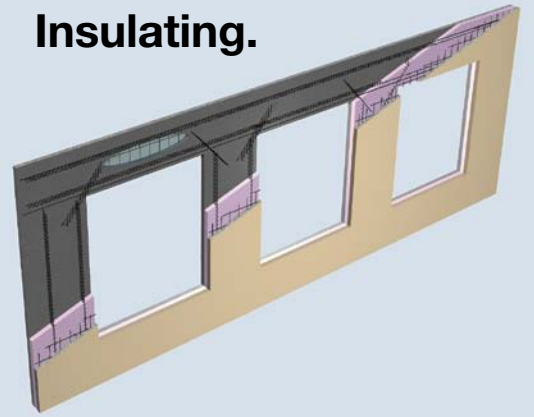


CarbonCast Insulated Architectural Cladding (IAC)

carboncast[®]



**Thinner.
Lightweight.
Insulating.**



- **Lighter weight enables reduced superstructure and saving in foundation design**
- **c.i. to meet ASHRAE 90.1 requirements**
- **Code compliant: ICC-ES with EPS insulation**
- **Aesthetic versatility**
- **Lower carbon footprint —up to 40 percent less concrete than a conventional 6" (152mm) solid panel**



Top:
Hilton Des Moines
Des Moines, Ill.
Precaster: Enterprise

Left:
5th and Race Development
Cincinnati, Ohio
Precaster: High Concrete Group

altusgroup[®]

carboncast[®]

C-GRID[®]
REINFORCED
C-GRID is a trademark of Chemar, NA

Thinner, lighter and fully insulated for energy and cost savings

Top to bottom:

University Commons at Georgia State University
Atlanta
Precaster: Metromont

151 First Side
Pittsburgh, Pa
Precaster: High Concrete Group LLC

Piedmont Central Student Housing and Dining Hall
Atlanta
Precaster: Metromont



CarbonCast Insulated Architectural Cladding features inner and outer wythes of concrete connected by C-GRID carbon fiber grid trusses. The concrete wythes sandwich a layer of insulation of usually 2" (51mm) or more depending on R-value demands. The thicker you specify the insulation layer, the higher the R-value can be.

Reducing the amount of concrete lowers the panel weight. Inner and outer wythes as thin as 1-3/4" (45mm) result in total concrete thickness of 3-1/2" (89mm). That's 40 percent less concrete than a conventional 6" (152mm)-thick precast panel. The benefits include:

- **Reduced load/superstructure:** Lighter panels mean the building's superstructure and foundation can be engineered for less dead load, resulting in cost savings and a lower carbon footprint.
- **Lower transportation costs:** Precasters can ship more panels on each truck, lowering fuel consumption.
- **Smaller cranes:** Crane size and expense can be reduced with lower-weight panels.
- **Seismic performance:** Lighter panels are generally more desirable in high-seismic areas.

Highly insulated for lower energy costs

CarbonCast Insulated Architectural Cladding features edge-to-edge continuous insulation (c.i.), typically EPS or XPS. The thermally efficient panel provides steady-state R-values starting at R-8 and go higher from there as additional insulation is incorporated into the panel. The negligible thermal properties of the C-GRID wythe connectors virtually eliminate thermal transfer.

Research validates performance

We tested our CarbonCast IAC panel at North Carolina State University in a pressure chamber that allowed for the application of uniform positive and negative air pressure. The full-scale panel measured 10' x 30' x 6.5" (3.05m x 9.1m x 165mm) and included three punched window openings.

The panel was initially loaded to over 75% of its 60 psf (2.87 kPa) design capacity in the positive and negative direction before being subjected to nearly 5000 lateral load cycles at (and above) +/-30 psf (1.44 kPa). After the lateral load cycles, the panel was loaded to the maximum chamber capacity of +80/-67 psf (+3.83/-3.21 kPa).

The panel did not fail, nor did it exhibit signs of distress during flexure and cyclic loading. No connection damage or distress was observed at any point during or after testing. Proper panel handling, storage and dunnage during transportation by the precaster coupled with proper strand and reinforcement placement during manufacture can minimize any torsion or hairline cracking, which can be a concern when dealing with thinner precast precast panels.

This study is on top of more than 15 years and \$2 million of research on CarbonCast High Performance Insulated Wall Panels, on which the IAC design is closely based. The similarity in sandwich design means the CarbonCast Insulated Architectural Cladding panels are engineered to exhibit exceptional strength and durability benefits.



CarbonCast Insulated Architectural Cladding panel undergoing load testing at North Carolina State University



Top to bottom:

The Heights

Monclair State University, Montclair, N.J.
Precaster: High Concrete Group LLC

371 East Paces Ferry Medical Office Building

Atlanta
Precaster: Metromont

Minimize field work

Factory fabrication greatly reduces the need for costly and inconsistent field labor. Simply lift and attach the panels to the building substructure. And because EPS or XPS continuous insulation is integrated in the panel, you can eliminate the need to install insulation along the building interior. We are also exploring the promise of delivering precast wall panels with factory-integrated fenestration to further speed construction and reduce on-site trades.

Remarkable aesthetics

CarbonCast Insulated Architectural Cladding offers a multitude of finish options to meet a project's aesthetic demands. Select from an assortment of pigments, aggregate colors and sizes, surface treatments, embedments like thin brick or tile, or formliners. You can also use the Graphic Concrete technology—available in North America exclusively from AltusGroup precasters—for imparting any image, pattern or design onto the panel face.

Commercial and Institutional Applications

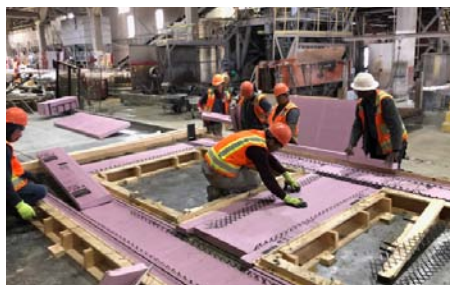
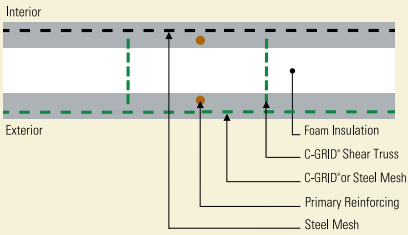
- Mid- and High-rise Office Buildings
- Multi-unit Residential
- Mixed-use Commercial/Residential
- Healthcare and Medical Facilities
- Education
- Hotels
- Student Housing

Details and drawings may vary slightly depending on precaster and region. All information is believed to be accurate as of April 2019 and is subject to change without notice. No responsibility is assumed for its use by AltusGroup, or its members, and who reserve the right to make changes without notice, to product design, product components and product manufacturing methods.

C-GRID® is a trademark of Chomarat North America LLC. CarbonCast is a trademark of AltusGroup.

CarbonCast® precast products are protected under the following US patents: 6,898,908 B2; 7,100,336 B2, 8,677,720, patents pending.

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