbonCast technology can also be used in architectural panels, double tees and a variety of multi-family residential uses.

The CarbonCast panels were fabricated and installed by AltusGroup founding member Oldcastle Precast, Building Systems Division.



Quick Facts

Project: Magic Theatres

Location: Landover, Md.

Footprint: 69,000 sq. ft.

Type of CarbonCast:
Insulated Wall Panels

CarbonCast surface area:
52,000 sq. ft.

Architectural Firm:
Fishbeck, Thompson, Carr and Huber, Grand Rapids, Mich.

Lead GC/CM Firm:
Chesapeake Contracting Group, Resterstown, Md.

Precast Company:
Oldcastle Precast, Building Systems Division, Edgewood, Md.

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