



## Medical University of South Carolina Ashley River Tower

Charleston, South Carolina

### Architect

NBBJ and LS3P

### Builder

BGKS (a joint venture of Birmingham, AL-based Brasfield & Gorrie, and M.B. Kahn Construction and Southern Management Group, both of Columbia, SC)

### Drywall Contractor

Cleveland Construction, Inc.



### Dens® Brand Products Protect and Speed Up University Hospital Project

Moisture and mold can be problems in any public building. In a hospital the issue is especially critical. The construction and design team for the Medical University of South Carolina's (MUSC) Ashley River Tower Hospital Replacement project in Charleston were well aware of that fact and it was one of the many reasons they chose fiberglass mat Dens® Brand products from Georgia-Pacific Gypsum for all gypsum board products in the project.

The team selected Georgia-Pacific Gypsum's mold-resistant gypsum panels for interior walls, stair and elevator shaftwall assemblies and exterior sheathing applications. Fiberglass mats are used on the front and back surfaces of the gypsum panels. Replacing the paper facings removes a potential food source for mold.

Fiberglass mat gypsum products also are contributing directly to compressing the MUSC Ashley River Tower construction schedule—a compression that is producing significant savings on the project. "The fiberglass mat concept came up early in the design cycle" says Project Director Chris Malanuk, director of strategic planning for MUSC Ashley River Tower. "The original idea was to reduce both short-term and long-term mold risk. Then the possibility of accelerating the construction schedule came up, and that efficiency more than made up for any cost differential many times over."

### Big project, risky location

The 641,000 sq. ft. (59,551 sq. m.), 156-bed hospital facility is a \$190 million project that includes the development of a four-story diagnostic and treatment building, a seven-story patient tower and a garden atrium that connects the two structures. It's the first phase of a plan funded by a \$401 million mortgage loan from the U.S. Department of Housing and Urban Development—the second-largest commitment ever made under the Federal Housing Administration's Section 242 Hospital Mortgage Insurance program. The builder is BGKS, a joint venture of Birmingham, Alabama-based Brasfield & Gorrie, and M.B. Kahn Construction and Southern Management Group, both of Columbia, South Carolina. The drywall contractor is Cleveland Construction, Inc.

The project location in Charleston, South Carolina is extremely risky for moisture and mold. Charleston has a hot, humid climate, and it sits in the

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Atlantic hurricane corridor. Commenting on wet weather during construction, Shamrock Thompson, area superintendent for the Patient Tower building, says, “We saw severe weather from an off-shore hurricane. There were heavy rains driven by high winds, a tremendous amount of water blowing in, and repeated flooding on the site.”

Charleston is also an area with high seismic activity and subsiding soil conditions. In total, the MUSC Ashley River Tower buildings have to withstand hurricanes, floods, earthquakes and high-risk soil conditions. “We’re looking for a 50- to 75-year building life-span,” says Malanuk. “That’s longer than the usual 40-year hospital life. Construction quality and long-term mold resistance are very important.”

### Construction acceleration with fiberglass mat building products

Early in the project approval cycle, BGKS approached MUSC Ashley River Tower with a plan that promised to shave up to nine months off the schedule. The team was excited. Dens® Brand gypsum products from Georgia-Pacific Gypsum were an integral and important part of the BGKS acceleration plan.

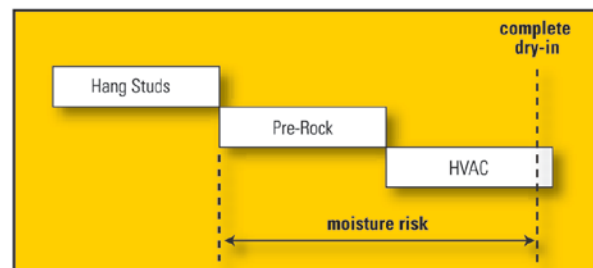
“The hospital needs the increased capacity as soon as possible to relieve crowding in existing facilities,” says Malanuk. “In addition, early completion will give the university additional cash-flow faster. Earlier completion also lets us move out of the construction loan phase sooner, which brings significant savings in interest. We knew that if we could pull it off, it would be a win-win operation.”

“Unfortunately, mold and its related litigation are not strangers to hospitals and healthcare facilities,” said Charles Perry, chief executive officer of EAG, a national mold consulting group focused on the real estate finance and insurance industries. “This problem is not going away, although many would like to pretend that it doesn’t exist. The insurance companies really didn’t help the lenders at all several years ago when they decided to exclude all coverage against mold from all policies. We are now starting to see the insurers willing to consider coming back with mold coverage, but not until building products like fiberglass mat gypsum come onto the scene. Look, it’s very simple, traditional drywall is covered with paper. Paper is a potential food source for mold. If you remove the paper you remove a food source and also reduce the chance of mold growth on the backside of the drywall.”

Fiberglass mat gypsum panels figure into the BGKS building plans in several ways. Products used include DensArmor Plus® High-Performance Interior Panel, DensGlass® Shaftliner, and DensGlass® Sheathing. These products combine a uniquely formulated, moisture-resistant gypsum core with fiberglass mats embedded in both faces. The core differs significantly from the core in regular paper-faced gypsum boards. The core absorbs little moisture, so it can safely be hung in less than ideal weather conditions, which may help accelerate schedules enough to pay for the cost difference between these products and regular paper-faced gypsum products.

### Early drywall speeds other trades

On the inside of the building, DensArmor Plus panels allow installers to hang gypsum board in critical areas behind plumbing, electrical conduits and HVAC ducts even before the structure was dried-in. “The aggressive schedule at the Medical University of South Carolina Ashley River Tower required the application of gypsum board prior to the building being completely closed from the elements,” said Rhett Stayer, Vice President Cleveland Construction.



“DensArmor Plus, a fiberglass mat and mold-resistant panel by Georgia-Pacific Gypsum was the product of choice,” continued Stayer. Stayer concluded, “The properties of the DensArmor Plus panels allowed Cleveland Construction to install top out drywall in advance of the MEP systems with the building remaining open to the elements. This increased our productivity and allowed Cleveland Construction to accelerate the schedule.”

Project Engineer Mac McClinton says, “Hanging the panels earlier had a huge ripple effect because other trades were able to start work sooner. Accelerated subcontractor schedules included plumbing, electrical and HVAC, plus massive amounts of wall-related details like interior glazing, corner guards and case work.” Using DensArmor Plus panels for these “pre-rock” operations reduces the

risk of having to perform potentially expensive post-dry-in remediation of damage from moisture and mold growth.

### **Fiberglass-faced gypsum reduces moisture remediation**

Hanging traditional paper-faced gypsum board before dry-in invites moisture damage and mold growth, McClinton notes. “Construction projects invariably have to replace paper-faced drywall when it’s hung early in the project. That’s very expensive. Replacing the panels after other trades have done their work is much more costly, and the out-of-sequence work causes access problems with other tasks.”

“Fiberglass mat gypsum drastically reduced remediation due to moisture,” comments Thompson. “We were able to safely start hanging DensArmor Plus panels about four months before we would have hung traditional paper-faced gypsum board. Cascading rain had no effect. After eight months exposure to the elements, the fiberglass mat panels looked like the day we put them up. And, the no-paper design leaves no food for mold.”

DensArmor Plus® panels carry a limited warranty against delamination and deterioration for up to 12 months exposure to normal weather conditions. They deliver superior moisture and mold resistance compared to regular paper-faced panels for any interior wall or ceiling where there is risk of moisture accumulation or mold growth. McClinton concludes, “DensArmor Plus panels just don’t react to moisture. We hung 675,000 sq. ft. (62,710 sq. m.) of DensArmor Plus panels during rainy weather with almost no replacement. That’s unheard of at this scale of construction. It was a really good investment.”

### **Dens® Brand products reduce long-term mold risk**

Eliminating paper facings from wall-cavity linings also reduces the long-term risk of moisture-related mold problems. Long-term owners expecting high occupancy such as healthcare facilities see the benefit of using fiberglass mat technology. With regular paper-faced gypsum panels, the organic components can feed the growth of mold inside the wall. Fiberglass mat gypsum products score a 10 (the highest score attainable, indicating no mold growth detected) in mold resistance when tested, as manufactured, per ASTM D 3273.

### **Shafts and stairwells benefit also**

Similarly, fiberglass mat DensGlass® Shaftliner lets BGKS close in stairwells and shafts well before dry-in. DensGlass Shaftliner has a moisture-resistant, noncombustible\* 1-inch



gypsum core and coated fiberglass mats that resist in-place exposure damage. That toughness helped BGKS compress construction schedules and deliver a top-quality project sooner.

In elevator shafts, stairwells, horizontal ceiling membranes and as area separation walls, the moisture- and mold-resistant DensGlass Shaftliner carries the same 12 month warranty as DensGlass® Sheathing. DensGlass Shaftliner is listed as a Type X gypsum board component (per ASTM C 1658) in one-, two- and three-hour fire-rated assemblies.

### **Fiberglass mats inside and out**

On the outside of the building, BGKS chose DensGlass Sheathing. The warranty allows BGKS more flexibility in completing exterior skin work. That is an important point in the MUSC Ashley River Tower project, because the project is being managed as a complex set of interconnected “micro-projects” to speed construction.

With billions of square feet installed over the years, DensGlass Sheathing, with its bright GOLD color is the #1 architecturally specified fiberglass mat panel.

\* As described and tested in accordance with ASTM E 136.

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### Construction veteran calls fiberglass mat gypsum “the drywall of the future”

Superintendent Thompson is a fan of Dens® Brand products from Georgia-Pacific Gypsum. “It’s a superior product.” Thompson says. “Installers find DensArmor Plus® panels work just like the traditional paper-faced drywall they’re familiar with. It is more impact- and abuse-resistant than traditional paper-faced drywall.” Thompson also notes that painters commented positively on the product’s finished surface.

For more information about fiberglass mat gypsum building products from Georgia-Pacific Gypsum, and for copies of product warranties, visit [www.gpgypsum.com](http://www.gpgypsum.com).

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#### Technical Information

Georgia-Pacific Gypsum Technical Hotline  
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**CAUTION For product fire, safety and use information, go to [www.gp.com/safetyinfo](http://www.gp.com/safetyinfo) or call 1-800-225-6119.**

**HANDLING AND USE—CAUTION** This product contains fiberglass facings which may cause skin irritation. Dust and fibers produced during the handling and installation of the product may cause skin, eye and respiratory tract irritation. Avoid breathing dust and minimize contact with skin and eyes. Wear long sleeve shirts, long pants and eye protection. Always maintain adequate ventilation.

Use a dust mask or NIOSH/MSHA approved respirator as appropriate in dusty or poorly ventilated areas.

**FIRE SAFETY CAUTION** Passing a fire test in a controlled laboratory setting and/or certifying or labeling a product as having a one-hour, two-hour, or any other fire resistance or protection rating and, therefore, as acceptable for use in certain fire rated assemblies/systems, does not mean that either a particular assembly/system incorporating the product, or any given piece of the product itself, will necessarily provide one-hour fire resistance, two-hour fire resistance, or any other specified fire resistance or protection in an actual fire. In the event of an actual fire, you should immediately take any and all actions necessary for your safety and the safety of others without regard for any fire rating of any product or assembly/system.

