METALS IN CONSTRUCTION

THE STEEL INSTITUTE OF NEW YORK
THE ORNAMENTAL METAL INSTITUTE OF NEW YORK
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FALL 08

ONE YORK / ALBERT EINSTEIN COLLEGE OF MEDICINE /
NEWTOWN CREEK WASTEWATER TREATMENT FACILITY /
JETBLUE AIRWAYS TERMINAL / RIVERHOUSE / BANK OF AMERICA STAIR /
JACOB K. JAVITS FEDERAL BUILDING PAVILION

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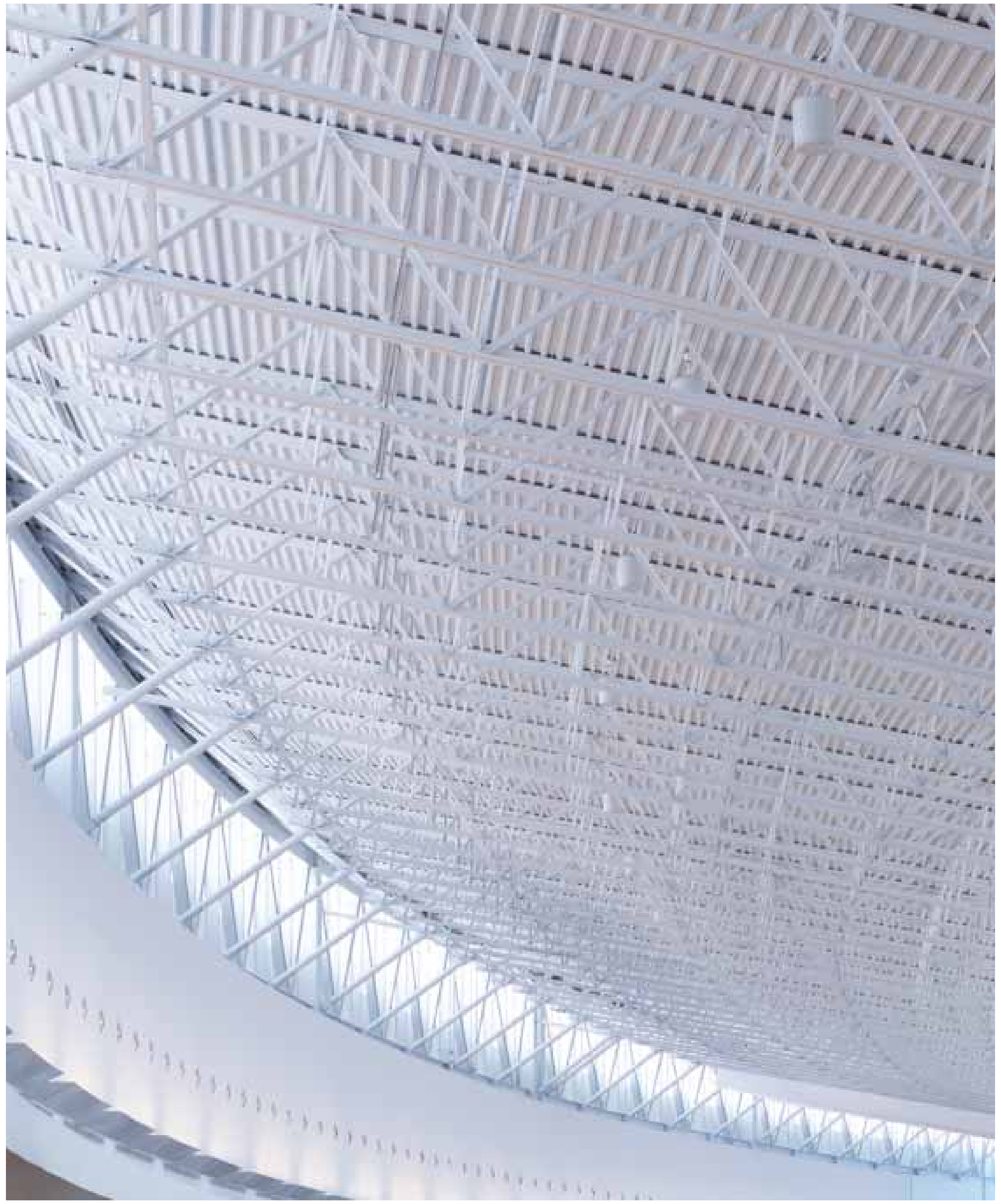
FALL 08





**Above** Steel truss roof, JetBlue Airways Terminal.

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# EDITOR'S NOTE
## Change design and steel

**Usually this column is used to** draw attention to noteworthy themes in the issue. But, at this writing, it would be unconsidered to ignore our widening national distress and its potential effect on the building industry. The impacts of a now-global financial crisis are beginning to pressure area businesses and frighten off investors, causing substantial layoffs and forced austerity. Coincidentally, it is happening at a time of growing awareness that innovation is critical to corporate competitiveness and growth, and that design, in turn, is critical to innovation. "Change Design," as the term has been coined, champions design sensibility and imaginative thinking as ways to match up with the fast-paced challenges of the day. In the face of economic and political uncertainty and the blistering pace at which new technologies are developed, leveraging design to demonstrate to employees how you care for their welfare has helped transform business organizations and boost their performance. Surely this will not go unnoticed as businesses reinvent themselves to remain profitable.

In designing for change, building owners, both private and corporate, have long known of the advantages of steel construction. When tenants depart or layoffs occur and reorganization results, spatial flexibility is needed to efficiently and economically adapt to the new organizational model. The long spans afforded by steel—one of the greatest advances in building construction—yield the column-free spaces that make this adaptation easier than when traditional materials are used. Fundamentally a product of structural steel's unique mechanical properties, long spans have benefitted from significant advances in engineering software achieved over the past decade. They have allowed designers to simulate with greater frequency and accuracy the theoretical models now essential to any construction project.

Not a replacement for engineering intuition, concept sketches or calculations, which will never phase out, software tools and computing power have helped designers validate, if not create, innovative designs. Look around. It's almost unthinkable that any of the decade's iconic long span structures could be designed without these software advances. Computer Aided Design (CAD) has not only revolutionized the way we work, but made it possible to build more accurately as well. With advances in technology, components can be constructed to fractions of an inch tolerance. Among other things, they have enabled cladding and framing systems to be fabricated so precisely that impossibly complex curtain wall designs can be erected without sacrificing performance or budget. To some, given the current economic environment, these capabilities represent excess.

But in the coming months as we struggle to regain our feet after an economic crisis of epic proportions, they will be remembered as important advances toward meeting the industry's fundamental challenge of getting it right the first time. Whether as a result of responding to a shrinking economy or to the growing importance of innovation in maintaining business performance, the flexibility to adapt to change will no doubt leave owners who built in steel thankful it affords this advantage.

Gary HIgbee AIA, editor

# ONE YORK

## Steel Bests a Bevy of Challenges

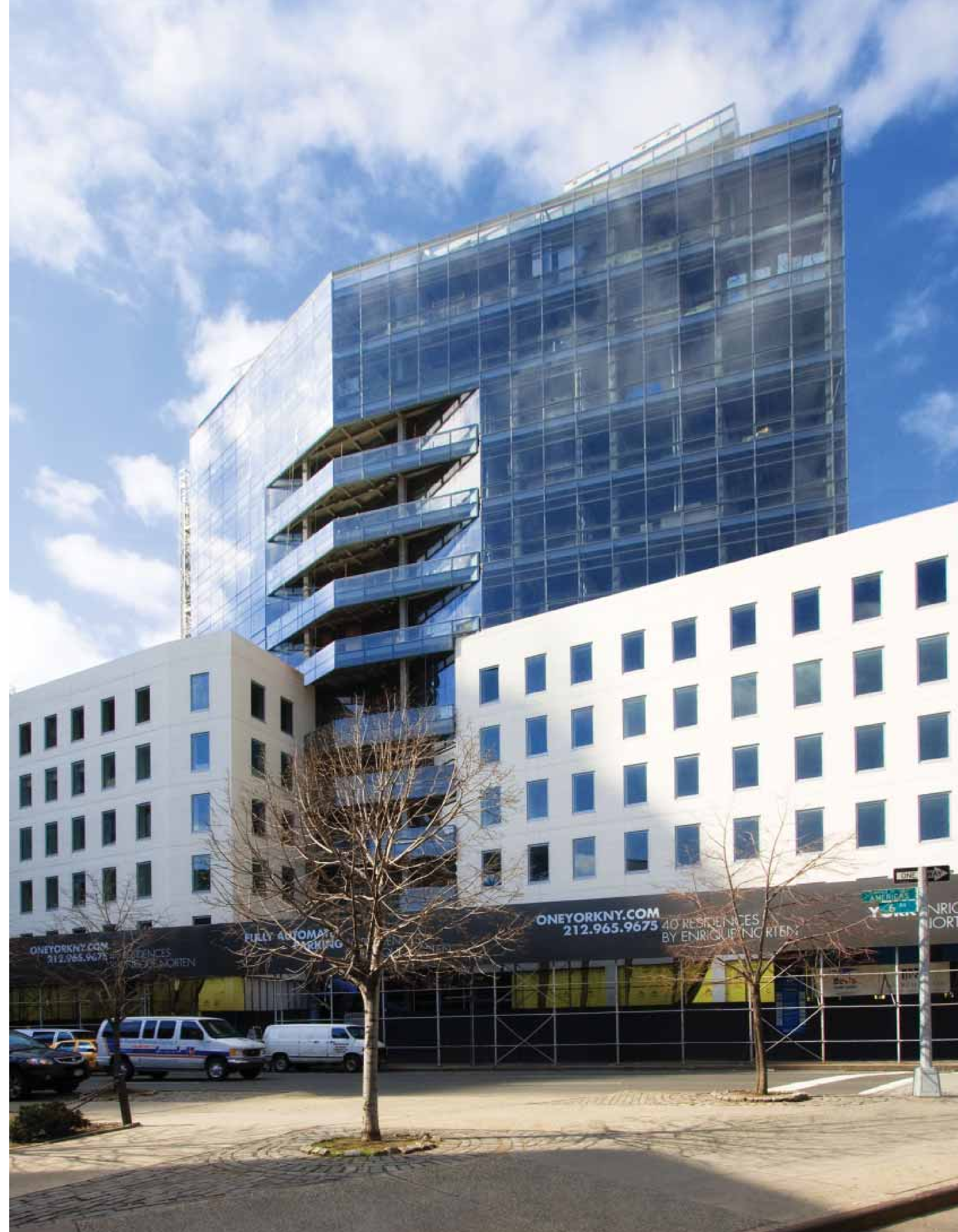
**In planning and constructing the Tribeca condo** project One York for developer Stanley Perelman, TEN Arquitectos didn't deliberately seek out all the possible challenges they could find—they just found them. In fact, at any one of several stages in the project, Norten's design could have been deemed unbuildable. Instead, thanks in large part to the properties of structural steel, TEN made the most of an extraordinarily difficult site and in the process added a rare gem to lower Manhattan.

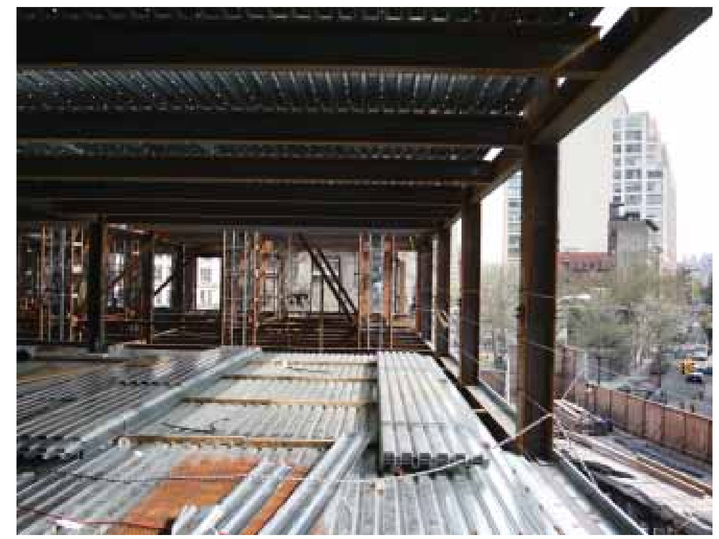
Only some of the project's challenges were inherent in the site; others were self-inflicted. The site boasted two 1845-vintage six-story brick warehouses, which zoning required be converted rather than demolished. While the structures had no telltale cracks, a century of vibrations from the nearby A/C/E subways left one of the buildings with an eastward tilt some six inches out of plumb. Adding to the challenge, the soil conditions offered little in the way of suitable bearing to help remedy the situation: Schist in this part of Manhattan is buried deep, and the warehouses bore on sand. So when the MTA changed its influence-line regulation from a 1:1 to a 1:2 ratio, meaning the original 45-degree angle requirement for establishing foundation interference with a nearby MTA subway tunnel became a more rigorous 30 degrees, the whole building and one party wall required extensive underpinning. To meet these requirements, the team had to remove all but two walls of the existing buildings, and some necessary temporary wall bracing had to be internal to avoid resting atop the MTA's tunnels. Coupled with the fact that close neighbors included Con Edison and Verizon buildings—the latter harboring most of downtown's fiberglass telecom cables—excavation at this site was only somewhat less complicated than brain surgery.

The program was almost as complex: a residential component, a retail segment, a Chinese-American community center, and an automated parking garage. This last feature was a high priority for the developer, who sought residents from the upscale end of Manhattan's housing market, largely car owners who'd view the location near the Holland Tunnel not as a noisy nuisance but as a means for quick escapes from the city. (Design plans for One York began four years ago, before the market began paying much attention to LEED points and non-auto-centered neighborhood plans, notes project architect Florian

**Facing** One York's steel superstructure allowed seven additional floors of residential space to be added to the site, whereas a concrete system would have only allowed two.

© dbox



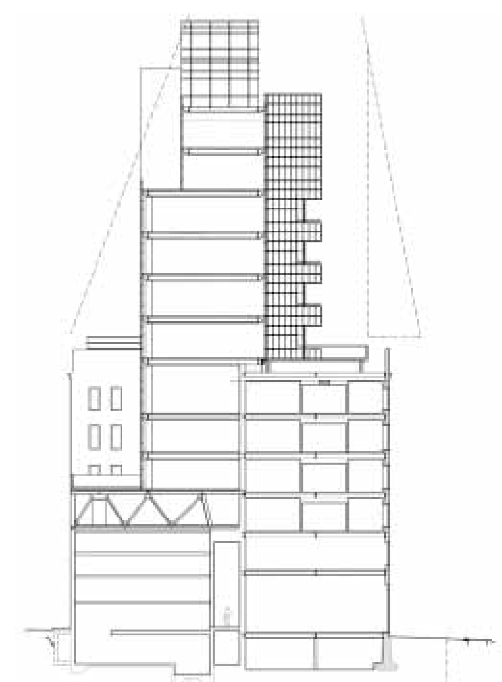


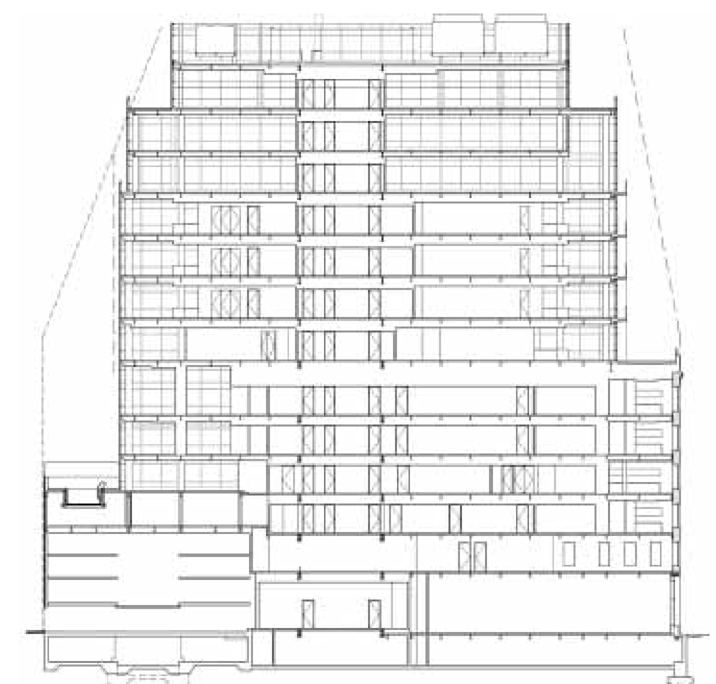
Oberhuber, an associate at TEN.) To balance and separate all these functions, TEN designed a multifaceted three-entrance building that places a 14-story translucent crystal box between the two brick warehouses, and astride a new corrugated-metal garage, much like a polished stone in an unpretentious setting. Achieving Norten's ambitious aesthetics—connecting folding planes of the new glass curtain wall to the brick masonry to produce an ethereal profile without sacrificing stability or relying on wedding-cake setbacks—called for creative engineering, particularly where loads are transferred at the seventh floor.

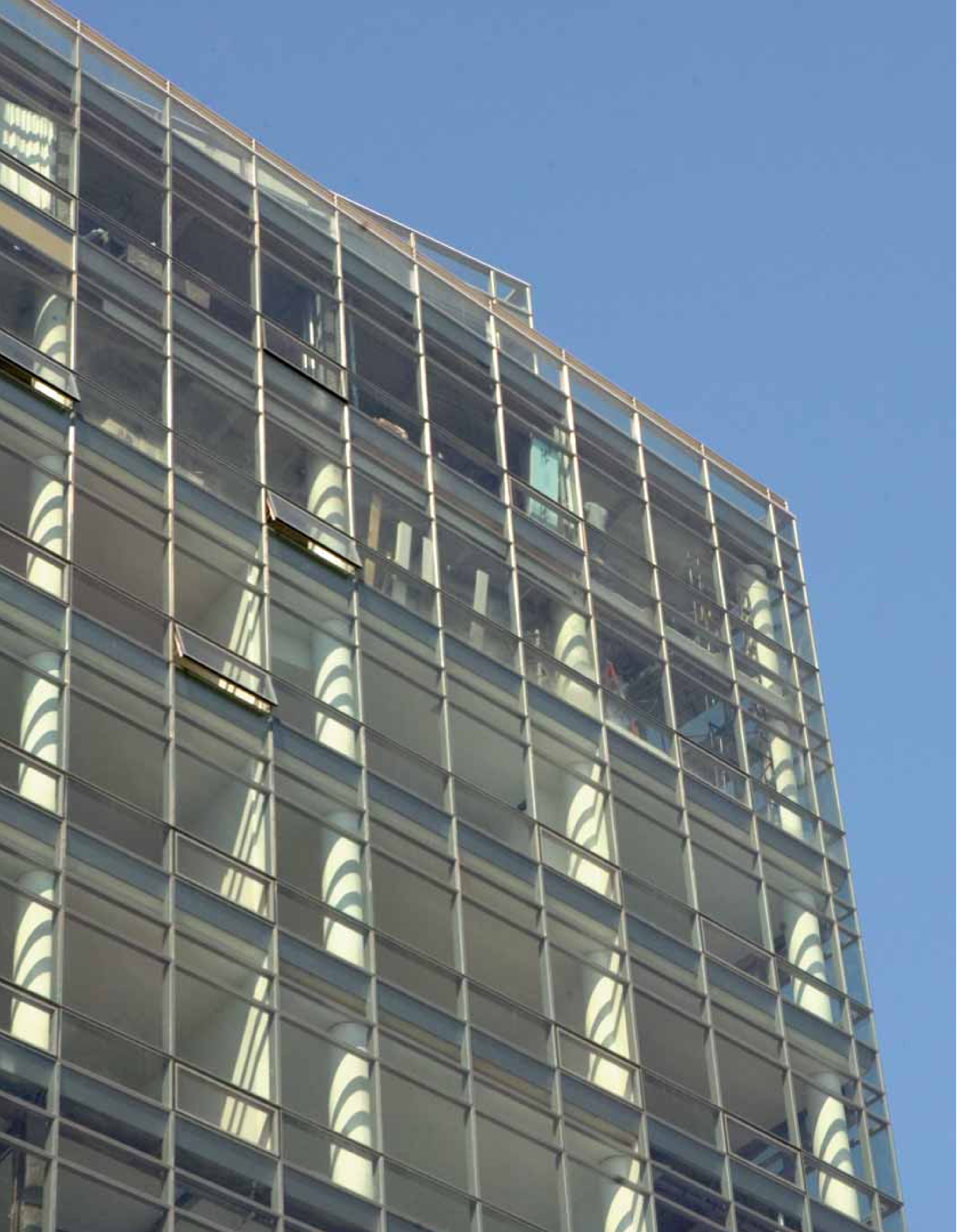
Steel offered distinct advantages over concrete for the building's structural system. Although the majority of residential buildings in New York use reinforced concrete, says senior project engineer Peyrouz Modarres of DeSimone Consulting Engineers, One York's unique features made steel the logical choice on multiple grounds: weight, flexibility, speed of erection, ease of reinforcement, and economics. Projects like this one, where planning and approvals create a long lead time and fabrication time isn't as important as rapid construction, create a strong case for overcoming what Modarres calls "this false attitude that for residential construction, steel is not suitable." The steel framework was able to adhere to and respect the cast-iron grid within the reconstructed original building; in the new segment, it allowed several daring choices that a heavier concrete frame couldn't, including seven new stories' worth of high-end amenities and wraparound views. (An early concrete scheme, says Oberhuber, could only have held two.)

Norten's desire to give the glass volume a light, translucent feel and uniform mullion spacing (in a somewhat unusual 5-foot-10-inch grid) called for some out-of-the-ordinary structural choices. The job used a large number of relatively light members, chiefly 12-inch wide flange beams of ASTM A992 Grade 50, ranging from W12x14 through W12x30; the project used a total of 876 tons of steel, according to Ronald Keating of Metropolitan Steel Industries. Emphasizing the contrast between the glass and masonry volumes, Oberhuber says, meant that in the apartments, "we wanted the curtain wall to have many horizontals and a pretty wide span between the vertical members and lose the sense of slabs. From the outside, it's hard to tell where the slabs actually are." Concrete flooring here is a slim 4¾ inches thick;

**Above, clockwise from top left** The existing warehouse's cast iron structure; the preserved walls and new foundation work; One York gets its skin; the new steel structure with metal decking.
**Facing, clockwise from top left** The new steel structure begins to rise behind the existing walls; one crawler crane lifted all the members into place; triangulated elements of the framing form balconies; the long spans provided by the steel system.
**Drawings** East west and north south sections.







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the curtain wall is connected directly to cantilevered steel plates with welded inserts; heating ducts are raised above the floors, admitting light both above and below. Columns are set back from the perimeter about 4 feet along the west wall and 1½ feet along the east; column sizes include W12x58, W12x72, W12x96, and W12x120, plus W14x257 columns in the elevator core. The off-center nature of the core abutting the western wall on St. John Lane creates special stiffening requirements to control lateral forces; a change midway through construction widened the core and encased it in concrete shear walls. On the seventh and 11th floors, apartments with dramatic double-height living rooms include HSS 12x8x⅜-inch ring beams attached to the slim curtain wall, anchored sideways to the columns, and, to minimize bulk, fireproofed with A/D Firefilm III intumescent paint with a 2-hour rating.

After the design was complete, one prominent multi-floor buyer whose property included the seventh-floor terraces opted for a private pool, hot tub, and ample foliage, including two full-grown Austrian pine trees, whose root structure requires special interior space. The redundancy of the structural system allowed DeSimone to accommodate these and other changes throughout the project. "That's the other beauty of steel," says Modarres, "that it's easily reinforced by adding plates. Not necessarily cheap, but if you had a concrete slab, it's not easy to reinforce it." Another area requiring a mid-course correction was the third-floor community center, where increasing loads called for beam sizes requiring floor-to-floor heights that the owner rejected. The solution was to abandon the conventional transfer beam entirely and arrange W12x19 to W12x65 beams to create floor-high V-shaped trusses large enough to walk through.

Owing to the garage, the building handles dynamic as well as static loads. The garage system, an Italian design manufactured in China, moves cars via turntable to an automated dolly that files them into cubbyholes at any of four levels (three above-ground floors and one underground). A digital key-card system controls retrieval: Owners can enter a code before leaving an apartment and have their car ready when they reach the garage. Though common overseas, this is only the second such system in New York and the only way One York's tight site could accommodate garaging. The cars' weight is less of a problem, says Oberhuber, than vibration. Consequently, the garage has its own largely freestanding structure with two transfer beams braced back to the building's main framework.

DeSimone's structural work for One York earned a 2008 platinum Engineering Excellence Award from the American Council of Engineering Companies of New York. The building has become a flagship project for TEN's New York office and may become a local landmark as well, defining what Oberhuber calls "the end of Tribeca," the northernmost border of this sophisticated neighborhood. As a boutique building, One York can offer its comforts and vistas to only a few dozen residents, but its effect on local building practices may be far-reaching: It sets a strong precedent for extending the benefits of steel construction to New York's residential stock. With the city's housing needs drawing architects' and developers' attention to previously unexplored sites, steel's versatility offers surprising answers to the questions that new urban spaces can raise. **M**

**Facing page and above** Insulation values provided by the masonry elements of the existing warehouses allowed One York's glass volume to be as transparent as possible.

**ONE YORK STREET**

Location: **1 York Street, New York, NY**
Owner: **One York Property, LLC**, *New York, NY*
Developer: **Jani Real Estate**, *New York, NY*
Architect: **Enrique Norten/TEN Arquitectos**, *New York, NY*
Structural Engineer: **De Simone Consulting Engineers**, *New York, NY*
Mechanical Engineer: **ADS Engineers**, *New York, NY*
General Contractor: **Bovis Lend Lease**, *New York, NY*
Curtain Wall Consultant: **Israel Berger and Associates**, *New York, NY*
Structural Steel Fabricators: **Metropolitan Steel Industries**, *Sinking Spring, PA*
Structural Steel Erectors: **Midlantic Erectors, Inc (Steelco)**, *Roselle, NJ*
Architectural Metal Erector: **Burgess Steel**, *Englewood, NJ*
Ornamental Metal Erector: **Summit Group Inc.**, *East Rutherford, NJ*
Curtain Wall Fabricator: **Ferguson Neudorf Glass**, *Beamsville, ON, Canada*
Curtain Wall Erector: **Enterprise Architectural Sales, Inc.**, *New York, NY*
Executive Architect: **Richard Bienenfeld Architect, PC**, *New Rochelle, NY*

# ALBERT EINSTEIN COLLEGE OF MEDICINE

## Stairway of DNA

**When the Albert Einstein College** of Medicine began planning for its first major research facility in two decades, the administration decided it wanted to create a uniquely collaborative environment that would foster interaction and cross-pollination among the facility's 40-odd research teams. In response, Payette—the architectural firm selected to design the Michael F. Price Center for Genetic and Translational Medicine—conceptualized an L-shaped building with wet labs in the two wings and a dramatic glass-enclosed atrium and core at their juncture. The atrium, with its light and airy common spaces, is designed to draw scientists for the sharing of ideas, while a dramatic two-story steel spiral staircase invites vertical circulation within the core.

It is the stairway that ties it all together, literally and figuratively, encouraging the desired interaction. "Not only do you have cross-pollination happening on the floors but also between floors," explains Chris Baylow, the project manager for Payette. Salvatore Ciampo, the senior director for facilities management at the college, says, "I love that it looks like DNA. It has relevance to what we do here. It's almost like a sign." Like DNA, the stair acts as the catalyst for the research that takes place inside by connecting to a series of lounges on each floor where researchers congregate to eat, socialize, and relax. And because the stair is located in the building's inviting atrium, the hope is researchers and doctors will prefer it to the elevator. "This way, not only will the scientists on the same floor be bumping into each other and sharing ideas, but it will happen throughout the entire facility."

Though it looks like a unified spiral, the stair is composed of two distinct flights, one connecting the second and third floors, another connecting the third and fourth. Empire City Ironworks fabricated each flight off-site in three pieces. "It was originally planned to deliver each flight in one piece," explains Richard Wolkowitz, Vice President at Tishman Construction. "However, due to the fabrication schedule, the building facade glass could not be left open. Each flight was fully fabricated in the steel shop and then cut down into the three sections for delivery."

**Previous** A prominent glass prow on the new facility houses dry labs, communicating the activity within to the world outside.
**Left** Each of the stair's two flights was shop fabricated in three pieces, then welded together on site.

**Below and Facing** The stair's curving form is meant to resemble the helical form of DNA.

Upon delivery, the pieces were welded and ground smooth in place. Steel plates were embedded in the concrete floor slabs to receive the stringers. These connections are welded and concealed by a wood fascia.

The structure is a steel box stringer made of a series of ½-inch AISC AESS built-up plate sections with continuous ¼-inch partial penetration fillet welds. Payette fitted the stairs with a glass handrail to mimic the atrium curtain wall, utilizing 18-inch-deep, ½-inch-thick monolithic low-iron glass. The glass is recessed into the stringer and held in place with Por-Rock non-shrink grout. It is also fitted with a mahogany railing that echoes the wooden motif found throughout much of the interior. The railing is fitted to the glass with stainless steel brackets. The stair's steel plate treads, which were welded to the stringer, were then fitted with ipê wood treads, which were screwed in place.

To create as inviting a space as possible, Payette chose to face the atrium with a clear, seamless glass curtain wall. Also, as the first building in a new 15-acre north campus—it doubles the size of the school's grounds—the new research center was designed as an entry point for all that will eventually rise behind it, a connection the glass helped emphasize. "Before you even enter the building, you can see right through to the whole new campus we have envisioned," explains Baylow.

Payette turned to Pilkington's Planar system to enclose the dramatic atrium. "It's about as transparent an enclosure material as you can get," says Baylow. The ultra-clear, low-iron glass panels are generally 4 feet 7 inches by 13 feet and 1½-inches in thickness including the air space. The panels are sealed with dry gaskets and silicone, and glass fins fastened to the panels by stainless steel spider connectors provide lateral stability. To reinforce the idea of connection to a wider campus, the

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© Robert Benson Photography

**Above** The open, light field environment is intended to foster ideas and random encounters between researchers.
**Facing** Views pass straight through the building's lobby to the other side, setting the building up as a gateway to a new campus.

lobby within the atrium runs straight through the building to another glass wall on the other side.

"It's art that fosters collaboration," says Ciampo. "By creating these light and airy spaces, we encourage co-mingling, which encourages collaboration." Even the stairways at the edges of the L-shaped building are wide and inviting, encased in a glass curtain wall composed of 1-inch-thick insulated glass panels set in extruded aluminum mullions. "We really wanted to get people away from the elevators, which can be a dead zone for ideas," says Baylow.

Wanting to maintain the drama that the glass atrium created throughout the building, Payette also turned to a curtain wall for the "dry" labs, where more computational, desk-bound research takes place. These labs are located in the prominent prow of the building, floors two through five, which are enclosed with an aluminum-framed glazing system with glass colored in a mix of tones that skew from green to blue. The different colored panels create shadow lines across the face of the prow, animating the exterior. "What it says is there's a lot of activity and sharing in that part of the building, a lot of ideas moving back and forth," says Baylow. "We wanted that part of the facade to read to the outside world and convey what's going on inside."

By all accounts, the Michael F. Price Center has been a real success, thanks in no small part to the master craftsmen of the ornamental metal industry. "For the first building of the expansion, it really is a statement," enthuses Ciampo. "We wanted to set the standard for the new campus, and I think Payette certainly has. They've hit a homerun." **M**



**ALBERT EINSTEIN COLLEGE OF MEDICINE**

Location: **1301 Morris Park Avenue, Bronx, NY**
Owner: **Albert Einstein College of Medicine of Yeshiva University**, *New York, NY*
Architect: **Payette**, *Boston, MA*
Structural Engineer: **Weidlinger Associates**, *New York, NY*
Mechanical Engineer: **WSP Flack + Kurtz**, *New York, NY*
General Contractor: **Tishman Construction**, *New York, NY*
Curtain Wall Consultant: **Gordon H. Smith Corporation**, *New York, NY*
Structural Steel Fabricator and Erector: **Empire City Iron Works**, *Long Island City, NY*
Miscellaneous Iron Fabricator and Erector: **Empire City Iron Works**, *Long Island City, NY*
Architectural Metal Fabricator and Erector: **Empire City Iron Works**, *Long Island City, NY*
Ornamental Metal Fabricator and Erector: **Empire City Iron Works**, *Long Island City, NY*
Curtain Wall Fabricators: **Sota Glazing Inc.**, *Brampton, ON*; **Pilkington North America**, *Toledo, OH*
Curtain Wall Erector: **W&W**, *Nanuet, NY*
Metal Deck Erector: **Empire City Iron Works**, *Long Island City, NY*

# NEWTOWN CREEK WASTEWATER TREATMENT FACILITY

## Space Oddity

**By day, the egg shaped digester** towers of the Newtown Creek Wastewater Treatment Facility barely show up in the glint of Greenpoint's industrialized waterfront. But by night, their stainless steel cladding bathed in a diaphanous blue glow, the monolithic egg towers and their steel and glass aerial walkways stand out fabulously, seemingly poised for an interstellar evacuation of the city's five boroughs rather than the vital daily mission of treating 310 million gallons of its wastewater.

Fed by 180 miles of sewers and serving over 1 million residents in a drainage area of more than 15,000 acres, the treatment towers at Newtown Creek couldn't afford to go offline at anytime during a carefully planned upgrade to this system of anaerobic digestion. So while interstellar evacuation might have been easier, steel's malleability and structural integrity were inherent advantages in achieving the unearthly look of the towers and their elevated walkways, most importantly allowing the speed and ease of erection that was essential to the success of the project.

Sci-fi aesthetics weren't always included in the Department of Environmental Protection's $2.2 billion expansion and upgrade of the Newtown Treatment facility. Richard Olcott and Greg Clawson of the highly acclaimed Polshek Partnership Architects, the project's designers, recall the early days of their firm's role as overseeing architects for the continuous 16-year renovation project. The project is a collaboration between Polshek Partnership and a triventure of engineering firms, Greenley Hansen, Hazen and Sawyer, and Malcom Pirnie.

"Back when we were designing this, there was a movement from the local folks around the area, the engineers and the DEP, trying to push us to make the plant out of brown brick," explains project architect Clawson. "Obviously, they were trying to hide it from view, and it just wasn't going to happen."

"It's hard to hide a 110ft tall building," concedes Olcott, design partner for the project. "So, rather than hiding it we thought we should do the opposite: We should really show the thing off and make something everyone would look at and go—'Wow! What's that?'"

Engineering marvels in and of themselves, the German-designed double curvature of the egg shaped digesters (ESDs) encourages an improved mixture of sludge, the organic material removed from sewage for anaerobic treatment, by concentrating grit at the bottom

**Right** Rather than try to hide the 110-foot-tall digester eggs, Polshek decided to celebrate them, cladding the exotic forms in stainless steel and commissioning a startling nighttime lighting scheme from L'Observatoire International.

Previous page: © Walter Dufresne; this and facing page: © Aislinn Weidele/Polshek Partnership Architects

of the tank, virtually eliminating dead zones and scum buildup—elements which force conventional tanks off-line for costly periodic cleaning. Though early ESD facilities were constructed of poured-in-place concrete, the difficulty and cost of forming the complex shapes necessary for such construction finalized the DEP's decision to shift the primary material to steel throughout.

At the Newtown Creek facility, Polshek crowned and linked the ESDs with steel and glass aerial walkways and turrets that glow like lanterns at night. Steel's speed of construction, flexibility, and lighter load weight were pivotal factors in the construction phase, as the congested conditions of the 24-hour site required a constant coordination of logistics between architects, engineers, contractors, and facility technicians. With steel, sections of the aerial walkways could be pre-fabricated and assembled on location with minimal scaffolding and workmanship, allowing connections to be welded and bolted in an efficient and convenient way.

The aerial walkways and turrets are made up of a variety of steel members, including structural tubes of ASTM A500 Grade B steel, structural pipe of ASTM A53 Grade B steel, and other shapes and plates of ASTM A36 U.O.N. steel. The turrets are framed with W10x15, W10x33, and W24x68 wide flange members, while the walkways spanning the distance between them are composed of steel trusses made up of W8x15 diagonal braces, W10x22 cross beams, and W24x104 main beams. Each truss weighs approximately 30 tons.

Originally intended as a pedestrian concourse around the ground floor of the plant, architects chose to elevate the walkway due security concerns and the impracticality of foot traffic between the wide-bases of the ESD's. But life at the top is not without its challenges. To equalize air pressure and wind loading, the aerial walkways' enclosure is composed of a series of independent, non-connecting components; a slight separation between the stunning metal roof and the glass paneled siding creates a kind of vented cladding system that allows sufficient air to move in and out of the enclosure under applied air pressure.

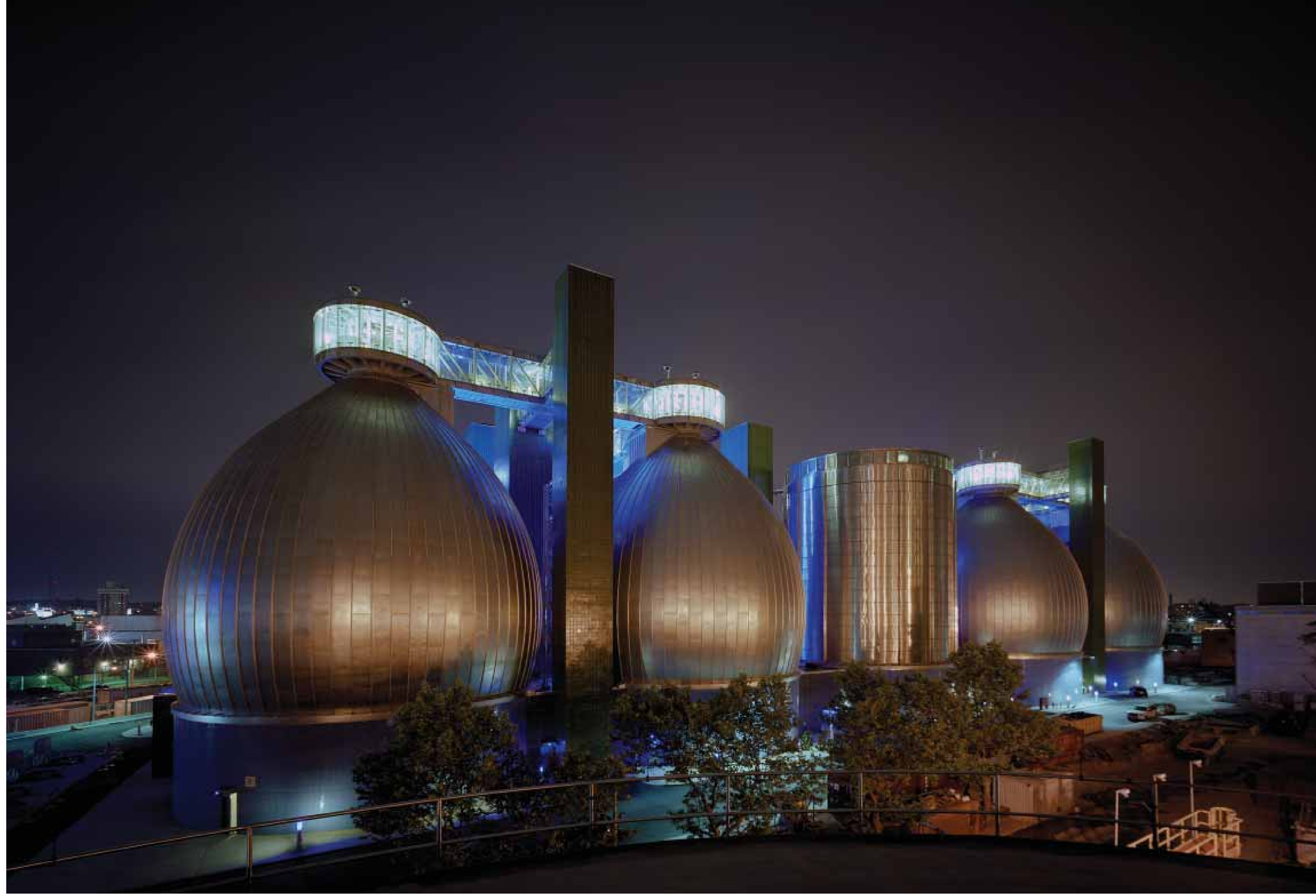
"These things we knew from the beginning were going to be structural steel elements; there are movement joints in the aerial walkway system that keeps them from cracking at the ends," says Polshek architect Greg Clawson. "They're bridges, basically." Each walkway section has a pinned connection at one end and a sliding connection at the other end. The sliding connection sits on a ¾-inch bearing plate with a ¼-inch Teflon bearing pad.

The walkways were delivered to the site in mainly pre fabricated, shop welded sections. In some instances, other sections were shipped loose for field welding, then fastened in place with structural grade bolts. The main structural work of the aerial walkways was set in place one month after the completion of the digester tanks, which took 102 weeks to complete, at an average of about three months per egg.

With diameters of 84 feet and heights of 90 feet, each of the eight egg digesters is clad in S31600 stainless steel, with a low-reflectivity proprietary finish. Similarly, the aerial walkways are clad in an epoxy finish that offers exceptional resistance to atmospheric corrosion and oxidation—key strengths for a facility meant to process 1.8 million gallons of sludge per day.

"All the materials throughout are selected to be incredibly durable because it's a very corrosive environment." explains Richard Olcott. "Not only because of the salt air and the river air, but because the materials need to last for hundreds of years. Like any other of the projects that were constructed a hundred years ago, you have to build these things to last."

Thanks to steel's ability to integrate form and function, Newtown Creek's egg digester towers and their aerial walkways transcend and demystify what otherwise might have been concealed, contributing yet another unparalleled sight to New York's skyline. "It's a twenty-four hour facility; we don't want it to appear like a black hole at night," says Olcott. "You can see this thing from the Kosciuszko Bridge, apparently." "You can see it from the L.I.E.," continues Clawson. "When you come out of the tunnel you just look to your right and it's all right there, in front of you." Beam me up Scotty! **M**



**Previous** The steel trusses of the catwalks were delivered on site, hoisted into place by three tower cranes, and pinned in place.
**Above** The stainless steel cladding offers exceptional corrosion resistance, an important quality in a facility that processes 1.8 million gallons of sludge per day.

© Walter Dufresne

**NEWTOWN CREEK WASTEWATER TREATMENT FACILITY**

Location: **320 Greenpoint Avenue, Brooklyn, NY**
Owner: **NYC Department of Environmental Protection**, *New York, NY*
Architect: **Polshek Partnership Architects**, *New York, NY*
Structural and Mechanical Engineers: **Greeley Hansen**, *New York, NY*; **Hazen and Sawyer**, *New York, NY*; **Malcolm Pirnie**; *New York, NY*
Joint Contractors: **AJ Pegno**, *Oyster Bay, NY*; **Tully Construction**, *Flushing, NY*; **Skanska USA Civil**, *Whitestone, NY*; **Slattery Skanska**, *New York, NY*; **Gottlieb Skanska**, *Valley Stream, NY* and **Underpinning & Foundation Skanska**, *Maspeth, NY*; **Picone/McCullagh JV**, *Brooklyn, NY*; and **Perini Corporation**, *Framingham, MA*
Structural Steel Erector: **Budco Enterprises**, *Hauppauge, NY*
Stainless Steel Cladding Fabricator: **Overly Manufacturing Company**, *Greensburg, PA*

# JETBLUE AIRWAYS TERMINAL

## Steel Takes Flight

**The swooping, winged roof. The distinctive purple, peaked windows.** The retro-futuristic lobby, with its egg-shaped timetables. Eero Saarinen's Terminal 5 building at John F. Kennedy International Airport is arguably the most famous airport structure in the world. But despite these distinctive features, the terminal has lain moribund since 2001, when TWA went out of business. The chief reason: It was rendered in concrete, making the building's outdated structure almost impossible to retrofit. In the fast-paced and, at times, turbulent nature of the modern airline industry, this is a major hindrance to progress. That is why the designers of the new Terminal 5 for JetBlue Airways turned to structural steel, which provided unmatched flexibility and economy for the hyper-efficient, cost-conscious airline.

"Structural steel framing offers airport terminals the ability to be as flexible as possible with future programming," says Cliff Bollmann, a senior associate for Gensler. "With the introduction of new aircraft, gates may change around, floor areas might change, areas once underutilized as hold rooms might become concessions. The greater flexibility and more column-free floor plate a structural system offers is tremendously appreciated and makes going to a steel system really a no-brainer."

**Previous** The new Terminal 5 subtly references Eero Saarinen's architectural ode to flight.
**Facing** Two elevated walkways, framed in structural steel, link the original terminal to the new one.
**Above** The galvanized corrugated steel deck gave the designers the aesthetic they were looking for without need of additional finishing.
**Below** Site plan

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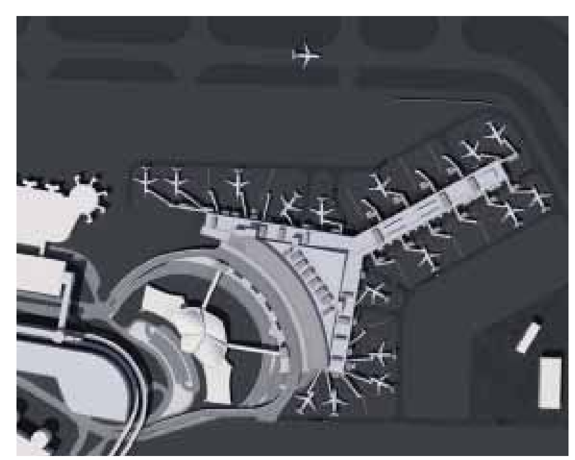
Above: © Prakash Patel courtesy of Gensler; drawing: Gensler



Nowhere was this flexibility more paramount than in reconfiguring and expanding the terminal's security facilities, some of the first that were designed ground-up after 9/11. "In the past, you had banks of check-in counters with a few security checkpoints, but with Internet check-ins, fewer bags, and heightened security concerns, we've been able to flip that," says Bollmann of Gensler's approach to the challenges of a post-9/11 terminal. The entry hall at Terminal 5 contains a few dozen e-ticket kiosks and a handful of luggage counters that flank a massive 20-gate security bank, which is designed to get customers through the discomfiting screening process as quickly and comfortably as possible.

According to Bollmann, it was crucial that the entry hall employ structural steel to ensure it could accommodate a continually evolving security technology (during the four-year design process, the security systems changed more than half-a-dozen times). The construction involved a relatively standard column and deck system utilizing wide flange members of ASTM A992 Grade 50 steel. The erection was completed piece-by-piece using mobile cranes, and connections between the members were, for the most part, made with high strength bolts, ASTM A325 and A490. In the ticketing hall, girders varied from W24x68 to W36x194 and beams ranged from W10x12 to W24x76. The concourse's girders were typically W33x130 at exterior sections and W36x150 at interior bays, and the beams ranged from W16x26 to W24x68. The concourses were also edged with W33x118 beams installed on their sides, 13 feet 6 inches above the floor and supported at third points with steel rods, creating spans of 42 feet. These members function as a wind girt system and allowed framing the concourse's curtain wall and window sections in light gauge metals without using supplemental hot-rolled steel backup members.

The real drama in the 750-foot-long crescent-shaped entry hall comes from an elegantly uncomplicated but striking roof structure. The designers wanted a column-free space that would provide an inviting, uncluttered gateway with unimpeded circulation. By employing galvanized corrugated steel, the designers not only got the strength they needed for the roof but also an attractive covering that did not need additional finish, thereby saving money, a chief concern for a cost-conscious carrier like JetBlue.

The corrugated deck employs radial-cut sheets that widen from 6 to 7 feet along their considerable 72-foot length. The material is 18 gauge 1½-inch decking made from Grade 50 steel. Lateral joists that support the deck were field welded in place, adding to both the visual vitality and structural drama of the roof. "It became the structure, the infill, and the finish all at once," says Joel Stahmer, the project engineer at Ammann & Whitney. "I don't think you get much more efficient than that." The designers took a similar approach on the far side of the security gates, in the marketplace, where travelers will spend the bulk of their time. "We now get everyone through security so quickly we need a place for them to decompress," says Bal Cherwoo, principal-in-charge at Ammann & Whitney. "We wanted a space that was both comfortable and impressive, but not ostentatious."

Bollmann, who described the marketplace as a "civic gesture," said the team looked at more than 20 structural solutions to the vaulted triangular space, off of which shoot the terminal's three concourses in a Y-shaped configuration. The team settled on a king post truss. "It's a very utilitarian way to support our roof that also provides a very dynamic elegance," says Bollmann. "Plus, it educates. By exposing that structure and leaving it open to the public, we can expose them to how the room stands up." The king post truss uses a W14 top chord, a 6-inch-diameter schedule 40 pipe for the post, and a 1½-inch-diameter Grade 105 rod for the lower tension rod.

This spread and overleaf: © Prakash Patel courtesy of Gensler

**Above and facing** The steel trusses in the 750-foot entry hall created a flexible, column free space capable of adapting to the airline's future needs.

**Overleaf** In addition to lending flexibility for future uses, structural steel helped the designers adapt to changes in security technology during the design process.

While much of the structural steel in the terminal was left exposed for aesthetic reasons, the chief concern was cost. "We had to justify everything, every last bolt," Stahmer said. With such value engineering involved—the massive project cost a mere $800 million—the design team looked everywhere for efficiencies. At the hold rooms for the gates, this meant adding an additional column—from three to four in the 35-foot spans—that meant less of an open entryway above ground but also the ability to use the same columns to support the massive baggage handling system below. "It's one giant conveyor," Stahmer joked. "Essentially the building we're doing is built around a baggage system."

But the role steel played in accommodating this, as well as the rest of the terminal, was no joke. "Steel did everything," Bollmann said. "It drove the efficiency of the space, the aesthetic, everything. We would not be in the same place if we were using other materials, we would have had to create a totally different design, one that frankly might not have worked, at least not on the budget we had." And JetBlue could not be happier. "From day one, when we hired Gensler, we made sure that they understood our brand, our approach, and that the building really needed to express and embrace that," says Richard Smith, the project manager for the airline. "I don't think they could have done a better job." **M**

“Structural steel framing offers airport terminals the ability to be as flexible as possible with future programming.”

**Cliff Bollmann, a senior associate for Gensler**

### JETBLUE AIRWAYS TERMINAL

Location: **John F. Kennedy Airport, New York, NY**
Owner: **jetBlue Airways Corporation**, *Floral Park, NY*
Architect: **Gensler**, *New York, NY*
Structural Engineer: **Ammann & Whitney**, *New York, NY*
Mechanical Engineer: **Arup**, *New York, NY*
Construction Manager: **Turner Construction**, *New York, NY*
Curtain Wall Consultant: **Gilsanz Murray Steficek**, *New York, NY*
Structural Steel Fabricators: **Helmark Structural Steel Inc.**, *Wilmington, DE*; **Beauce Atlas, QC**, Canada
Structural Steel Erector: **Falcon Steel Erection**, *Wilmington, DE*;
Miscellaneous Iron Fabricator and Erector: **FMB Inc.**, *Harrison, NJ*
Architectural Metal Fabricator and Erector: **Champion Metal & Glass, Inc.**, *Deer Park, NJ*
Ornamental Metal Fabricator and Erector: **Champion Metal & Glass, Inc.**, *Deer Park, NJ*
Metal Deck Erector: **A.C. Associates**, *Lyndhurst, NJ*

© Nelson Bakerman

**Facing** With their double curtain wall, Polshek was able to obviate the Battery Park City Authority's 60/40 glass/masonry requirement and take advantage of the site's sweeping river views.

# RIVERHOUSE

## Double Vision

**When designing Riverhouse,** a new 32-story condo located in Battery Park City, designer Todd Schliemann of Polshek Partnership Architects had two main goals that, at first glance, appeared to be irreconcilable: he wanted to maximize views of the Hudson River for occupants, while at the same time he was charged with creating the first LEED Platinum building in New York City, meaning energy conservation would limit glazing. These design aspirations were further challenged by the fact that the Battery Park City Authority requires its buildings to feature 60/40 glass/masonry ratios. Not to be undone, and famous for award-winning solutions, the architect prevailed by cladding Riverhouse's west elevation in a double glass curtain wall, increasing the transparency of the envelope for views and daylight while simultaneously offering greater insulation values than its punched-windowed neighbors.

Double curtain walls, in which two layers of glass create a pocket of insulating air, have been common in Europe for years, but have taken longer to infiltrate the American market. "Due to cost and unfamiliarity, there has been resistance from developers and clients," explains Bob Heintges, principal of facade consulting firm R. A. Heintges & Associates. "We've worked with architects to develop double-skin designs only to have them value-engineered out." So when Polshek Partnership approached Heintges to deploy a double curtain wall for Riverhouse, Heintges half expected to see the idea pulled. But by designing the facade as a panelized system, which saves money during construction owing to its quick and easy installation, the team was able to justify the approach to both the developer and regulating authority, Battery Park City.

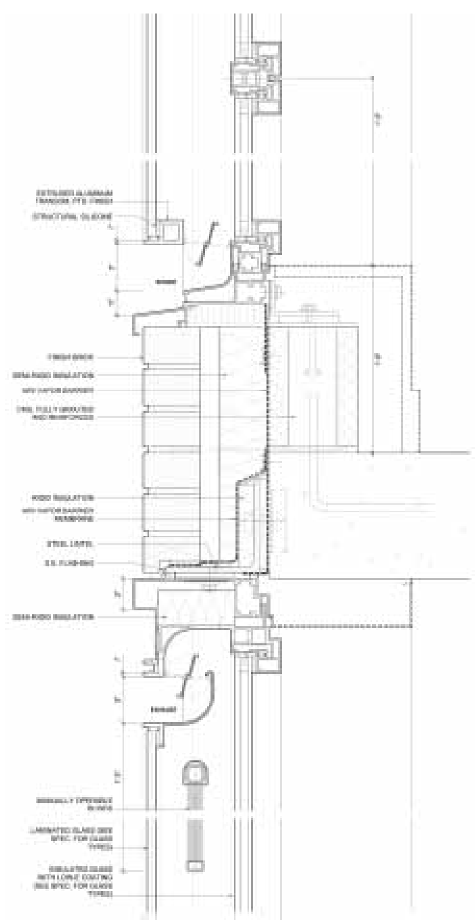
Schliemann and his design team had previously designed a double curtain wall in 2006. At that time the firm completed the University of Michigan Biomedical Science Research Building, a 472,000-square-foot facility located in Ann Arbor. For this double curtain wall, three feet of air space was used to separate the two layers of glass, a depth creating an enormous cavity for insulating air, convection cooling, and accommodating catwalks for maintenance access. Vents are located at the bottom and top of the cavity, together with manually operable shades installed within the cavity for controlling daylight admission and solar heat gain absorption, which allows occupants to regulate the heat load on individual rooms, as well as the building as a whole. The shades function as a heat absorption device in the air space: "The shades absorb solar heat gain," explains Schliemann. "They heat up independently of the envelope, and cool air entering from the bottom vents passes over them, cooling them. Through natural convection the air then exits through the top vents." In summer, the vents are open all the way, allowing fresh air to constantly whisk heat away. In winter, the vents are closed halfway to wrap the building in the heated air. (They are closed only halfway because the build up of heat would be extreme if closed completely). According to computer models run by engineering firm Buro Happold, the glass-and-air sandwich allows the office ribbon of the lab building to achieve a 25 percent energy savings over a typical glass curtain wall.

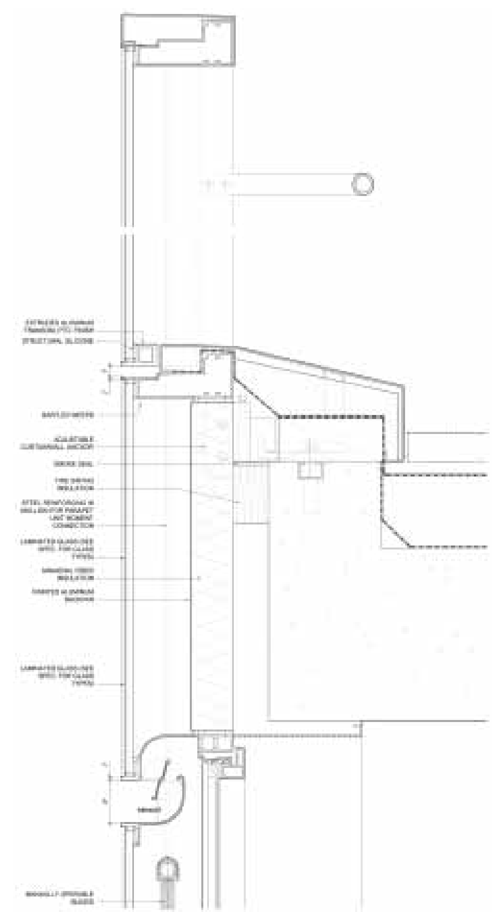
The Riverhouse system, which was engineered and fabricated by Minneapolis-based Enclos Corp., approximates the University of Michigan design, writ small. Just as the condo building is made up of individual apartments, so the double curtain wall here is divided into panelized units measuring 10-½ feet tall by 5 feet or 2½ feet wide. Each panel is only 9 inches deep. The air cavity measures slightly under 5 inches and contains a manually operable shading system.

"The interior glass of the double wall is a 1-inch insulated glass unit comprised of a quarter-inch-thick clear heat-strengthened outer lite with a low-E coating on the number-two surface, a half-inch

**Above** Riverhouse's double wall is a penelized system and is installed like any other curtain wall.

**Drawings** Operable intake and exhaust valves in the double wall allow air to flow through the gap at variable rates.





Above: © Brian Slocum/Polshek Partnership Architects; drawings: © R.A. Heintges & Associates

**Right** The airspace between the double wall's two glass panels allows it to retain or vent heat, depending on the needs of the prevailing weather conditions.

© Nelson Bakerman

air space filled with argon gas, and a quarter-inch-thick clear heat-strengthened inner lite," explains Enclos engineering manager John Lusch. The outer glass of the double wall is a single pane. Small operable windows in the system include their own dampers that bypass the hot air in the cavity, and redirect outdoor air into the apartment. Each overall unit includes its own vents, and the whole composition is framed in extruded aluminum that has a Polyvinylidene Fluoride two-coat silver metallic finish. Interior aluminum components are finished in one coat of acrylic resin that matches the facade's appearance.

Installation is rather painless, Schliemann says. "These unitized systems travel up the elevator, are set on the floor, and put on the building from the inside. They basically get slid out and hoisted into position." Because the building is constructed of poured concrete, famous for its imprecise and uneven floor plates, Enclos designed a multi-component anchorage system for securing each panel. "It accommodates specified building tolerance and dynamic building movements, in addition to withstanding the loads imposed on the curtain wall by wind, snow, and seismic movements," Lusch says.

Now in place, the double skin behaves very much like its University of Michigan predecessor. Air travels from lower vents into the cavity, picks up heat from the internal blinds, and then passes through upper vents. Computational fluid dynamic modeling has ensured that the cavity does not get excessively hot, which would cause the air within to move too rapidly and, in passing over the blinds, cause them to flutter. And whereas the biomedical science research building's double curtain wall included maintenance catwalks, the operable Riverhouse windows may be cleaned from inside. In fall and spring, Riverhouse's window washers will be charged with reaching inside the sandwich and closing or opening the vents to ready the wall for the change in seasons.

"Even if the shades aren't drawn, the cavity still performs," Schliemann says of the innovative system, which, by all projections, should help Riverhouse exceed New York's energy code requirements by 25 percent. The condo's developer, the Sheldrake Organization, is also putting together an extensive tenant guide that educates apartment dwellers about the simple tasks that can improve Riverhouse's green mission even more. As for Polshek Partnership, the architecture firm continues to seek innovative solutions, conceiving double-curtain alternatives for other projects, such as one that substitutes vents and blinds with ceramic frit and different ventilation openings. As Schliemann says, "There's more than one way to make a double-wall system." **M**

Facing: © Nelson Bakerman; this page: © Polshek Partnership Architects

**Facing and above** The greater insulation values provided by the double wall helped Riverhouse become the first LEED Platinum rated residential building in New York City.

**RIVERHOUSE**

Location: **2 River Terrace, New York, NY**
Owner: **Site 16/17 Development LLC**, *New York, NY*
Developer: **Sheldrake Organization**, *New York, NY*
Architect: **Polshek Partnership Architects**, *New York, NY*
Architect of Record: **Ishmael Leyva Architects**, *New York, NY*
Structural Engineer: **DiSimone Consulting Engineers**, *New York, NY*
Mechanical Engineer: **Cosentini**, *New York, NY*
General Contractor: **Plaza Construction**, *New York, NY*
Curtain Wall Consultant: **R.A. Heintges & Associates**, *New York, NY*
Miscellaneous Iron Fabricator and Erector: **Ment Bros. I.W. Co., Inc.**, *New York, NY*
Architectural Metal Erector: **Airflex Industrial, Inc.**, *Farmingdale, NY*
Ornamental Metal Erector: **Airflex Industrial, Inc.**, *Farmingdale, NY*
Curtain Wall Fabricators and Erectors: **Enclos Corp.**, *Egan, MN*;
**United Ornamental**, *Holtsville, NY*

# BANK OF AMERICA STAIR

## Flights of Fancy

**Facing and above** The stair's red glass core, known as the "media wall," subtly projects the bank's brand within the office and onto the street.

© Paúl Rivera

**For The Bank of America Tower at One** Bryant Park time is money. An extra second waiting for an elevator can spell a missed trading opportunity, or a crucial piece of economic data neglected. So when outfitting its headquarters, the bank leadership commissioned interior architects and workplace specialist Gensler to design an ornamental stair connecting its main trading rooms—dispersed because of their enormous size—among the third, fourth, fifth, and sixth floors. "An interconnecting stairway means instant movement and information," says Gensler principal EJ Lee, benefits that would not have been so easily achievable had the building's superstructure been framed in a material other than steel.

Strikingly visible behind the 42nd Street facade of One Bryant Park, the interconnecting stairway is broken up at each flight by two intermediate landings, achieving a petite 10-by-20 footprint and conserving valuable square footage for trading desks. Gensler chose to expose the stair's structural steel framing, displaying it for ornamental purposes and signaling an aesthetic alliance with Bryant Park's wrought iron street furniture. Pedestrians, however, will note the staircase's big marketing impact: Investment bankers travel up and down, in a kind of vertical theater, on treads that wrap around a steel core clad in glass, colored the red of Bank of America's logo. "We went through many different iterations of emphasizing the staircase," Lee says of the unique lighting. "We started with pixelated pictures formed in LEDs, for instance, but we finally went with a simple red, glowing box."

The simplified branding is deceiving, while the construction of the stair is anything but. Installation had to be intricately coordinated with the construction of the tower.

**Facing and above** A tremendous amount of coordination was needed since the stair framing was erected after the steel superstructure. A 3D drawing in Revit helped to coordinate between subcontractors.
**Overleaf** The exposed steel stringers nod to the wrought iron street furniture of Bryant Park, while the superb detailing smoothly integrates the stair into the modern office.

© Gensler

Overleaf: Paúl Rivera

"The stair framing was erected well after the building steel had been erected and the concrete fill placed on metal decking," says Andrew Mueller-Lust of structural engineer Severud Associates, "meaning that the floor openings for the stair had to be framed in coordination with the base building construction manager." (The stair was part of a fit-up contract, not core-and-shell.) To facilitate this coordination, contractor Leonard Spector of Structure Tone says he used an intricate three-dimensional drawing prepared in Revit to coordinate between subcontractors. In the words of Carlo Valente, vice president of ornamental metal and glass fabricator A-Val Architectural Metal, "A tremendous amount of coordination was required to produce quality work. Because the structure is exposed, you see every aspect of the stair's construction; there's no opportunity to bury a mistake beneath sheetrock or metal."

The structure of the stairwell's core, known as the "media wall," resembles an H in shape, and is composed of two columns of 8x8 HSS and steel pipe bracing, both of Grade B ASTM A500 steel. Landings connect to the media wall via 6x4 HSS of Grade B ASTM A500, and similar members are field-welded to the tower's framing, tying each landing into the building's ASTM A992 Grade 50 steel structure. The stair appears to float on a 6x4 HSS stringer whose spine is lined in LEDs. "Most of the tube-to-tube connections are welded," explains Mueller-Lust. "Where the surfaces of the connected members are flush, the welds are j-groove complete joint-penetration welds; otherwise the welds are fillet welds." All of the welds were ground smooth after they were completed, and connections of tubes to wide flange and other steel shapes were mostly bolted. Other grades of steel used include

A992 for rolled sections, Grade 50 A572 for plate and miscellaneous shapes, and A36 for connection material. Thirty-six tons of recycled steel were used in all.

T5 fluorescent lamps nestle into each corner of the media wall construction: They are backed by baffles that A-Val customized for the project to enhance and better distribute illumination, and protected by off-the-shelf fluted acrylic lenses. The combination of mast steel and integrated luminaires is encased on either short end by eighth-inch-thick aluminum plates, powder-coated to resemble blackened steel. A series of imperceptible panels allows maintenance workers to access the T5s by compression clips.

On both long sides of the media wall, a series of spider fittings holds in place the laminated Bendheim glass that mixes red into the fluorescent lamps' glow. These and three-quarter-inch clear handrail glass fittings are both installed with countersunk connections. The connections are so precise, Valente explains, that they were calculated in AutoCAD and realized in the factory rather than on site. The handrail is so delicately installed that "the glass appears like it is just passing by the stair," says Gensler team member Christopher Baglino. In all, the combination of structural steel and perfectly finished glass, Lee says, "mixes the raw and refined. We did not want this to look like a typical, traditional bank office." In that spirit, too, the steel plate treads are topped in Siberian marble to evoke a carpet runner. The marble is slightly set back from the edges of the steel plate, like a two-tier sheet cake.

Gensler's nod to the vernacular of Bryant Park differentiates Bank of America from the traditional corporate headquarters lining Avenue of the Americas. Indeed, the elevated public space above the sidewalk is reminiscent of the terraced form of the stair treads. And the stair's mix of the so-called raw and the refined evokes the park's ability to accommodate both casual film screenings and glamorous fashion shows. Baglino points out in a tribute to all involved—designers and fabricators—that a design that can inspire so many moods and interpretations is no piece of cake. Although highlighted by the carefully choreographed construction, the design "was a collaborative effort with everyone really involved from day one—this wasn't something we designed and then put out for bid." **M**

**BANK OF AMERICA STAIR**

Location: **1 Bryant Park, New York, NY**
Owner: **Bank of America at One Bryant Park, LLC**, a joint venture between The Durst Organization and Bank of America, *New York, NY*
Stair Design: **Gensler**, *New York, NY*
Architect: **Cook + Fox Architects, LLP**, *New York, NY*
Executive Architect: **Adamson Associates Architects**, *New York, NY*
Structural Engineer: **Severud Associates**, *New York, NY*
Mechanical Engineer: **Jaros, Baum & Bolles**, *New York, NY*
General Contractor: **Tishman Construction Corp.**, *New York, NY*
Interior Fit-Out Construction Manager: **Structure Tone Inc.**, *New York, NY*
Curtain Wall Consultant: **Israel Berger & Associates, Inc.**, *New York, NY*
Structural Steel Erector: **Cornell & Company**, *Woodbury, NJ*
Miscellaneous Iron Fabricator: **Empire City Iron Works**, *Long Island City, NY*
Miscellaneous Iron Erector: **Skyline Steel Corp.**, *Brooklyn, NY*
Ornamental Metal Erector: **Melto Metal Products**, *Freeport, NY*
Curtain Wall Fabricator: *Permasteelisa Cladding Technologies, Ltd.*, *Windsor, CT*
Curtain Wall Erector: **Tower Erectors**, *Clinton, NJ*
Metal Deck Erector: **Cornell & Company**, *Woodbury, NJ*


# JACOB K. JAVITS FEDERAL BUILDING PAVILION

## Security Detail

© General Services Administration

**Waiting in long lines is not only aggravating** and time consuming, in a service facility the experience can affect our perception of the quality of service provided. This was a concern for the 41-story, 2.4 million-square-foot Jacob K. Javits Federal Building in Manhattan's Civic Plaza, a facility housing 20 federal agencies, including the Immigration and Naturalization Service, which receives over 1,000 visitors per day. With the tightened security measures put in place after 1995, before entering the building each one of these visitors must undergo a rigorous security screening process that can take up to two minutes per person, leaving long queues at the mercy of the weather. To solve this problem, and improve the overall security of the building, the GSA commissioned architecture firm Lehman Smith McLeish and structural engineering firm Weidlinger to design a pavilion on the Broadway side of the building. Wanting to maintain the open, glassy aspect of the original 1967 Kahn & Jacobs-designed lobby, the team chose structural steel to frame the pavilion, which provided the rigidity needed to support a cable net curtain wall with slim column profiles for an airy, light-filled environment.

The choice of material offered other benefits for the project as well. "Structural steel was chosen because it is lightweight and the structure is supported on top of an existing underground garage," explains Weidlinger's Paul Hobblemann. "It was desirable to keep the loads at a minimum."

While the existing lobby was accessed via a sunken plaza, the new pavilion raises the building's entrance to street level, creating direct views from inside, through an expansive cable-net curtain wall, to pedestrians going up and down Broadway, a design decision that both improves security and imbues a welcoming air to the facility. The long, low, horizontal form of the pavilion also creates a human-scaled juxtaposition to the massive structure beyond, which dominates the immediate skyline. But in spite of these augmentations, the steel-and-glass articulation of the addition speaks directly to the 60s modernism of the Javits Federal Building, while at the same time introducing the advances of 21st-century technology.

The pavilion is a self-supporting structure for lateral and vertical loads. Its framing system is a mix of rigid frames and diagonal bracing that rests on the slab of the parking garage below, which was reinforced as necessary. The system is composed of a mix of ASTM A992 Grade 50 wide flange members, ASTM A500 Grade B HSS, ASTM A36 bars and plates, and ASTM A53 pipe sections. Wide flange members were used primarily to frame the roof, which spans 22 feet, while HSS were used for most of the columns. Left exposed and treated with Cafco Spray Film intumescent paint, the HSS cut a slim profile behind the cable net wall, allowing unimpeded sightlines into the pavilion and across the public plaza. Most of the connections between members were bolted on site, but the rigid (moment) connections were field welded. The bolts used were generally ASTM A325, and the entire assembly was erected piece by piece by one crawler crane.

The structural steel framing system provided the rigidity needed to support the jewel of the pavilion—its cable net curtain wall. The system actually combines a mullioned curtain wall with vertically strung cables for additional lateral support. The combination of these systems created a higher level of visual transparency as it allowed the mullion sizes to be kept at a minimum. The cables run vertically behind the curtain wall's aluminum framing system, connecting either to a wide flange beam in the roof or to plates that were shop welded to the HSS columns. "They prefabricated as much as they could," explains Hobblemann. Stainless steel clamps secure the cable system to the curtain wall's aluminum mullions. The wall is glazed with low iron, low-e coated glass panels, 5 feet wide and in varying heights. Manufactured by Guardian Architectural Glass, the panels feature an air gap for insulation.

Like many of the existing stock of federal buildings, the Javits exemplifies 1960s modern architecture, a typology whose open-planned lobbies were designed for free entry and movement. Introducing controlled access to these buildings, so necessary in our current political climate, without sacrificing the high-minded ideals of the original designers creates a real architectural challenge. With their pavilion, LSM has shown that it is possible to maintain mid-century modernist openness while at the same time improving security, a job that would have been all the more difficult without structural steel. **M**

**Facing and above** The pavilion provides a space for sheltered queuing while increasing the quality of the federal building's security.


© General Services Administration

**Facing** Structural steel HSS columns back the pavilion's cable net glass facade, providing strength and narrow profiles that maintain openness and views.
**Above** The pavilion raises the original sunken entrance to street level.

> "Structural steel was chosen because it is light weight and the structure is supported on top of an existing underground garage."
>
> **Paul Hobbleman, Weidlinger**

### JACOB K. JAVITS FEDERAL BUILDING PAVILION

Location: **26 Federal Plaza, New York, NY**
Owner: **General Services Administration, Public Building Services**, *New York, NY*
Architect: **Lehman-Smith + Mcleish PLLC**, *Washington, DC*
Structural Engineer: **Weidlinger Associates**, *New York, NY*
Mechanical Engineer: **WSP Flack + Kurtz**, *New York, NY*
General Contractor: **Volmar Construction, Inc.**, *Brooklyn, NY*
Curtain Wall Consultant: **Advance Structures Inc.**, *Los Angeles, CA*
Structural Steel Erector: **Global Iron Works**, *New York, NY*
Miscellaneous Iron Fabricator and Erector: **Global Iron Works,** *The Bronx, NY*
Architectural Metal Fabricator and Erector: **Action Bullet Resistant Inc.**, *West Islip, NY*
Ornamental Metal Fabricator and Erector: **Global Iron Works**, *The Bronx, NY*
Curtain Wall Fabricator: **United States Aluminum**, *Waxahachie, TX*
Curtain Wall Erector: **Action Bullet Resistant Inc.**, *West Islip, NY*
Metal Deck Erector: **Integrated Construction Inc.**, *Hicksville, NY*

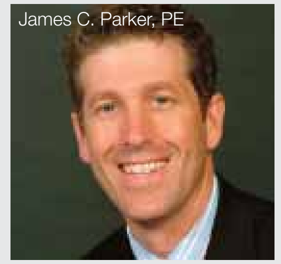
## Upcoming Events

On Wednesday, November 19, 2008, from 8:30 am until 5 pm, leading architectural metal consultant Catherine Houska will present her latest workshop **Advanced Stainless Steel Architectural Design** at the Center for Architecture, 536 LaGuardia Place, New York, NY 10012. The program, sponsored by the Ornamental Metal Institute of New York in cooperation with The Nickel Institute and the International Molybdenum Association (IMOA), is Ms. Houska's latest in a series of workshops that provide practical instruction on how to successfully plan, specify, and execute designs in stainless steel, including those using innovative design concepts or finishes. Registration is online at http://www.aiany.org/calendar.

The Steel Institute of New York will participate with AISC in sponsoring one of that organization's newest all-day seminars **Listen to the Steel—Welding Seminar** taught by industry expert Duane K. Miller, Sc.D., PE, a 2001 recipient of AISC's T. R. Higgins Award. The event will be held Thursday, February 19, 2009 at the McGraw-Hill Auditorium, 1221 Avenue of the Americas, New York from 8:00 am until 5:00 pm. Registration is online at AISC http://www.aisc.org/.

## OMINY Seminar on Facade Attachments at McGraw-Hill Auditorium

On Thursday, November 6, 2008, the Steel Institute and the Ornamental Metal Institute jointly sponsored "Facade Attachments to Steel Frames," an AISC seminar based on the new AISC Design Guide 22: Facade Attachments to Steel-Framed Buildings. The 175 attendees heard the design guide's author James C. Parker, PE, Senior Principal, Simpson, Gumpertz & Heger, Inc., Los Angeles, explain facade system fundamentals and practical examples highlighting the performance issues that impact attachment design. The afternoon program awarded 4 AIA/CES learning units or 4 PDHs. Mr. Parker is a frequent speaker at seminars and conferences, including the 2007 NASCC where he presented this seminar last April in New Orleans. Parker




received his B.S. in Engineering from the University of Cincinnati and his M.Eng in Structural Engineering from Cornell University. He is a member of the ASCE Seismic Rehabilitation Standards Committee, the Boston Society of Engineers, and the CASE Programs and Guidelines Committees.

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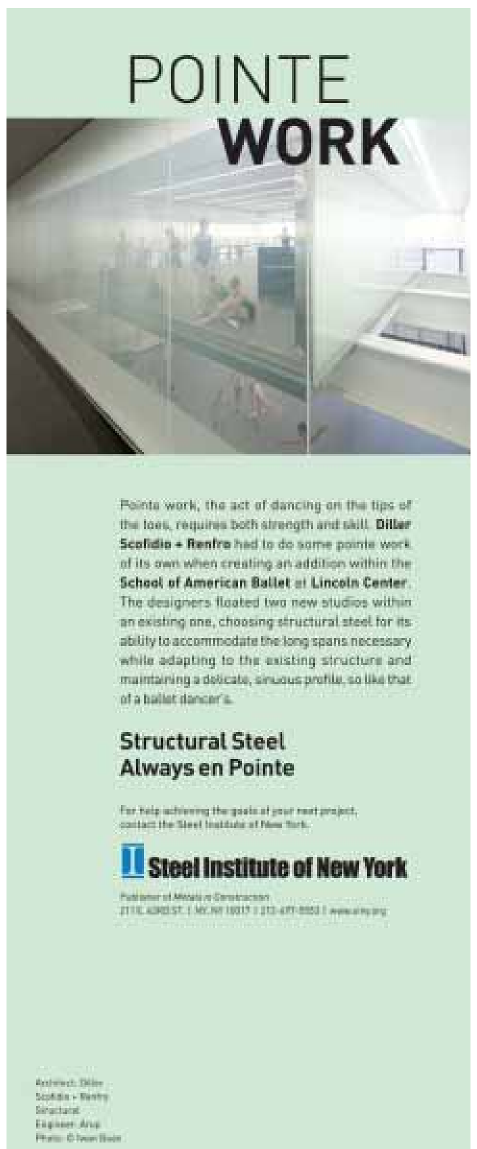




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**Rich Lucas**
Northeast Structural Steel Inc.
*Mt. Vernon, NY*

**Randall Ment**
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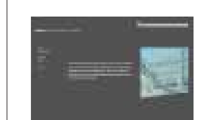

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- Consultations extending to the preparation of preliminary design and construction cost analyses for alternative structural systems
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