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2016 ABC of the Carolinas
Excellence in Construction Awards
Carolinas HealthCare System CMC Kitchen
Healthcare

Contracted Scope

Provide a detailed description of your scope for this project. Responses should include: type of construction; size of project; contract value; length of project; and percentage of labor that is self-performed.

Project Description/Type of Construction

Carolinas Medical Center (CMC) – the main campus in Charlotte, NC, for Carolinas HealthCare System (CHS) and the only Level I Trauma Center in the region – serves approximately 2,400 patient meals per day. Last updated in the 1990s, the main kitchen utilized a cook/chill system. Rodgers undertook a complex renovation to completely modernize the existing dietary department to provide full-service on-site cooking.

Every floor of the 13-story hospital was touched during the renovation. The bulk of construction was completed in the 13,204-square-foot main kitchen, which is located in the center of the third floor. Kitchen offices and a dry storage area were added on the second floor, and on every patient floor a small room, called a servery, was added to provide a final plating area before meals are distributed to patients.

The most significant portion of the project involved building a completely self-sustained temporary kitchen, complete with a loading dock, outside the hospital, adjacent to the existing kitchen. The temporary kitchen eliminated over 9 smaller "stop-and-go" phases associated with renovating the main kitchen while it remained operational 24/7 throughout construction.

Schedule

Start Date: August 1, 2013

Completion Date: October 16, 2015

The total project duration was 26 months.

Size of Project

Kitchen Renovation: 13,204 SF

Temporary Kitchen: 5,000 SF

Support Areas: 16,442 SF

Contract Value

Construction costs totaled $13,659,220.

Self-Performed Labor

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

• *Below: Before and after.*

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Project Narrative

Provide a written narrative indicating why this project is special and why it qualifies for the Carolinas Chapter award. The focus of the narrative should be the construction of the project.

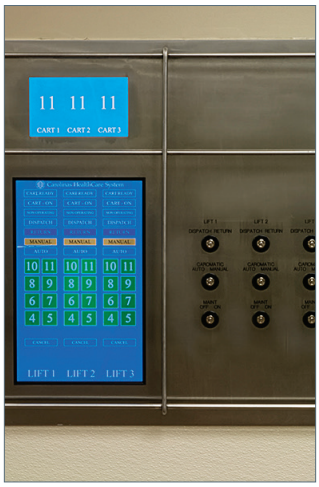
Why is this project special?

Carolina Medical Center's kitchen was originally installed in the 1950s. The dietary department was using a cook/chill system that was state-of-the-art in the 1990s when the kitchen was last renovated. Daily patient satisfaction scores regarding the quality of meals were below Carolinas HealthCare System's (CHS) target range. All patient meals were cooked offsite, plated and chilled down for delivery from a commissary located ten miles from the hospital. Once on site, the food was warmed using plug-in rolling carts, and final plating was performed before delivery to the patients. Striving to meet the needs of patients, CHS listened to concerns, comment cards, surveys, and general feedback and decided to abandon the cook/chill method. CHS embarked on a major dietary expansion and renovation program, with a goal to provide a room service model for food delivery – prepared fresh daily in-house and to order.

CHS determined a Design Assist format was the best project delivery method and selected RDK Engineers as the prime consultant. RDK brought on board architecture and engineering services and a food services consultant. Rodgers was awarded the construction management contract through a competitive Request for Proposal process. Key subcontractors and suppliers were brought in early to ensure critical information was designed into the project.

The project scope was a complete renovation and expansion of the existing dietary department to provide full service, on-site cooking. New utility services, rooftop air handlers, exhaust fans, grease ducts, grease traps, and electrical and mechanical support all would be reworked to accommodate the new services.

The food delivery system was also revamped. A new 3-bank, automated dumbwaiter system was re-commissioned throughout the entire height of the existing bed tower within newly designed nourishment rooms, also known as a servery, for final plating on each patient floor.



- *Photos depict the automated dumbwaiter system used to deliver food to each floors servery for final plating, prior to delivering to patients.*

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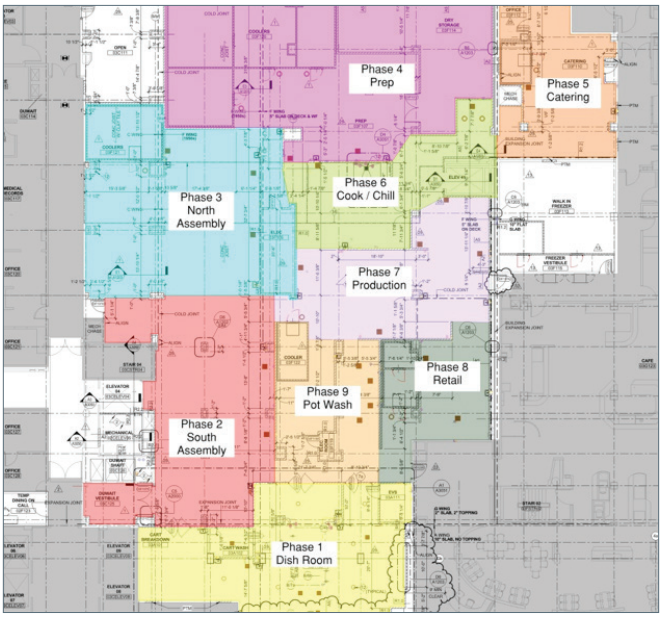
The central location of the kitchen was landlocked within the two million-square-foot facility, making access for renovation particularly challenging. The project scope touched multiple departments and services on 13 floors of the hospital, including the roof, and stretched from one side of the campus to the other to tie-in to various utilities. After working with the owner, kitchen staff, construction manager, and members of the design team, an initial 9-phased plan was conceived and approved.



• *Initial planning included nine phases. The temporary kitchen reduced the kitchen renovation to one phase.*

During the planning phase, innovative ideas and collaboration among the team members produced an alternate plan: provide a temporary kitchen in an adjacent parking lot with prefabricated units that would allow the entire kitchen portion of the project to be renovated in a single phase. Although the temporary kitchen delayed the project by approximately three months while it was constructed, this plan saved seven months in the overall schedule (25% of the originally approved schedule), and the project also came in below the initially approved budget. Additionally, there were ICRA benefits since a reduction in the construction duration decreased the potential for exposure to contaminants.

• *"The team decided to provide a temporary kitchen to accommodate continuous food service. The Rodgers team coordinated this work, which allowed the kitchen itself to be a single phase of the project. During the construction, Rodgers was always concerned with quality control and took the initiative in setting up meetings to discuss phasing of the work and security issues," said Scott Shipp, RDK Engineers Vice President. "Perhaps the best part of working with Rodgers was their beginning-to-end can-do attitude."*

Most importantly, the hospital's daily patient satisfaction scores improved significantly even during construction, with the implementation of the temporary kitchen. Patient satisfaction scores, collected daily, have continued to climb following completion of construction and implementation of the room service model for delivering healthy and delicious food to patients.

This innovative and collaborative approach resulted in a dietary expansion and renovation that truly delivers on improvements to the patient experience.

• *Below: The new, state-of-the-art kitchen.*

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Quality of Finished Project

Describe the end product in detail referencing Site, Exterior, Interior, MEP, Other. Include detailed pictures not included in Section 4 (Photographs) that show the quality of the work.

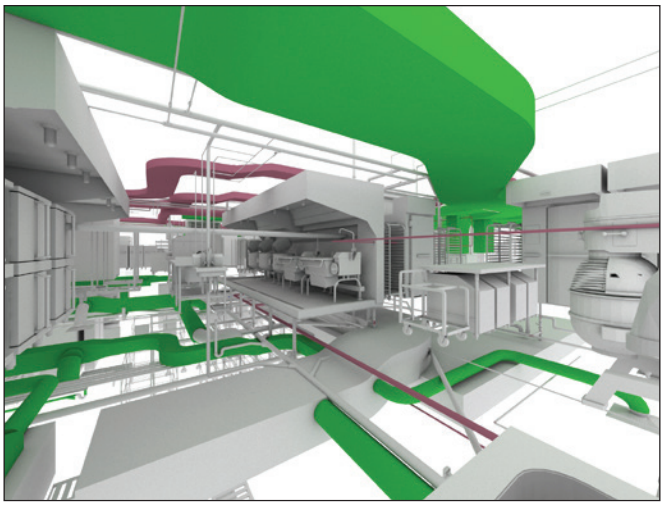
Carolinas HealthCare System, RDK Engineers and Rodgers entered into a Design Assist contract at the start of the project, with Rodgers providing substantial assistance during the MEP and design process.

The team's goal was to increase patient satisfaction through a higher quality dietary program and in-house made food, making it possible to provide fresh, quality meals via a room service model.

- *"With leadership and unmatched attention to detail, Rodgers spearheaded gathering the necessary information while coordinating with the different CHS teams, equipment vendors, multiple trades and subcontractors," said Johns Martin, Adams Electric President & CEO. "Your team prepared, planned, scheduled, supported and executed with minimal impact to hospital operations and dining services."*

When construction started, the existing conditions were different than what was shown on documents, involving abandoned material and lines running in and out without a known purpose. In order to create a quality kitchen, with the capability of hassle-free maintenance in the future, the team spent a tremendous amount of time helping CHS verify what the existing utilities were, tracing conduit, ducts, pipes, etc. out of the kitchen, determining if they were abandoned and if they could be demolished.

Rodgers' Virtual Design and Construction team used a laser scanner to capture existing conditions and insert them into the model in order to create an accurate record of existing conditions for CHS.



- *Above: BIM showing relationship of kitchen equipment with mechanical ductwork, sanitary systems and electrical*

The kitchen was not only landlocked in the middle of the hospital, but it was surrounded by four different wings, all constructed in different years, with different materials. This posed a problem with the expansion joints that connected each wing to the center of the hospital. In order to ensure quality construction when tieing in utilities from each wing, Rodgers worked with the structural engineer to verify the best process for anchoring methods, patching and elevation changes. This guaranteed the structural integrity of the renovation.

Another major accomplishment was the renovation of the dumbwaiter shaft. It had been out of commission for years and now delivers meal carts to each patient floor for final plating before delivering meals to patients. This high tech system is automated and uses mechanical tracts to wheel the meal cart into the shaft.

Once it arrives on the patient floor, mechanical arms extend and deliver the food into the nourishment room, or servery. It can also be programmed to pick the trays back up and return them to the kitchen. Previously, food had to be carted to each floor using the main elevators.

Rodgers' General Superintendent devised a plan and had a custom cover built for the dumbwaiter controls to protect them from rolling carts. Weighing several hundred pounds each, the carts could have easily broken a control if hit.

Building Information Modeling (BIM)

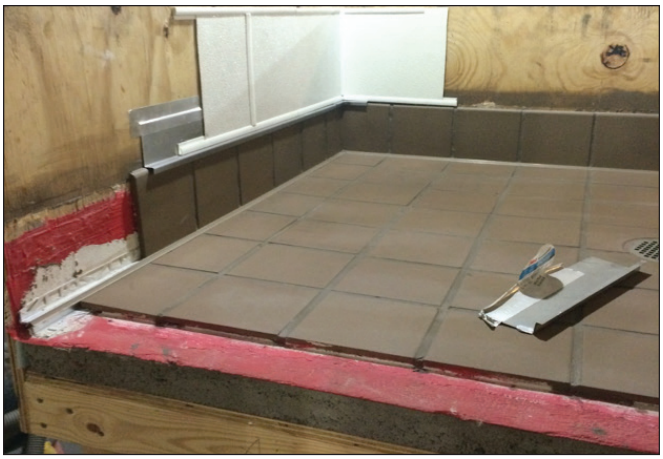
From the start, BIM was essential to the success and quality of the project. During preconstruction, Rodgers used virtual design and construction (VDC) to assist in coordination drawings before construction began. The team was able to identify a two-foot elevation discrepancy on several floors that didn't match the model.

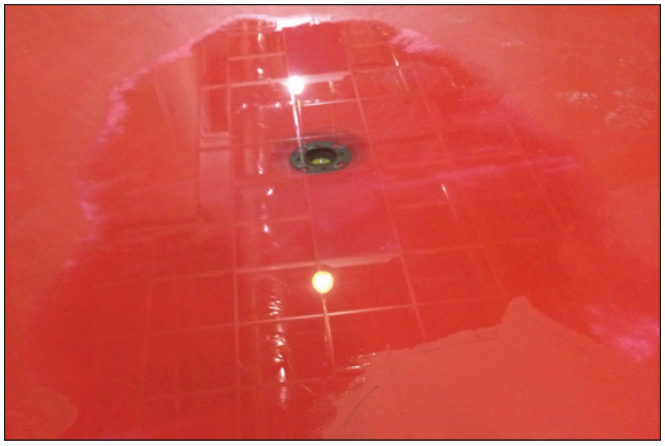
Project engineers also worked together with our VDC department to find better and shorter routes for MEP piping, saving money and time.

Rodgers also utilized point cloud laser scanning to locate existing utilities and provide CHS with a reference.

Mock-Ups

Given that the kitchen was located on the third floor above lab space, extra consideration went into planning for floor waterproofing. A full scale mock-up was constructed of the tile floor system and all associated details including the mortar bed, red guard, thin set, tile, base, expansion joints, wall joints, flashing and wall protection. Once the floor had red guard applied, the entire area around each drain was flooded for 24 hours to test and ensure there were no leaks.





• *Above: Flooring mock-ups to ensure waterproofing.*

In order to ensure every last area was waterproofed, the team installed all door jambs six inches from the floor, into the wall, instead of using standard floor anchors. The door jambs also had red guard applied through them.

The cart wash down area was extremely important to waterproof. It is comparable to that of a shower, with red guard applied on the floors and all the way up the walls, above the ceiling grid. Stainless steel cladding was also added on the walls, surrounding the tile floor, in order to prevent any future issues and maintain quality.