



NEMOURS ALFRED I. DUPONT HOSPITAL FOR CHILDREN | WILMINGTON, DEL.

Colorful glazing and construction creativity brighten kids' days.

CASE STUDY

AGI Glazier

R.A. Kennedy & Sons, Inc. | Aston, PA

Team

Architect: FKP | Houston, TX

Facade Consultant: Wiss, Janney,

Elstner Associates, Inc. | Houston, TX

Construction Manager: Skanska

Completion

October 2014

Awards

2016 Vision Design Award Healthcare
Honorable Mention)

2016 SCCM/AACN/AIA ICU Design
Citation Honorable Mention

2015 Healthcare Design Showcase
Award of Merit



Photo above © Brad Feinknopf/OTTO

INNOVATIVE EXPANSION

Founded by philanthropist Alfred I. DuPont in 1936, Nemours A.I. DuPont Hospital for Children is a nationally ranked pediatric hospital. When Houston-based healthcare architects FKP were engaged to master plan and design an expansion, they took inspiration from the hospital's location and existing building. The dramatic exterior features a system of unitized, multi-colored glass and laminated metal panels with solar shade pipes, made possible by teamwork with AGI member R.A. Kennedy & Sons, Inc. and facade consultant Wiss, Janney, Elstner & Associates, Inc.

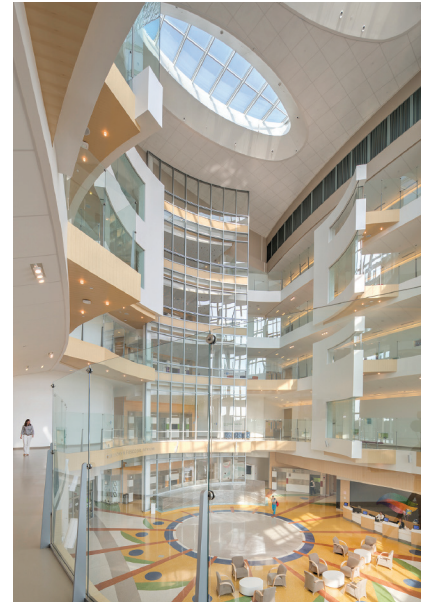
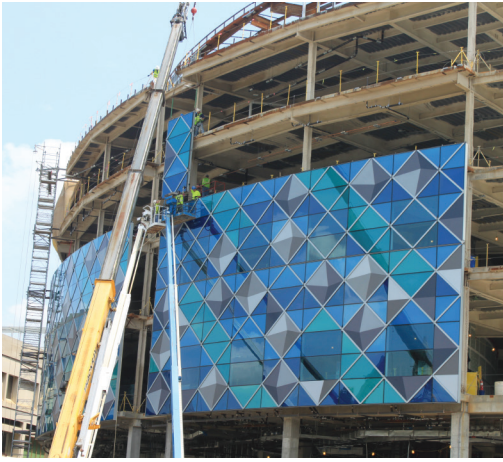
ARBOR IN A GARDEN

The architectural team from FKP uses two nature analogies to describe their concept for the expansion, which sits among the vast DuPont gardens. "We saw our project as a hospital in a garden," explained FKP Senior Project Designer Paul Asteris, AIA. The trellis-like glass structure that clads the hospital expansion shelters patients inside the way an arbor frame strengthens delicate growth.

In contrast to the 1979 building's rough stone exterior, the dramatic blue and purple hues of the expansion recall a geode spilling forth its colorful and wonderful interior. "The expansion explodes with new architecture that's a little more fun, playful, and kid-friendly," Asteris adds.

ARBOR WALL

According to Kennedy Senior Project Manager John Hermansen and Field Superintendent Timothy Petriccione, the distinctive arbor wall contains 65,000 sf of curtain wall in 432 unitized sections. Most sections measure 9-by-23 feet tall and weigh 2,000 pounds. Cranes were used to erect the walls, because of the size and weight and also to navigate construction components on site - including all of the fully fabricated patient bathrooms, delivered around the time the curtain wall was to go up. Erecting the arbor wall went so smoothly that Kennedy beat its anticipated schedule.



COLORFUL COLLABORATION

Led by Design Principal Michael Shirley, AIA, LEED AP, Asteris, and Senior Project Architect Bob Clark, AIA, the FKP team conceptualized a five-story patient tower with 192 private rooms – each with a window to view the surrounding gardens. The plan looks like two intersecting footballs. A skylit central atrium links the two wings.

Without a single 90-degree angle, the design required plotting points in space to calculate and detail the glazing. The faceted exterior curtain wall slopes upward, further complicating the geometry. According to Hermansen, it was “an incredible design. We had never seen anything like it.” His team used Trimble Total Station software to execute the challenging layout and provide accurate measurements for the field crew.

“We had a lot of collaboration,” said Clark. “Kennedy did a really outstanding job providing us with the results we were looking for.”

WJE supported the team with design assistance and building enclosure consulting on both the curtain wall and aluminum panel systems, including laboratory and on-site air and water infiltration testing. Associate Principal/Project Manager Dale Fuhr, CDT, NACC, explained WJE helped develop a sound design with a focus on the facade’s air and water resistance capabilities, thermal performance, and long-term sustainability.

MULTI-FACETED

The triangular pattern of the arbor wall belies the fact that the unitized sections are rectangular. The diamond grid was achieved by creatively manipulating components to achieve the desired appearance. Instead of faceted metal panels, Kennedy worked with Metal Sales and Service Co. to laminate four-ply aluminum panels in four shades of gray. The solution reflects sunlight similar to how facets might, but in a budget and maintenance friendly flat solution that ensures air and water tightness. In total, 274

Left to right: Unitized panel installation; arbor wall detail showing laminated metal, glass, and solar shade tubes (photos courtesy R.A. Kennedy & Sons, Inc.); atrium view through glass railing (image © Brad Feinknopf/OTTO)

six-by-six-foot panels and 127 six-by-three-foot panels were incorporated into the arbor wall. Cristacurva glass was chosen for its range of colors. The glass was manufactured in Mexico, shipped to Oldcastle in Texas where the unitized sections were fabricated, and then trucked to Wilmington for installation by Kennedy. Over 100 truckloads of fabricated materials were installed.

ON THE INSIDE

The interior scope of work was no less complex than the exterior. The five-story atrium features a 1,000-sf unitized interior curtain wall of high-end Meltdown artistic glass, Paragon glass floor accents, and 5,000 sf of glass railings. Patient rooms feature Unicell insulated windows with integral privacy blinds that can be controlled from the nurses’ stations. Kennedy also installed over 100 aluminum and glass ICU doors and 40 exterior operable vent windows with associated motors for the building’s smoke evacuation system.

FOR THE KIDS

Never losing sight of the project’s focus on kids, the construction team engaged Nemours patients as often as they could. When bedrock below the soil required blasting, Skanska arranged for a dynamite plunger to be brought into the hospital. A group of children took turns pressing the plunger to “set off” the charges while carefully orchestrated demolition orders were given by walkie-talkie from the next room. When curtain wall sections were installed by crane, Kennedy job foreman Mike Maiers stood indoors with kids and together, they gave crane signals to set the wall. The interaction and involvement brightened the days of both kids and crews.