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Duncan and McMurtry Colleges, Rice University

Elegant use of timber for college commons creates a bold statement amidst a tradition of brick
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Rice University in Houston, Texas, was established in 1912 and has been developed as a highly consistent collection of finely detailed brick buildings, set amongst a rich environment of mature oak trees.

Opposite: Duncan commons has a rectangular plan, with tree-shaped solid Douglas fir structural columns and interesting light patterns created by the up-light fixtures.

Above: The external wood featured on the college’s first-floor siding and internal corner louvres is solid cypress.
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Above and right: McMurty commons has a circular plan and a central roof lantern. Both commons are supported by solid Douglas fir columns, while wood flitched perimeter columns support the façades at every bay.
The original campus was master planned and designed by Cram, Goodhue & Ferguson, and the first buildings were designed by renowned architect Ralph Adams Cram. Since the 1980s, Rice has carefully added to the campus through engagements with architects James Stirling and Michael Wilford, Caesar Pelli, Ricardo Bofill, Cambridge Seven Associates, John Outram, Antoine Predock and others.

When it came time to expand the residential college system at Rice University, the aim was to work sensitively within historical contexts, reinterpreting traditional construction in a modern, innovative and sustainable way.

Residential colleges are a signature strength of the Rice University campus. The strategic addition of these two new colleges – Burton and Deedee McMurtry College and Duncan College – will help the campus grow while sustaining the campus culture. According to the architects’ plan, with the addition of the colleges and supporting facilities, the residential area on the north campus is now complete with a total of seven buildings.

The architects developed the plan for the two new colleges and supporting facilities; the residential area on the north campus is now complete with a total of seven buildings.

Architecture

Currently, the south residential area of the campus is a much higher density development than the north. To balance this distribution and increase the number of student residents on campus, two new colleges were built on the north campus. The colleges have approximately 400 rooms, housing up to 650 students, with approximately 115,000 total square feet in each building.

The new colleges were conceived in the tradition of collegiate quadrangle arrangements, and they were designed to preserve as much of the surrounding green spaces as possible. Shaded arcades around all the new buildings carefully weave together the spaces of each individual college with the existing tree-lined walks of the campus which provide such an integral order to the original plan.

Residential accommodation is provided on the upper four floors, with communal college accommodation below. Each college quadrangle is completed by a commons, or dining space, the communal heart of the colleges.

The commons are served by a shared kitchen and server, which is placed in a central position at the end of one of the primary external walks on the north campus.

Upper floors are highly modular and offer different types of bedrooms and different living environments. The typical double bedroom has its own prefabricated GRP bathroom pod – modules designed and fabricated in the U.K. and assembled in the U.S.

With masters’ houses making smaller, more private courts behind the commons, the whole composition establishes a careful hierarchy of buildings and spaces for these new collegiate communities.

The fifth floor accommodates more bedrooms, and a large, shaded, outdoor terrace among extensive green plantings enhances the sustainability of the new development and creates a special environment at high level above the canopy of the oak trees.

Landscape

The buildings are designed to preserve and enhance the existing landscape. The mature oak trees that are part of the existing character of the campus were preserved as much as possible and, where necessary, relocated with a technique that allowed trees up to 160,000 pounds to be transplanted with their root balls.

Materials

Façades are brick, reflecting the rich character of existing brick buildings on the site. Thanks to mortar with high lime content, the bricks span across each façade of the building without being broken by expansion joints, and their full 8-in. depth ensures that the walls support themselves rather than being supported on a metal substructure.

The perimeter brick façades sit on architectural quality, cast-in-place concrete arcades made with high recycled content slag cement. The buildings are topped by ventilated weathered zinc standing seam roofs; deep overhanging eaves create a shaded zone around the entire perimeter.

The high thermal mass of the exterior is maintained on the interior with fairfaced load-bearing crosswalls to support exposed, cast-in-place concrete floor slabs.

The commons are built as independent volumes, each with its own individual shape and character. Each makes a bold formal statement, with visible timber structures holding the roof in the most elegant and slender manner.

McMurtry commons has a circular plan and a central roof lantern. Duncan commons has a rectangular plan, with tree shaped structural columns and interesting light patterns created by the up-light fixtures.

The perimeter of each commons is glazed and protected from solar gain by a high-level deep aluminium gutter and lower level horizontal sunshade panels.

Both commons are supported by solid Douglas fir columns with steel bolted connections, while wood “flitched” perimeter columns support the façades at every bay. The roof’s wood beams are veneered, to express the roof structure. Douglas fir veneer infill panels are slotted in for acoustic absorption and recessed lights are configured in a controlled layout.

All internal wood is Douglas fir and all external wood is solid cypress, including the colleges’ first-floor siding and internal corner louvres.

Sustainability and Energy Saving

Duncan College was developed with a specific focus on sustainability, not only of the physical environment, but also of academic and cultural environments. Along with a number of

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unique sustainable elements, Duncan College offers a “sustainability classroom.”

Duncan College achieved a LEED Gold rating certification from the United States Green Building Council. McMurtry College was also built to meet the university’s goal for all new campus buildings to meet LEED silver certification or higher. McMurtry’s certification from USGBC is pending.

In addition to the measures described already, the two buildings achieved all available points for optimized energy performance; they have use-occupancy sensors for thermostat and lighting and reduced water consumption devices. All materials have been selected to maximize recycled content and local sourcing.

Additional sustainable features include energy monitoring and green roof terraces. Both colleges’ top floors are surrounded by terraces which are entirely planted, on the external fascia, with local species. The servery’s east terrace is also entirely planted to soften the landscape of the new building and help cool the upper floors and the natural habitat.

The prefabricated glass reinforced plastic (GRP) bathroom pods are submitted as an innovation item together with the high content concrete replacement (70 per cent). This percentage has not been achieved in the U.S. before.

The combined impact of all these strategies was to reduce energy consumption by 42 per cent, compared to a typical building. The energy model shows that this target has not only been met but exceeded.

Throughout the design process the design team sought to understand and interpret the campus culture from all parties: students, staff and faculty. It is hoped that the buildings will enrich the life of the campus in the long term and contribute to sustaining the college culture at Rice University.

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Rice University
Houston, TX

**DESIGN ARCHITECT**
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**EXECUTIVE ARCHITECT**
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Norfolk, VA

**LANDSCAPE ARCHITECT**
James Burnett (the office of)
Houston, TX

**GENERAL CONTRACTOR**
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**STRUCTURAL ENGINEER**
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