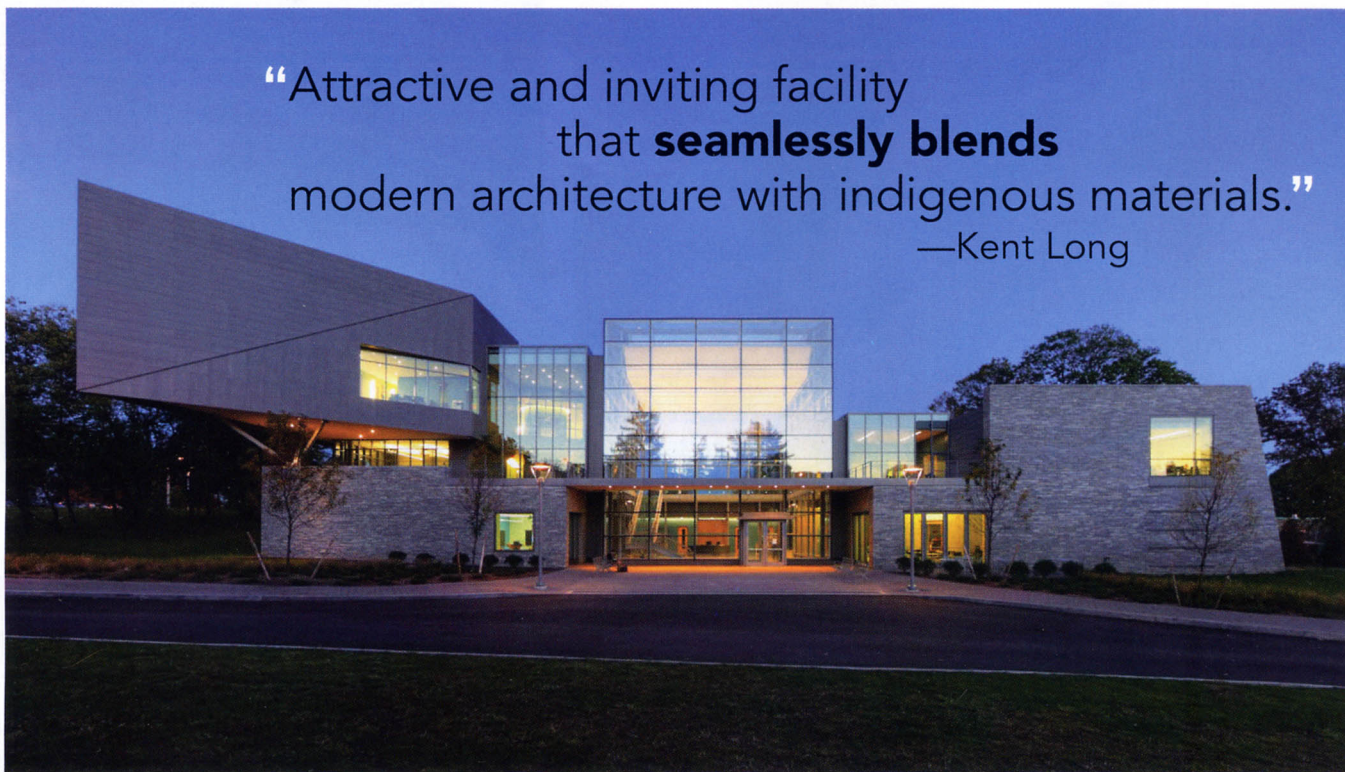


“Attractive and inviting facility
that **seamlessly blends**
modern architecture with indigenous materials.”
—Kent Long



Photos by Goldberg/Esto, Photographics Inc.

The Gateway Center is a 70,000-sq.-ft academic building on the Valhalla, N.Y., campus of Westchester Community College. The three-story building houses a welcome center, classrooms, offices, computer and language labs, an auditorium, and a café. Construction was completed in fall 2010 for a total cost of \$33 million, and received LEED Gold certification.

The heart of the project is a 48-ft-tall glass cube that creates a striking lobby and connects the north and south wings at two levels. Early in the project, the team began to pursue a modular design, using prefabricated elements in a kit-of-parts approach. Ultimately, the structure and architecture of the lobby became the expression of a manufacturing process. Although this idea has been explored in various ways, including through the use of shipping containers in building construction, the team settled on a more customized approach: 233 architecturally exposed structural steel (AESS) “boxes” were assembled to create a light, transparent volume. The boxes were fabricated from channels and plates and based on eight basic templates to maximize repetition and efficiency in the shop. Almost all field connections were made with shims and bolts, minimizing field welding and cutting erection time. Curtain wall connections were made to steel plate tabs that were attached to the boxes in the shop.

In addition to the boxes, the main lobby staircase and the bridge between the north and south buildings are AESS, with laminated glass treads and flooring. The bridge is supported in part by two steel hanger rods, which connect to the main stringers with custom pin and jaw fittings.

At the northern end of the building, the third floor cantilevers out over its base on all sides, with cantilever lengths varying from 6 ft to more than 30 ft. On the east side of the building, where the largest overhang occurs, the floor is hung

from four steel roof trusses which also form a parapet wall to screen rooftop mechanical units from view.

The original design included a cantilever of more than 40 ft on the west side of the building. As part of a value engineering effort, the roof trusses in this area were eliminated, and an additional support was provided to reduce the cantilever to 24 ft. This additional support is an AESS element in an inverted tripod configuration, with three legs supported on a steel column that is embedded in a concrete wall below. Each leg of the tripod consists of two parallel plates stitched together at regular intervals with round spacer bars, creating ladder-like elements. To eliminate bending forces in the tripod, each leg terminates in a steel pin detail. The 4-in.-diameter pins are tied together at the base by a plate assembly designed to transmit gravity and lateral forces to the concrete structure below.

Steel was also chosen for an architectural sunscreen to shade the south facing façade of the north wing. The screen, approximately 19 ft tall and 160 ft long, was assembled from 13 separate panels that hang from steel supports cantilevered off the main building structure. Each panel provides shade with a field of closely spaced horizontal $\frac{3}{8}$ -in.-diameter steel tubes supported within X-shaped frames formed with steel plate. Panel connections to the base building were designed to accommodate movement due to thermal expansion and contraction.

Adjacent to the south wing of the building is one of the project’s most prominent features, a 60-ft-tall tower built of steel and clad in zinc panels. The structure tapers from 10 ft wide at the base to less than 3 ft at the top and consists of two interconnected plates built up into an 18-in. overall cross section. Along the east-facing narrow edge of the tower is a full-height LED, allowing the tower to serve as a beacon for the entire campus at night as well as during the day.



Owner

Westchester Community College, Valhalla, N.Y.

Architect

Ennead Architects, New York

Structural Engineer

Leslie E. Robertson Associates, New York (AISC Member)

Steel Detailer

JCM & Associates Ltd., Frankford, Ontario, Canada (AISC and NISD Member)

Steel Fabricator

R & S Steel, Rome N.Y. (structural steel) (AISC Member)
Manufab, Kenner, La. (sunscreen panels) (AISC Member)

General Contractor

Worth Construction Company, Bethel, Conn.

Structural Software

ETABS