



“The potential of **steel design** is apparent in the free formed and unique geometry of the building.”

—Asma Momin

National Award—Less than \$15 Million

CAMPUS COMMONS – THE STATE UNIVERSITY OF NEW YORK, NEW PALTZ, N.Y.

The State University of New York at New Paltz has taken a new approach to the concept of a university commons area. The new Campus Commons on the school's campus is a three-level steel and glass “winter garden” addition to a 1970 student union building. Taking its inspiration from the forms of the nearby Shawangunk Ridge, it spans over and fills in a previously underutilized plaza courtyard.

In order to span over and enclose the courtyard with a column-free space that will also allow for future flexibility, the project team designed a structural tube “stress skin” system for the addition that recreates the angular forms of Shawangunk Ridge, an internationally known rock palisade in the nearby Catskill Mountains. Uniform 4-in.-sq. HSS sections were fabricated in large planar sections in the shop, then erected on-site before being spray-coated with intumescent paint to meet the required fire rating. The erection of the entire steel enclosure was completed in less than two weeks.

To resist the dead load and wind uplift on the roof, a 1-in.-diameter stainless steel cable and 2-in. down rods were used to transform the stress skin on the horizontal roof plane into a series of trusses and hold-downs. Ceramic fritted glass, patterned with an abstracted digitized version of the tectonic plates of the Shawangunk Ridge, was placed on top of the stress skin to create the enclosure.

The distinctive geometry of the steel and glass enclosure

demanded creative use of structural analysis and design software, as well as sequential prefabrication of portions of the steel assembly. Ikon.5 architects, Robert Silman Associates and Altieri Sebor Wieber (the mechanical engineer) worked intensely and collaboratively in integrating the architectural, structural and infrastructure systems, as all of these systems are exposed and therefore part of the visitor's experience.

Structurally, the atrium is composed of six main surfaces (eight if you include the small beveled corners), with an exposed superstructure of tubes and cables that form a column-free net on which glass panes are placed. Welded HSS members, 4 in. by 4 in., provide the majority of the structure. Because of snow load, the HSS on the upper and lower roofs is supplemented with steel bars and cables to form out-of-plane trusses, where the HSS acts as the top chord. The HSS on the roofs is supplemented by hold-down cables anchored down to panel points on the sidewalls to address wind uplift.

The “ridge” surface is formed geometrically as the step in elevation between the low roof and the high roof, and the 100-ft spanning “truss” formed by the HSS in this plane was increased to 14-in. by 4-in. members for the top and bottom chords. Field connections to assemble the atrium surfaces onsite were generally performed by welding at exposed locations and bolting at hidden locations.

The steel of the atrium is supported on a more conventional



All photos in this spread by Peter Mauss, Esto Photographics.



structure at the new occupied floor level: steel framing with concrete slab on deck, with lateral resistance provided by moment frames and braced frames. A partial floor mezzanine also floats within the space, supported partly by columns and partly by rod hangers up to the ridge truss. The new structure is founded on mini-caissons down to rock, with concrete caps and grade beams supporting the basement slab. It is seismically separated from the existing plaza and building complex.

Working within a strict budget of a publicly funded project, the design used repeated structural sections types in the steelwork, which served to simplify fabrication. In addition, varying the HSS wall thickness reduced the overall steel tonnage, making it cost-effective without sacrificing aesthetics. With the expressed steel grid, a very economical glazing system could be employed and easily installed due to the relative frequency of local structural support.

The expressive new addition improves the experience of entering the university while tying the campus back to its surrounding, distinctive landscape. Set upon the existing concrete plinth, the new structure draws an intense but elegant contrast between the old and new construction. The 12,000-sq.-ft addition includes meeting rooms, a game lounge, a study mezzanine, group study rooms and a large, informal commons, while the revitalized 10,000 sq. ft of space in the adjacent existing building accommodates the renovated bookstore, a food court and a gallery for social functions.

A sustainable, high-performance building, the new com-

mons has been designed to reduce energy consumption and provide a healthy, light-filled interior environment for the campus community. The ceramic-fritted glass enclosure permits transparency while controlling solar gain, and low- or zero-impact mechanical and electrical support systems are included throughout. The Commons is designed to achieve a LEED Silver certification through its use of daylight harvesting and views, radiant heating and cooling, use of recyclable materials and photo-optic lighting controls.

Owner/Developer

The State University of New York at New Paltz

Architect

ikon.5 architects, Princeton, N.J.

Structural Engineer

Robert Silman Associates, New York

Mechanical Engineer

Altieri Sebor Wieber, LLC, Norwalk

General Contractor

Niram Construction, Booton, N.J.

Steel Team

Steel Fabricator

Erection and Welding Contractors LLC, New Milford, Conn. (AISC Member/AISC Certified Fabricator)