

The Aesthetic Versatility of Precast Achieves Project Goals

Replicating the look of a new hospital's brick, stone, and lapboard siding on the accompanying precast concrete parking structure required creative designs and flexibility

— Craig A. Shutt

The precast concrete parking structure that supplements the new Martha Jefferson Hospital on the outskirts of Charlottesville, Va., was designed to complement the look of the hospital design using aesthetic techniques.

Photo: Kahler Slater, Inc.

The new Martha Jefferson Hospital on the outskirts of Charlottesville, Va., lies atop a hill in the sightline of Monticello, Thomas Jefferson's historic plantation. In such august company, designers wanted the new hospital to blend with the local styles, featuring masonry and lap-board siding with a slate roof. Those materials were specified to clad the hospital—and they were replicated on the adjacent precast concrete parking structure, creating unique replication challenges that showcased the material's aesthetic versatility.

“When we design parking structures, precast concrete is always our first choice, because it offers the best value in terms of cost, durability, and speed of construction.”

“The parking structure provided a unique challenge to match the hospital's traditional materials in precast concrete,” says David Plank, associate principal and project architect at Kahler Slater. “When we design park-

ing structures, precast concrete is always our first choice, because it offers the best value in terms of cost, durability, and speed of construction. We designed the hospital with the look we wanted, and we had enough faith in the local precasters that they could replicate the materials we used.”

The buildings, part of the Peter Jefferson office complex, provided a new home for the hospital, which moved from downtown Charlottesville and prides itself on its historic preservation. Matching the parking structure to the new hospital's design in precast concrete could be achieved, but optimizing the panels to provide the precise look with the variety of materials required proved challenging, says Jim Lyons, project manager at The Shockey Precast Group, the precaster on the project.

Total Precast Structure

The structure features a total precast concrete structural system consisting of double tees, beams, columns, walls, stairs, and architectural spandrels. The structure itself was relatively easy to design, measuring three bays wide and six stories tall to provide the needed 765 spaces in the approximately 250,000-square-foot rectangular building. But achieving the appearance needed for each panel required careful attention to detail.

Surrounded in the complex by buildings with façades featuring brick and dark gray cast stone, the parking structure was designed to feature a dark brown wood siding look (achieved with formliners) as well as embedded cast stone and brick features. Brick was used primarily

PROJECT SPOTLIGHT

Martha Jefferson Hospital Parking Structure

Location: Charlottesville, Va.

Project Type: Parking structure

Size: Approximately 250,000 square feet

Designer: Kahler Slater, Milwaukee, Wis.

Owner: Martha Jefferson Hospital, Charlottesville, Va.

Structural Engineer: GRAEF, Milwaukee, Wis.

Contractor: M.A. Mortenson, Brookfield, Wis.

PCI-Certified Precaster: The Shockey Precast Group, Winchester, Va.

Precast Components: Total-precast concrete structural system, including double tees, beams, columns, walls, stairs, and architectural spandrels.

To replicate the look of the natural materials used on the hospital, the precast concrete panels cladding the parking structure feature three finishes and four concrete mixes. The inset brick added another texture and color to the aesthetic palette. Photo: Kahler Slater Inc.





Panels often had more than one texture in them to reduce piece counts. The dividers in openings, which offered a woodgrain appearance, added depth and a window-like appearance but required special attention during transportation. Photo: The Shockey Precast Group.



The precaster had to ensure each finish was contained with no spillover as the various textures were cast in the panels. Photo: The Shockey Precast Group.

on the lower floors, acting as a solid base, while cast-stone panels frame the glass-enclosed stair towers on the end. The wood siding appearance was used on upper levels and as accents for the windows and to frame the perimeter.

To achieve all of these variations, the panels feature three finishes and four concrete mixes: one each for the lap siding, cast-in lintels and sills, mortar around the inset brick, and the gray panel backup. The inset brick added another texture and color to the aesthetic palette.

Complicating the design further

was the need to match the bricks on the adjacent hospital, but no thin brick provided the proper appearance. To resolve this issue, the precaster bought full bricks from the local manufacturer and sliced off the front half to insert into the panels. "We needed to slice each brick thin enough and consistently across all of them to fit uniformly into the panels," Lyons explains.

Using the full bricks, while more time-consuming to produce, provided a key benefit, notes Plank. "Because we had full bricks at our disposal, we could do full corners with returns at the punched openings and set them back deeply. They look quite sharp." Lintels that accent the openings, which provide the appearance of windows, project out from the panels, while wood-like vertical dividers that split some openings were recessed to provide depth and more shadow lines.

Panel Sizes Optimized

Many of the panels combined a variety of colors and textures to help reduce the total number of panels. These are often referred to as combination finishes. "It was a complicated system, but it greatly simplified the job on-site," says Lyons. Optimizing the sizes without regard for the number of textures and colors in each panel cut the piece count by more than 100. "That reduced shipping and erecting costs significantly." The typical panels were 1 foot thick, 48 feet long, and 9 feet tall, weighing approximately 50,000 to 60,000 pounds.

As the combinations were designed and formliners, textures, and embedded brick were aligned, the key concern centered on keeping each section contained so there was no spillover, Lyons explains. "Each type of material required its own formliners, so we had to carefully match sections and ensure each remained separate during casting," he says. "Some of the aspects to it became very complex."

Many of the panels are load-bearing, creating "wallumsn," or a combination of walls and columns, in Shockey's parlance. "They were able to shave a little of the wall thickness down by combining the functions," Plank explains. "That helped provide more openness and flexibility on the interior."

Delivering and erecting the components also offered challenges. The woodgrain panels feature three or four vertical "fingers" that project to allow

connections to be made. Those projections precluded the panels from being shipped flat due to the stress on their cross-sections. Shockey contracted with a Richmond, Va., hauler to load eight or nine of the panels vertically onto double-drops that were placed on low-boy trailers to protect the panels while providing the proper clearances.


Upon arrival, the panels were picked from the truck in the position in which they were being placed on the frame. Other components, including the 207,000 square feet of double tees and the stair and elevator panels, were delivered on traditional trucks and staged at a nearby location for erection as needed.

The panels had cast-in-place plates embedded into them, and they were connected to the foundation using splice sleeves, rather than setting the panels onto the plates. "The goal was to allow the stacked panels to act as one unit," Lyons explains. In part, this was done because the crane was limited in its maneuverability, requiring it to swing over two bays to locate some panels. The crane was placed in an outer bay and performed the erection from that spot.

"The general contractor did an excellent job with staging the area and providing access for a difficult process," Lyons says. "We had a steady stream of trucks going into the site and coming back out quickly. It all went fairly smoothly."

The finished parking structure blends beautifully and seamlessly with the architecture of the adjacent hospital and other buildings. The structure connects to the hospital, with a dropoff point at the front that leads to the hospital lobby and directs drivers around to the parking entrance.

"The owner was very pleased that all of the finishes on the hospital could be applied to a precast concrete structure," Plank says. "It creates a light, open look that enhances the patient experience as they arrive and depart."

Lyons agrees. "Everyone was very pleased with the results. We did a lot of things they thought couldn't be done. We're very proud of the work, because it looks beautiful. While I can't say this was the easiest project Shockey has ever completed, I'm glad to be able to say we could handle the complexity and challenges beyond even our own expectations." 

For more information on these or other projects, visit www.pci.org/ascent.