

Contracted Scope

Project Description/Type of Construction

The original Talley Student Center was built in 1972 to serve as the hub for student life on the campus of North Carolina State University in Raleigh. At that time, the student body numbered 14,000. Enrollment is now at nearly 35,000, and the University determined the student center needed to expand to meet current needs.

The new Talley Student Center is a vibrant, four-story, multi-purpose building that houses the 800-seat Stewart Theatre, plus a smaller theatre and studio; a ballroom for lectures, meetings, and training; multiple food service areas; the Wolves' Den; Student Senate Chamber; campus bookstore and offices.

The building features a 150-foot tall, steel structure dubbed the Technology Tower. Representing the University's commitment to STEM, it serves as the focal point of the new student union, and anchors the northeast

section of the central campus. Fabricated of AECS (architecturally exposed structural steel) it commands attention with steel segments of graduating ellipses.

Schedule

The construction schedule for the addition and renovations was phased to minimally disrupt the college's daily operations.

- February 2011: Prior to beginning Phase I of construction, a comprehensive utility relocation was needed.
- Groundbreaking Date: August 16, 2011
- Phase-I addition was completed in the summer of 2013 and Phase-II renovations were completed May 7, 2015.

Size of Project

Construction totaled 299,000 square feet, with 149,000 square feet of addition and 150,000 square feet of renovation.

Self-Performed Labor

As construction manager, Rodgers self-

performed less than 1% of labor on the project.



Architectural rendering shows the new Talley Student Union with its iconic Technology Tower.

Project Narrative

Why is this project special?

The imaginative design features of the new Talley Student Union, as well as complex schedule challenges, required excellent communication and collaboration among the project team, which included architects Duda Paine (architect of record), Cooper Cary (interiors), engineering firm Stewart, and construction management as a joint venture of Rodgers Builders, Inc. and H.J. Russell, in association with minority subcontractor DayeCo, along with numerous subcontractors and material suppliers. BIM played an important role throughout the project, which is registered for LEED® certification with the goal of Silver.

Site challenges

Before construction could begin, the campus bookstore had to be relocated. Rodgers Russell DayeCo (RRD) upfit space in another campus building for a temporary bookstore. Underground utilities were then rerouted for chilled waterlines, sanitary piping, new duct bank and telecom lines that would support services for the new facility. This work took place during the summer of 2011 to minimize impact to students.

A nearby dormitory remained in use, even as its foundation was underpinned 20 feet with soil nailing to allow excavation for the new subterranean loading dock.

Students and university staff were kept updated on construction activity via social media.



Onsite signage displays used red light/green light codes to indicate noise levels, remaining sensitive to student activities and Price Music Hall adjacent to construction. The site was located in a dense area of the central campus, surrounded by occupied facilities on all sides and with very limited laydown area.

• *"Quite an accomplishment considering the magnitude of the extremely congested underground work and boundary limitations NCSU placed on you. The University appreciates the hard work the team put into this significant feat."*

*-Charlie Marshall, Associate Director
NCSU Capital Project Management*

Accelerated schedule and early turnover

The project was constructed in two phases; the first phase encompassed the new building addition and the second was renovation of the existing structure. Midway through Phase One, the client requested an early turnover of a portion of that Phase, which would allow campus dining services to remain operational. This portion included a subsurface loading dock,

mechanical/electrical rooms, a convenience store and a commercial kitchen, which supports catering and branded food service venues on the second floor.

Significant efforts were invested in early turnover of these areas. The complex 80-page schedule was broken into micro-schedules for the subcontractors, with regular meetings to review and address concerns.

These areas opened for use in October 2013, representing a 3.5 month schedule acceleration. Early turnover of dining areas allowed a continuous revenue stream for the University and kept food service intact for students.

The remainder of Phase One was turned over for use in February 2014, and Phase Two was completed in May 2015.

Budget and cost controls

Before the project began, RRD met with more than 20 various user groups to get input. During preconstruction, over 30 different alternates were tracked and well over fifty value engineering strategies and life-cycle cost studies evaluated for feasibility. Multiple bid dates were established resulting in nearly forty bid packages being awarded.

Through early involvement during design stages, RRD was able to maintain budget consistency with the original estimate, with a decrease of -0.08% from SD through DD, GMP and bid day. This allowed the owner to add value/scope during the project.

Green features

Sustainability was an important component,

with the goal of LEED Silver. Studies were done to calculate energy consumption and considerations were given to reduction of landfill waste, water use, daylighting and indoor air quality. Green features include fins and fritted window glass to reduce solar heat gain, sourcing renewable materials, a 50,000-gallon cistern to capture rainwater from roof drains, and use of native plants.

Additionally, the Talley Student Center will continue to operate with sustainability in mind, including activities such as composting, recycling sorting stations, green cleaning, and a refillable water station. Talley is also located to encourage the use of public and campus transit.

Diversity goals were exceeded

Diversity was important, with goals for HUB participation at 10%, and more than 30% achieved. The construction management team included a woman-owned firm and two minority firms.

Impact on student life

The Talley Student Union creates a new center for student activity by transforming a 1972 facility into a vital place for building the campus community and hub for student life. The landmark design fosters an exciting, engaging, interactive and interdisciplinary student environment through an emphasis on shared and flexible spaces, diversified dining, university pride and centralized student organizations. Integrated exterior/interior environments advance a new model for student centers and redefine NC State's campus identity.

Project complexity

This complex project required a high level of expertise from all team members, with unique design features, schedule requirements, and site challenges on the occupied campus. Talley Student Union is located Cates Avenue, a main thoroughfare through campus, next to the Reynolds Coliseum.

Campus site constraints

Connectivity to and around the building was a primary design theme. Talley lacked a 'back door,' so design for servicing was critical. The design team created the first subterranean loading dock on campus and placed the main kitchen a level below grade, adjacent to the dock. A 24' grade change across the site challenged placement of points for pedestrian and emergency access, as well as of support access for satellite trucks for Reynolds Coliseum events in the site adjacent, new drop-off areas for campus transportation routes, and off-campus housing shuttles.

Additionally, the site offered the challenges typical within an occupied and functioning campus. Roads and fire lane access as well as pedestrian routes had to remain open. Keeping the University's students, staff and visitors safe was the top priority.

Renovation challenges

Renovation of the existing Talley building first involved a teardown to essential structural components, opening up space for a large atrium and adding new steel structure for floors,

stairs, and unusual shapes in the atrium.

One of the major challenges was keeping the project watertight while a new 80'x100' skylight opening was created in the atrium. Scaffolding was put in place with outriggers at each floor level so trades could work. Just below roof level, the scaffold was rigged with plywood, membrane and roof drains into the existing roof leader. Once steel was in place for the skylight, Rodgers used marine shrink-wrap around the opening until glass was ready to put in place.

Innovative technology

Virtual design and construction (VDC) was used throughout design, preconstruction and construction. Rodgers' VDC team had early involvement with the architect, providing clash detection reports at 80-85% DD documents. Rodgers held regular coordination meetings with all trades for more than 18 months due to the project's complexity. The Building Information Model (BIM) was loaded on iPads for use in the field, along with a virtual station on site for trades to access the model.

The Rodgers team used a Trimble Robotic Total Station to perform layout efficiently, requiring only one person with a sensor to coordinate points based on drawings and monument locations. With unusual angles and radius walls in the design, robotic layout was very effective. The construction documents did not detail layout for the radius walls, so CAD files were uploaded to the robotic station to layout walls, sleeves, light fixtures and roof penetrations for the technology tower.

Unique design features, materials and finishes

The technology tower required complex engineering, with detailed specifications for fabrication and erection.

The 150-foot technology tower was designed of Architecturally Exposed Structural Steel (AESS), with graduating ellipses forming the conical shape. It houses a three-story glass elevator with walkways connecting each level of Talley. The engineers and fabricators shared the BIM, and used a laser scanner onsite to ensure correct clearances at installation.

Many of the unique materials and finishes required special expertise. A portion of the building's exterior uses a unique terracotta-cladding system, one of only a few in the US. Other portions of the exterior specified 12-inch brick coursing in a very difficult diagonal pattern. At another area, a media mesh was installed; providing an LED screen where students can enjoy movies, campus events and Wolfpack games from the lawn.

Incorporating innovative technology, sustainability, inclusion, and social gathering spaces, the new Talley Student Union is a vibrant hub for campus life.

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- *"It is with great joy and admiration I report to you the new Talley Student Union passed SCO B.O. inspection this afternoon. I am in awe of the caliber of personnel and resources your firms brought to bear to meet this important milestone! This wonderful new facility captures, like no other University facility, "who we are" at N.C. State. GREAT JOB!"*
-Charlie Marshall, Associate Director
NCSU Capital Project Management
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Quality of Finished Project



The North Carolina State University Talley Student Union creates a new center for student activity through the transformation of a 1972 facility into a vital place for building the campus community and a hub for student-life experiences. The building's architecture and interior spaces foster an exciting, engaging, interactive and interdisciplinary student environment. The design's landmark form and emphasis on shared and flexible spaces, diversified dining, university pride, centralized student organizations, and integrated exterior/interior environments advances a new model for student centers and redefines NC State's campus identity.

The design turns the original student union building inside out, transforming a contained and closed-off structure into an open and inviting campus hub. The building's northern facades—a combination of glazed storefront and aluminum and terra cotta sunscreens—opens to a central exterior gathering space, the Stafford Commons. This common space hosts a 31'6" by 18'6" video wall for projecting movies and sporting events.



The designers advocated the addition of an iconic landmark element into the project's program. The Technology Tower now marks the eastern entrance to the building and has become a primary point of campus orientation, a choice meeting place for students and an important starting point for campus tours.

The phased project includes a new four-story, sky-lit atrium carved from the existing



atrium links major program areas and houses a full-height, louvered wood art sculpture of the University mascot to reflect the strong spirit of NC State's student body.

The building also includes formal and informal meeting spaces, a dynamic variety of culinary experiences (12 venues on 3 floors), a commons, lounge areas, campus print/copy shop, the NC State Bookstore and student government and organization spaces, as well as Arts NC State and Student Affairs administration. The Stewart Theater received new interior finishes.

The 12,000 SF ballroom is designed to easily convert to five smaller spaces and includes unique LED lighting that provides an array of colors.



The building massing of the existing student center opens and reaches out to merge with the campus surroundings. The interior architecture incorporates diverse programs across multiple levels, offering high visibility and a sense of identity for student organizations. In addition to expanding more traditional elements (student organization spaces, food service and dining, ballroom, and bookstore), the facility creates a student commons and establishes an iconic campus gateway.

In contrast to the existing facility, the addition welcomes the campus population by shaping pedestrian circulation and strong visual links to north and central campus areas. Each corner of the building provides a prominent landmark and orients students and visitors to the interior sequence of spaces. A robust infrastructure supports the entire building. Phase II building additions transformed every facade of the existing building.

The project is slated to receive LEED Silver certification. It includes extensive daylighting, water efficient landscaping, a 50,000-gallon cistern to harvest rainwater for irrigation, high-performance glazing to prevent heat gain, recycled content materials and extensive indoor air quality measures.

Integrated into the Common's landscape are a number of sustainable features that bring environmentally conscious thinking to everyday campus life.

