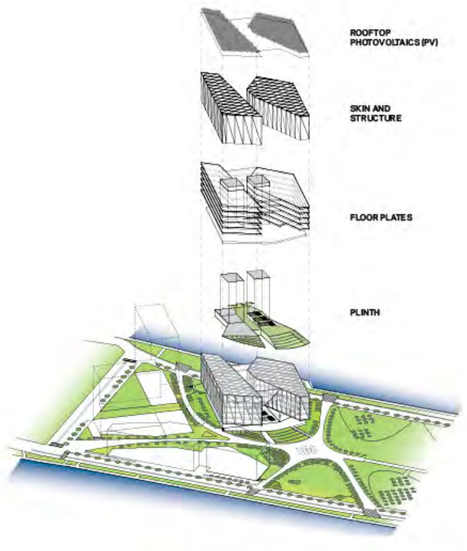
The Bridge at Cornell Tech

The Bridge (right, foreground), Cornell Tech's co-location building by Weiss/Manfredi, is one of the first three buildings to open on the new Roosevelt Island campus, along with the Bloomberg Center (Morphosis, left) and The House (Handel Architects, background).

Weiss/Manfredi Architects have reimagined an academic "co-location" building as an open connector both physically and programmatically, mixing Cornell Tech's students with entrepreneurs. With a cloven volume and an innovative facade, The Bridge is as clever a problem-solver as the tech businesses it's designed to incubate.

IF NEW YORK CITY MAYOR BILL de Blasio's intention to close the Rikers Island prison eventually comes to fruition, the planners charged with repurposing the site might take a hint from the development of Roosevelt Island. Rikers's predecessor as New York's chief penal colony—a two-mile strip of land in the East River, serially renamed from its original Lenape name Minnehanonck as Hog, Blackwell's, Welfare, and finally Roosevelt Island—hosted institutions for the incarcerated, the ill, and the downtrodden through



Top The Bridge's two conjoined volumes and central atrium offer views westward toward Manhattan (shown here) and eastward to Queens.

Above Exploded view of The Bridge's components, from the solar-panel canopies to the supporting plinth.

the 19th and 20th centuries. Its special-purpose facilities included the New York City Lunatic Asylum a.k.a. Octagon (1841-1894), Goldwater Memorial Hospital (1939-2013), and the Renwick Smallpox Hospital (1856-1875, used as a nurses' dormitory until the 1950s) as well as the penitentiary (1832-1935). It is living proof that sites reserved for deprecated uses can evolve to serve higher ones.

Today, smallpox is extinct except for a few samples in government labs, the ruins of James Renwick's hospital are a city landmark, the Octagon has been rebuilt as residences, and Goldwater has been razed to make room for an engineering and computer-science campus. The first three buildings at Cornell Tech, a partnership between Cornell University and the Technion-Israel Institute of Technology, are pioneers in forward-thinking, energy-wise architecture, designed by three top-flight firms (Weiss/Manfredi, Morphosis, and Handel Architects). The master plan by Skidmore, Owings & Merrill reimagines an urban campus as an open space engaged with its neighborhood, arranged around a public "Tech Walk" corridor that extends the spine of the island's Main Street south past its iconic tramway toward Franklin D. Roosevelt Four Freedoms Park.

The Bridge, Weiss/Manfredi's seven-story, 235,000-square-foot "co-location" building, mingles academics with entrepreneurs: Cornell Tech occupies 69,000 square feet, leaving 103,000 square feet for spec tenants in information-based industries. Its two asymmetrical masses surrounding an atrium are broken apart in a bowtie configuration to emphasize continuity and daylight, counteracting courtyard-like interiority. These prismatic volumes, set obliquely with wings pointing to the northeast and southwest, give students and workers sweeping views of Manhattan, the Queens waterfront, and the river, reinforcing the impression that the campus is simultaneously a place apart and a place connected.

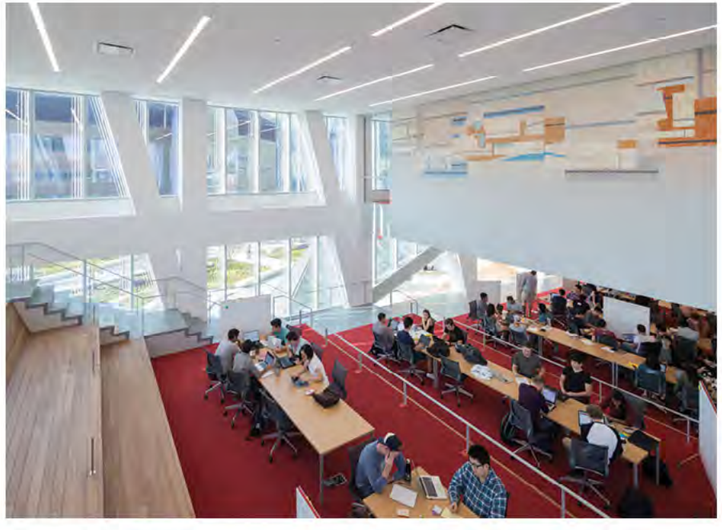
Marion Weiss and Michael Manfredi, designing a building for a program with no exact precedents at existing institutions, took the risk of organizing the volumes around voids and views, turning "inefficiencies" into opportunities. "We've been pretty strategic about where we've located the public space," says Weiss, "by locating it at the very center and effectively creating a wedge that's more generous as it opens to the landscape, which is central to the campus, we've concentrated the most public space on the first two levels ... almost leveraging the idea of the Spanish Steps, where there's both connection and engagement in that public terrain."

The building sits on a plinth 7 feet above the 100-year flood level, with precast concrete lower-level walls and a flood wall protecting the basement from rising water. Its raised *piano nobile*, as Manfredi noted in presenting the project at last October's *Architectural Record* Innovation Conference East, brings circulation up through the building to the roof, where accessible terraces offer an "incredible panorama." The aggressively cantilevered wings keep ground-plane space clear for landscape terraces and outdoor meetings, thanks to a steel-on-concrete-base structure using hyper-efficient full-height steel trusses with an atypically low pounds-per-square-foot ratio. Maintaining column-free, light-filled work space is "why the truss is on the outside," Weiss points out: "It allows us to keep the structure concentrated on the perimeter, so that we can have open lofts for the labs, classrooms, office areas, and collaboration spaces."

The facades of the two main volumes present strikingly angled

From top Diagonal mullions in the facade of The Bridge's east and west volumes synchronize visually with the sharp angles of the recessed atrium glazing. The Bridge's atrium features a generously scaled staircase with multiple landings, facilitating the chance encounters and conversations that its "co-location" program encourages. Perimeter truss members in The Bridge, covered in white gypsum board, contribute to a brightly daylit interior and help reduce electric lighting.

All photos: Iwan Baan; diagram: Weiss/Manfred



aluminum mullions that harmonize with the interior trusses and the sharp reverse-setback segment above the atrium. "One of the engineering challenges was that the cantilevered truss areas would settle as the facade was installed," reports Chris Lalonde of curtain-wall firm W&W Glass. "Engineering had to develop the high set points for installation, so as the facade was installed, it would settle to the desired elevation points. The facade was modulated so that all the zig-zags could be done within one standard rectangular panel in our factory; the diagonal mullion was built into each unitized panel, so that we didn't have to snap diagonal units together. This was worked out with [curtain-wall consultant] Heintges during design assist. Due to the geometry, it made almost every panel on the job different."

The curtain wall includes approximately 59,000 square feet of Erie EnviroFacade™ EF 30 UW glazing with custom exterior aluminum fin-cap profiles on unitized panels. The reflective glass is Viracon's low-iron VRE 13-54 low-emission argon-filled insulated glazing units (IGUs) with custom white vertical line patterns to create the zig-zag effect; approximately 7,000 square feet of the same glass makes up the standard field-glazed system at the first floor. The water-white inverted curtain wall and sloped skylights use the Erie Custom Carrier Glazed System, approximately 12,000 square feet of low-iron IGUs with Ipasol Neutral 70/39 (also low-emission and argon-filled, with a custom-gradient white-dot frit pattern), toggled into place with carrier frames silicone-sealed to the back of the glass.

With 75% of the working and social spaces located within 30 feet of the windows, The Bridge gives occupants ample daylight, lowering electric-lighting use. Although the reflective facade appears transparent, it combines 60% opaque shadow-box units and 40% thermally efficient transparent units, considered a sweet-spot ratio for sustainable design. Solar-panel canopies 100 feet above Tech Walk combine shade for rooftop terraces with 24,000 square feet of photovoltaics, sharing the juice with Morphosis's neighboring Bloomberg Center, which aims for a net-zero energy metric. Daylight-harvesting systems and occupancy-sensor-driven dimmers enhance The Bridge's energy performance. On track for LEED Gold certification, exceeding the campus-wide goal of Silver, The Bridge observes best practices in materials and construction operations (most work for the project was completed within 500 miles of the site, and barge transportation helped minimize intrusive trucking onto an island designed chiefly for pedestrians, not vehicles).

Andrew Winters, Cornell Tech's senior director of capital projects during the building's construction, commented that for Weiss and Manfredi, "one of the genius elements ... is the ability to work landscape and architecture together; they don't really see a distinction between the two." In the Bridge, with bidirectional river views so that "no matter where you are on the campus you can orient yourself," they "took that one step further and said 'Well, why should that concept end at the front door? Why doesn't it go right through the building?'"

While transparency, connectivity, and sustainability are familiar principles behind many contemporary buildings' *parti*, The Bridge expresses the literal and metaphoric senses of these themes with exceptional thoroughness. The 100-person multipurpose event space includes a broad view of the Queensboro Bridge. The central atrium's social staircase and tiered lounges encourage impromptu conversations, as do diverse public zones, including a ground-level café, retail, and a terraced entryway. Plantings and rain gardens assist in stormwater management. Interior artworks include a 1942 mural by Albert Swinden, one of three Works Progress Administration-era artworks salvaged from Goldwater Hospital and restored to give the futuristic Bridge continuity with the site's past.

Manfredi compares Roosevelt Island in some respects to Paris's Île de la Cité, "certainly of the city, in the city, but a little different ... a bit of a heterotopia" with a distinct microclimate and a quirky history. Looking to a future where the Queens waterfront sees ample ferry traffic and other forms of revival, he observes that "after 9/11, all of a sudden there's a different perception of the water: the water is infrastructure. The water is every bit as vital a highway and a connective median as the subways are." New York is morphing from a city surrounded by water, relegating its least desirable uses to a dilapidated waterfront, into a city constructively integrated with, and respectful of, its waterways. Weiss and Manfredi and their collaborators have consequently given Cornell Tech a building that expands what it means for a school, or a city, to be a harbor.

The wings of The Bridge are daringly cantilevered to create landscaped ground-level spaces and enhance views of the East River and Queensboro Bridge from multiple angles.

THE BRIDGE AT CORNELL TECH

Location: **Cornell Tech Campus, Roosevelt Island, NY**
Owner/Developer: **Forest City Ratner Companies**, *New York, NY*
Architect: **Weiss/Manfredi Architecture/Landscape/Urbanism**, *New York, NY*
Structural Engineer: **Thornton Tomasetti**, *New York, NY*
Mechanical Engineer: **Jaros, Baum & Bolles**, *New York, NY*
General Contractor: **Turner Construction Company**, *New York, NY*
Curtain Wall Consultant: **Heintges**, *New York, NY*
Structural Steel Fabricator: **Beauce Atlas**, *Sainte-Marie, Québec*
Structural Steel Erector: **Stonebridge Steel**, *South Plainfield, NJ*
Miscellaneous Iron Fabricator and Erector: **Empire City Iron Works**, *Long Island City, NY*
Ornamental Metal Fabricator: **Champion Metal and Glass**, *Hauppauge, NY*
Curtain Wall Fabricator: **Erie Architectural Products**, *Novi, MI*
Curtain Wall Erector: **W&W Glass, LLC**, *Nanuet, NY*