

Contracted Scope

Project Description/Type of Construction

Carolinas HealthCare System Union in Monroe, North Carolina, recently expanded its campus with the addition of a three-story, 73,800-square-foot Women and Children’s Center. The new facility offers personalized healthcare services for women and children in a state-of-the-art facility and has tripled the hospital’s capacity of LDRP beds, adding associated support space, a newborn nursery, waiting rooms and conference space.

In addition to the Women and Children’s Center, Rodgers completed 16,500 square feet of renovations to the existing acute care hospital, including a new lobby and main entrance. The facade was refinished with all new windows and existing precast was stained to create a modern transformation that ties in with the architecture of the new addition. In order to connect the main lobbies of the two buildings, a corridor was constructed, providing an interior hallway with floor-to-ceiling windows.

Additional aspects of the project include the renovation and expansion of the Central Energy Plant and the construction of a 60-foot-wide ground helipad, installed adjacent to the ED.

Schedule

Start Date: August 2012

Completion Date: July 2015

The total project duration was 36 months.

Size of Project

Women’s Center: 73,800 SF (expansion)

Central Energy Plant: 5,473 SF (expansion)
1,804 SF (renovation)

Existing Hospital: 16,500 SF (renovation)

Self-Performed Labor

As construction manager, Rodgers self-performed less than 1% of labor on the project.

- *View of the renovated main entrance and corridor leading to the new Women and Children’s Center.*



Project Narrative

Why is this project special?

The Women and Children’s Center addition expanded the hospital’s capacity from eight to 24 labor, delivery, recovery and postpartum beds. Each room is approximately 400 square feet and private, providing a comfortable atmosphere where patients can transition from labor to recovery all in one place, thus removing the need for room transfers and improving the overall patient experience. The department features a unique layout with one LDR equipment room shared between two patient rooms. This was designed to manage space more efficiently and increase patient room size. Each room includes a flat-screen TV, mini fridge, private bathroom and overnight accommodations for family. The facility was designed so that all rooms are located on exterior walls, providing a window in every room.



Additional features include a birthing tub room, one isolation room, seven special care rooms for premature babies, a newborn nursery and a lactation center. Common areas include a specialty retail shop, bistro, internet cafe, children’s play area and a waiting lounge, designed with a family-style atmosphere that features a fireplace, creating a cozy space for

family and friends.

The project scope also included a 16,500-square-foot renovation of the existing acute care hospital, located adjacent to the new Women and Children’s Center.

In order to blend the two buildings together, Rodgers stained the existing precast to match the new facility, unifying the old with the new. Windows were also replaced along the front of the building, which included 35 patient rooms. The new design increased the window size from approximately four feet to 12 feet, matching the design of the new facility and providing an exterior view spanning the length of the room. The windows connect from one end of the building to the other, creating a continuous “ribbon” effect.

At the main entrance, a new canopy was constructed around a circular drive, providing a drop-off and pick-up zone for patients.

In addition to staining the precast and replacing windows, Rodgers added an “eyebrow” along the top of the building. This feature protrudes from the facade and acts as a decorative feature. The team used steel members and had to tie into the existing structural members below the roof. A 15-foot pylon was also constructed above the main entrance, using the same material as the entrance of the Women and Children’s Center. Together, these features add dimension and interest to the prior flat facade.

Interior scope of the existing acute care hospital included renovating the main lobby, C-section area, second floor corridor and adding a new nurses station.

In order to connect the new facility with the existing hospital, Rodgers constructed eight tie-ins where the two buildings connect through

corridors. Patients have interior access between the two buildings, leading to the main cafeteria, ORs, and pediatric wing from the new addition.

In order to support the Women and Children’s Center addition, Rodgers completed a 5,473-square-foot expansion and 1,804-square-foot renovation to the Central Energy Plant.

Lastly, a 60-foot-wide ground helipad was constructed. Rodgers had to first demolish an existing building of approximately 70,000 square feet in order to make way for the required fly zone, concrete pad and modular retaining wall.



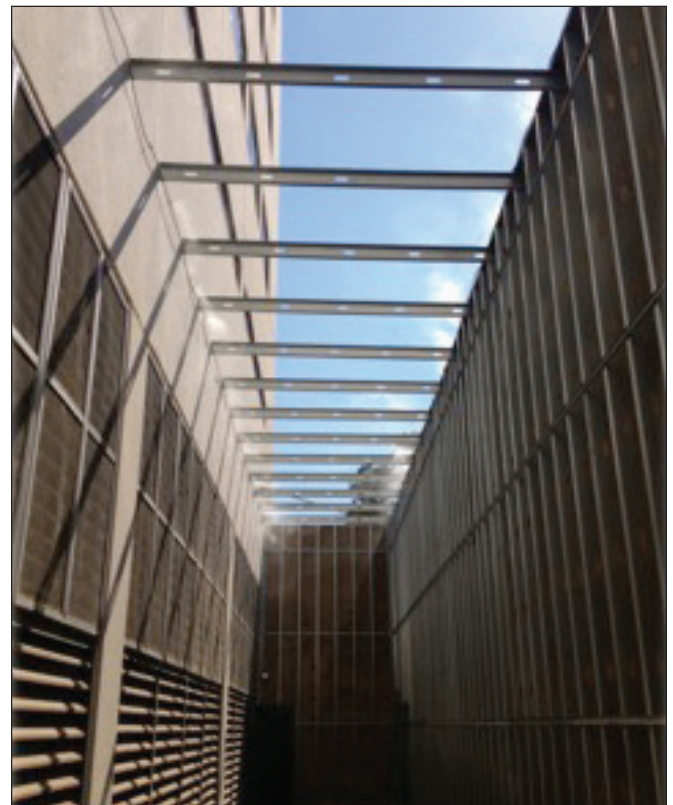
Quality

From the start, Rodgers implemented a “Big Room” approach, where the designers, contractors, and engineers worked together using Virtual Design and Construction (VDC) in a shared room to identify and resolve conflicts within the drawings for all trades, prior to work occurring in the field.

BIM was essential to the success and quality of the project. During preconstruction, Rodgers used virtual design and construction to assist in finishing the construction and coordination drawings before construction began. While working on the underground utilities, BIM coordination was key, making it possible for the team to work around existing utilities while

adding new ones underground. The virtual design and construction team utilized clash detection and scanning in order to successfully model existing conditions and ensure there would be no complications while adding the expansion.

A major aspect of monitoring quality on the project involved the installation of a misting system surrounding the air intakes for the existing hospital. Because of the close proximity of the existing hospital to the new addition, Rodgers had to pay special attention to contain construction debris. Mechanical air intakes for the existing hospital were located just 10 feet away. These serviced the OR and had to be protected from any dust that could potentially be sucked into the intake system. Rodgers devised a plan and dug down 20 feet to the basement level. A metal stud wall with sheathing was built and a misting system was installed to settle dust.



Rodgers could control the system and would run it throughout the day during construction

activities in close proximity. This innovative water misting system provided a shield between the construction and air intakes.

To ensure space was not contaminated, Rodgers kept a particle count log that recorded daily levels both inside and outside the hospital. A particle counter was used to monitor air quality and ensure it’s integrity was not affected by construction debris and dust. This innovative system was designed by the team and was the first time any system of this type was used on a Rodgers project.

Another major proponent of quality was the use of the Electronic Job Box. This was also a first for Rodgers and proved to be highly successful. The electronic job box, which resembles a kiosk, was set up on the project site and provided subcontractors access to BIM documents. This information was also available on Ipads. The system allowed all subcontractors to access each others drawings and coordinate with one another. The job box was constantly updated with the most current drawings and model, enabling the integrity of the model to be maintained as well as the overall quality of the project.

Throughout the project Rodgers collaborated with CHS, the nursing staff and the doctors who would be working in the new spaces. Rodgers engaged the owner early on, encouraging involvement through walk-throughs and mock-ups so staff could offer suggestions throughout construction and avoid problems after construction was complete, ensuring quality and efficiency. Nurses engaged in the design of the women’s center rooms and changed locations of equipment to better suite their daily tasks and routines, including sinks and cabinetry.

The virtual design and construction team created a 3D model of a patient room for staff to view and offer input. Rodgers then constructed a real life patient room mock-up for nurses to

walk through and evaluate the functionality of the layout.

Schedule

This project had a tremendous amount of phasing involved in order to work around an occupied campus. Between the Women and Children’s Center addition, the CEP renovation and expansion, and the existing acute care hospital renovations, the team completed over 50 phases of construction. In order to minimize impact to the hospital patients and staff, Rodgers implemented night and weekend schedules in addition to the weekday schedule.

Phasing was implemented during the replacement of windows in the existing acute care hospital.

Rodgers replaced every window on the front facade, 35 of which included patient rooms. In order to have as little impact as possible, Rodgers renovated as few as three rooms at a time. The precast had to be cut out between existing windows, temporarily waterproofed, and then replaced with new windows, creating one seamless glass “ribbon” across the facade.

The team also had the task of replacing the air intakes that serviced the ORs. To avoid disrupting the OR schedule, all air intakes were removed and new ones installed in one weekend. This one weekend shutdown took the team one month of planning, permitting the ORs to remain operational and allowing services and surgeries to continue uninterrupted.

Value Analysis

Throughout the project, value engineering was used in order to stay on budget. Since Rodgers participated in Design Assist, the team was able to incorporate constructability review early on.

Rodgers used Value Engineering (VE) logs and created design concepts through design collaboration meetings with the design team and key subcontractors, providing cost estimates

without completing full design documents. This removed overages by giving CHS alternative options for materials, changing the scope without impeding patient care spaces.

Budget issues were addressed through value engineering and continued collaboration between the contractor and the design team through the duration of the project. Several instances called for the original design to be revised in order to meet the construction budget. For example, original drawings called for a detached glass curtainwall to be installed as a false façade, with the existing building cast behind the curtainwall. After creating a mock-up of the suggested design, Rodgers determined the design to be too costly and cost prohibitive based on maintenance and cleaning requirements.

In order to maintain budget, Rodgers suggested refinishing the original façade and replacing all existing windows, creating a “ribbon” effect, reducing costs by roughly \$700,000.

Throughout preconstruction, weekly meetings with the design team, owner and vendors allowed collaboration between all teams, providing important opportunities for conflict resolution, saving time and money. For example, the original design called for the new connector bridges between the existing hospital and new addition to be built off of the existing structure within operating rooms of the Surgical Services department, forcing them out of commission and temporarily closing them down. During a “Big Room” meeting, it was decided to change the design and alter the tie-in locations of the connector bridges, allowing the operating rooms to be kept open and undisturbed, saving the owner a significant amount of money and operational constraints. This change saved the ORs from going offline for 4-5 weeks, as planned in the original design.

Another major result of value analysis was changing the design of the helipad, which was originally scheduled to be a freestanding

structure. Instead, Rodgers constructed a ground helipad located adjacent to the ED. Logistics were a challenge due to working around the ED entrance and underground utilities, including electrical and gas lines, but this design change resulted in \$923,000 of savings to the owner.

This project was also one of the first to have BIM completed by all the subcontractor trades, adding value to the project process and increasing accuracy and efficiency. Monthly meetings were held with the designer for each subcontractor to ensure drawings were updated in the model and new coordination drawings were issued. The team improved standard processes to become more efficient, introducing the electronic job box and electronic document management, now a standard on Rodgers’ projects.

Difficulties or Extenuating Circumstances

One of the early challenges that faced the project team was unearthing masses of unanticipated rock while leveling the site. Because the rock was slate, it broke apart in large chunks that had to be removed and hauled off site, leaving uneven levels throughout the project site. Rodgers trucked in new, suitable material and backfilled all areas where rock was excavated.



Another obstacle was the location of the underground utilities. There was a very tight area between the CEP and new addition where utilities had to be added underground. The distance between the two structures ranged anywhere from 20 to 70 feet. Elements added include electrical duct banks, located 30 feet below the CEP, chilled water piping, sewer, storm drains and site lighting.

A major challenge the team faced was the requirement to maintain egress at all existing egress paths. One specific tie-in connecting the pediatric wing to the new Women and Children’s Center had to remain operational at all times during construction, per the fire marshall. Rodgers was performing excavation 20 feet below that specific egress. In order to keep it functional, the team had to build a temporary emergency egress bridge above the foundation excavation, spanning 45 feet. The bridge was affectionately coined the “Gerald Tucker” bridge after Rodgers’ Superintendent who came up with the design.



Throughout the project, over 90 hospital-impacted utility shutdowns were performed, involving medical gas, water, power, HVAC, fire protection and chilled water. Rodgers kept a hospital impact log to track and coordinate

shutdowns with the least impact possible.

The team also utilized Bluebeam, software used to create, markup and edit design drawings, to create detailed phasing plans to coordinate construction with hospital operations. This helped coordinate the schedule with the hospital staff and minimize the impact that construction had on day-to-day operations. Phasing plans and schedules were coordinated with nursing managers to review impacts to patients as well as impacts to life safety measures. Planned shutdowns were reviewed once a week with hospital administration in order to coordinate and work around the entire campus.

The overall project had a monumental impact to the campus of CHS Union. The team carried out over 50 major phases of construction over a three year span, including reconfiguration of parking lots, closure of entrances, frequent utility shut-downs, and maneuvering around an operating campus with hundreds of construction workers. Throughout construction, monthly meetings and team collaboration between the owner, contractor, designer and subcontractors were key to successful communication and overcoming project challenges.

Engaging Rodgers early on in the design process allowed constructability review to be incorporated from the start, helping the project stay on budget and on schedule.

Collaboration was key to this project’s success. From the beginning the project engaged field workers, subcontractor management teams, the design team, hospital staff and even the community. Rodgers developed relationships with the fire marshal, building inspectors and the permit department. It was truly a team effort and everyone had a sense of responsibility in the design and construction of the project.

Quality of Finished Project

Carolinas HealthCare System, FreemanWhite, and Rodgers entered into a Design Assist contract at the start of the project, with Rodgers providing substantial assistance during the MEP and aesthetic design process.

The team’s goal was to develop a new “front door” image that was consistent with the contemporary aesthetics of the campus. A new facade was designed for the main exposed surfaces of the existing patient pavilion, including staining the existing precast and replacing windows to create the illusion of one endless window running the entire length of the hospital. The windows not only updated the exterior of the building, but 35 patient rooms benefited from the renovation as well, providing light filled rooms and expanded patient views. These upgrades improved the campus aesthetic and resolved ongoing thermal efficiency and water intrusion issues.

The window pattern continues from the existing hospital to the Women and Children’s Center, through the connecting corridors. Floor-to-ceiling glass runs the length of the hall and covers the entire exterior wall. On the opposite side of the corridor, local artwork decorates the walls. Columns that were previously part of the exterior facade, prior to constructing the corridor, are covered in wood paneling and glass mosaic tiles, adding warmth and color to the bright space.

• *“I would like to commend you on the high quality of the finished product,” says Kevin Tice, Starr Electric Company Senior Project Manager. “It is truly a beautiful building.”*



Colors and finishes flow down the hall and carry into the renovated lobby inside the main entrance, blending the two spaces. The reception desk features a solid surface desk and a combination of millwork and wood paneling.



These same finishes carry into the Women and Children’s Center, tying the design together. Curved lines are incorporated into the design from the ceiling soffits, to the reception desk, to the pattern of the tiles on the floor.

Next to the reception desk, just outside the waiting room, is a unique lighting feature. Rodgers installed ribbon lighting inside a cove where the walls meet the ceiling. Every time there is a birth the walls light up with color - pink for a girl, and blue for a boy.



The newborn nursery features decorative circular soffits and the flooring pattern mirrors the design on the ceiling. The circular pattern carries into the corridor on floors and ceilings.



Rodgers’ goal was to create a high quality project that enhanced the patient experience with state-of-the-art technology and amenities. The team successfully integrated existing buildings with new — seamlessly blending the campus together and creating one unified design.