

cross sections

Magazine for the Structural Engineers Association of New York

2013 VOLUME 18 NO. 2

THE 2013 EXCELLENCE IN STRUCTURAL ENGINEERING WINNERS

THE AWARDS ISSUE



cross sections

2013 VOLUME 18 NO. 2

SEAoNY
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President's Message

Late spring brings two of SEAoNY's most important events – the annual Excellence in Structural Engineering Awards Boat Cruise and the SEAoNY Education Fund charitable golf outing. In addition to being one of SEAoNY's best-attended social functions, the boat cruise is an opportunity to take a step back and appreciate the tremendous accomplishments in structural engineering in New York and by New York structural engineers. Once again, this year's collection of submissions clearly indicates that New York continues to make immeasurable contributions to the field and attract some of the very best talent among engineers around the world. This year's submissions exemplify not only technical knowledge, but also perseverance, collaboration and creativity. On behalf of the Board of Directors, I want to congratulate this year's winners and finalists. I also want to congratulate all of the entrants this year. And I strongly encourage everyone to participate in next year's competition. Please take the opportunity to appreciate your immense efforts and those of your colleagues as exemplified in this issue of *Cross Sections*.

I also want to congratulate the SEAoNY Education Fund on another successful golf outing. While at the time of this writing the outing has not yet occurred, the fundraising and sponsorship efforts by the committee have been every bit as successful as years past. Once again the Fund will award scholarships to current college students studying engineering as well as a high school student from the New York City Urban Assembly School for Design and Construction. Over the past seven years the Fund has awarded over \$90,000 in scholarships to deserving students.

For those who attended these events, I trust you enjoyed yourselves and the company of your colleagues. For those who were unable, please join us next year. In the meantime, enjoy your summer.

Scott Hughes

Editor's Message

This special edition of *Cross Sections* is dedicated to the Excellence in Structural Engineering Award Competition hosted by SEAoNY. The winners of the five design categories were unveiled aboard the SEAoNY annual boat cruise on June 10th. The task of the jury in this competition was a daunting and challenging one as each project undoubtedly demanded its own extraordinary efforts and collaborations to overcome unique design challenges in order to make it a success. Each year the frontier of the design realm is nudged a bit further along; the cutting edge of structural design becomes slightly sharper. In the face of increasingly complex geometries and innovative and improving building materials, the role of the structural engineer has become evermore integral in making beautiful architecture a tangible reality. The entries in this competition certainly reflected that truth.

On behalf of the Publications Committee, I'd like to congratulate the winners and the finalists in each category. The competing entries were quite impressive, and to be awarded a finalist is no menial accomplishment.

Special thanks should be given to Alice Tao for completing the layout of another dazzling issue in a short time frame and to Shinjinee Pathak for managing the design competition this year and compiling all the information for this edition.

Justin Den Herder

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Judges

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Michael Guilfoyle, GACE
Robert Silman, RSA
Aine Brazil, TT
Karl Rubenacker, GMS

SEAoNY EXCELLENCE IN STRUCTURAL ENGINEERING AWARDS 2013

The Structural Engineers Association of New York (SEAoNY) Excellence in Structural Engineering Awards serves to recognize creative achievement and innovation in structural engineering. Modeled after the National Council of Structural Engineering Associations (NCSEA) Awards, the program annually highlights some of the best examples of structural engineering ingenuity by firms in New York.

For the 2013 Awards, projects must have been sufficiently completed between January 1, 2010 and December 31, 2012 such that they clearly show the basic design of the structural system. Firms were asked to provide narratives, photos, and plans or sketches to convey the complexities and innovations of their design. Judged by past SEAoNY presidents and honorary members, themselves structural engineers and leaders in the industry, scores were awarded based on: creativity and complexity of design; innovative application of materials or techniques; ingenuity of design for efficient use of labor and materials; sustainability of structure; and exceeding client/owner needs and expectations.

Awards finalists and winners were recognized on the SEAoNY Annual Boat Cruise, with each being represented by a project display board and, of course, their engineers. Finalists and winners were chosen in three categories based on their overall construction cost, with one additional category addressing renovation work and another addressing other unique and unusual structures. This year also marks the first ever Engineers' Choice Award in which participants of the Boat Cruise voted to declare the winner.

The SEAoNY Awards provide a great opportunity for engineers to learn more about the work of their peers and to share in their engineering achievements. In past years, several SEAoNY Awards winners have gone on to win NCSEA Awards as well. This year's winners are sure to be no exception.



*2013 Excellence in Structural
Engineering Awards Presentation &
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NEW BUILDINGS
UNDER \$30 MILLION

DENVER UNION STATION METAL CANOPIES

Skidmore, Owings & Merrill LLP



SOM Structural Engineers, working closely with SOM Architects, designed several steel and fabric pavilions for Denver Union Station Intermodal Hub, scheduled for completion in 2014. The exposed painted structural steel was detailed in close collaboration with the architectural team to develop a consistent architectural and structural vocabulary throughout the project. The focal point for the new station – the Train Hall structure – was conceived as an efficient and formally expressive means of clear-spanning 180 feet across multiple railway tracks. The primary structural system consists of eleven steel “arch trusses” spanning nearly 180 feet from a single large-diameter pin connection. The arch-trusses and cantilevered trusses support a tensioned PTFE fabric.



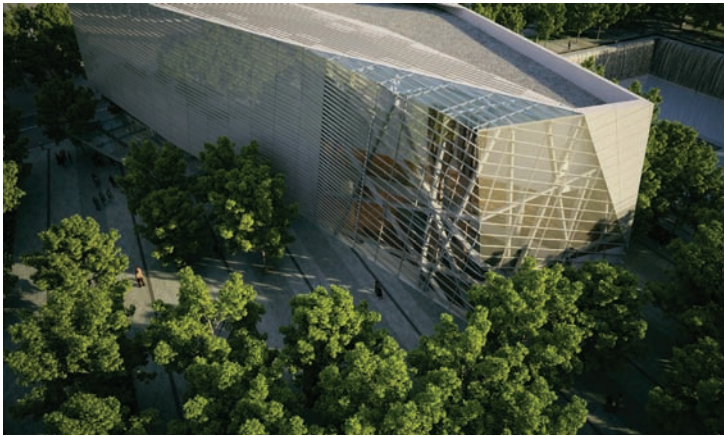
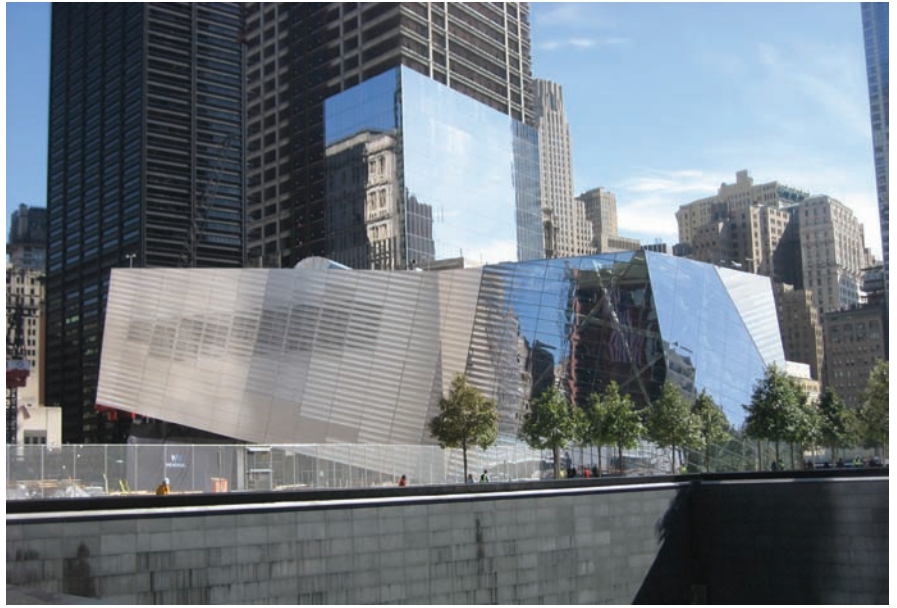
FINALISTS

BROOKLYN BOTANIC GARDEN VISITOR CENTER

Weidlinger Associates

RUTH LILLY VISITORS PAVILION

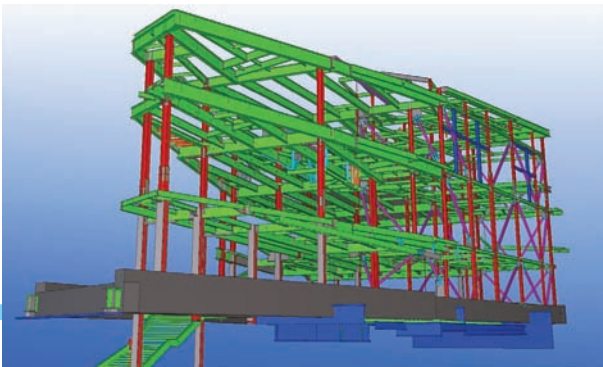
Guy Nordenson and Associates



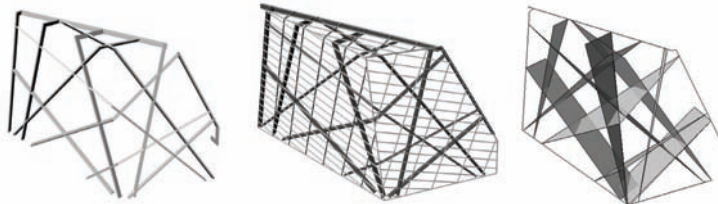
NEW BUILDINGS \$30 MILLION TO \$100 MILLION

WTC MEMORIAL PAVILION

Buro Happold



Achieving a unique Snohetta design with limited structural support, constraints on all sides, security requirements, and complex geometry was an unprecedented, but successful challenge. The World Trade Center Memorial Pavilion will welcome over 5 million visitors annually as they enter the subterranean galleries of the National September 11 Memorial and Museum. The structure is an intricate web of steel and glass showcasing two surviving tridents from the Twin Towers. The true complexity of the project remains hidden to visitors as the building is supported on only 12 points split between the PATH station and Memorial Museum below.



This Image © Foster + Partners, all others © Buro Happold

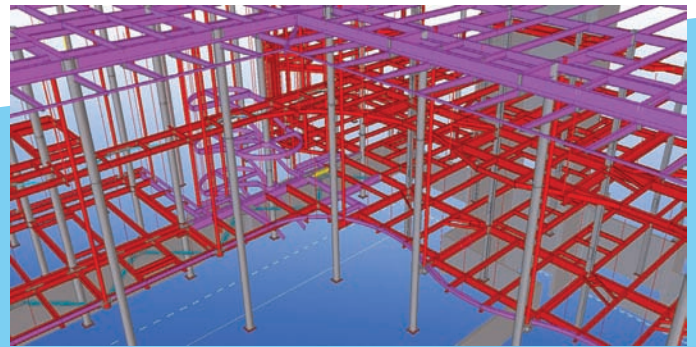
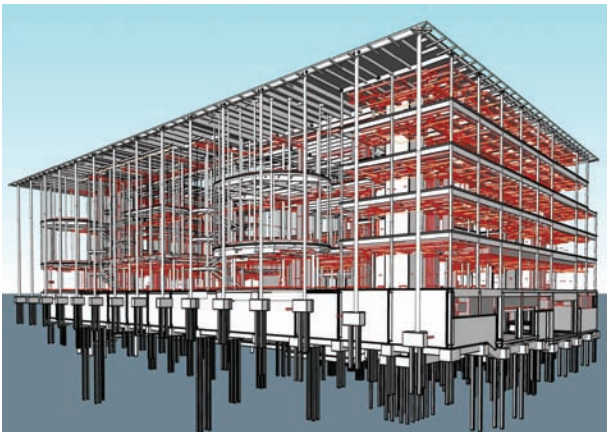


NEW BUILDINGS
OVER \$100 MILLION

YALE SCHOOL OF MANAGEMENT

Buro Happold

Yale University will open the Foster + Partners-designed School of Management building in January 2014. Exposed exterior columns, a curved four-story glass façade, slim interior vertical elements and intricate connections achieve the demanding architectural vision and provide unparalleled interior views of the courtyard and exterior views of the unique oval-shaped classroom pods. Cutting-edge BIM modeling and innovative structural design were integral to Buro Happold's successful role on this 242,000 square foot building. A steel fabrication and connection model facilitated the early award of the steel package, bid tonnages within 1%, and smooth erection with fit up issues being practically non-existent.



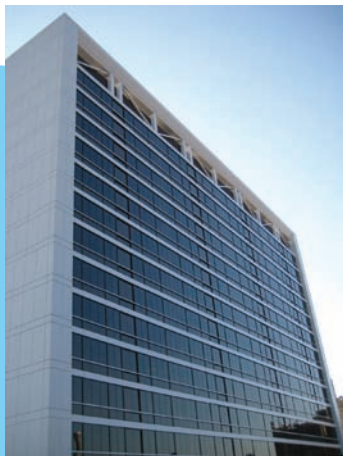
FINALISTS

INTERNATIONAL FINANCE CENTRE SEOUL

Thornton Tomasetti

JOHN JAY COLLEGE OF CRIMINAL JUSTICE

Leslie E. Robertson Associates



All Images: Courtesy RSD Engineering

FORENSIC ANALYSIS/RENOVATION/RETROFIT/ REHABILITATION OF STRUCTURES

MARSHAK SCIENCE BUILDING

RSD Engineering



The Marshak Science Building is a 450,000 sq. ft. 12 story exposed frame structure built of poured in place lightweight concrete in the 1970's. The building's exposed frames were seriously spalling and cracking with severe reinforcement corrosion due to the lightweight concrete's propensity to absorb moisture, the presence of chlorides used as accelerator during construction and the collection of snow and water in exterior balconies. After repair of the concrete exterior members, a new curtain wall with innovative structural steel support system that did not rely on damaged existing spandrels was installed around the entire building to arrest the deterioration.



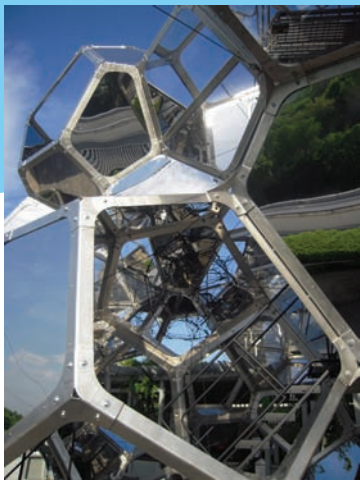
FINALISTS

510 FIFTH AVENUE RENOVATION AND ADAPTIVE REUSE

Skidmore, Owings & Merrill LLP

NBC UNIVERSAL SPORTS FACILITY

Axis Design Group



All Images: Courtesy Arup



OTHER STRUCTURES CLOUD CITY

Arup

Arup collaborated with artist Tomás Saraceno to design a sculpture of 16 interconnected modules which was installed on the roof of The Metropolitan Museum of Art for the summer 2012 season.

The interconnected modules are fabricated from stainless steel plates, with a combination of polished stainless steel and transparent acrylic panels forming the floors and walls. A pathway through the sculpture allows visitors to experience the artist's vision of future cities.

One of the project's key challenges was realizing the artist's vision while fitting within engineering and budgetary constraints and finding a design that could be easily fabricated and installed.



FINALISTS

CHHATRAPATI SHIVAJI INTERNATIONAL AIRPORT CABLE WALL

Skidmore, Owings & Merrill LLP

NEW SUBWAY STATION AT BARCLAYS CENTER

Stantec

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Photo by Michael Mahesh, Port Authority of New York and New Jersey

All Images: Courtesy Robert Silman Associates



ENGINEERS' CHOICE CAMPBELL SPORTS CENTER COLUMBIA UNIVERSITY

Robert Silman Associates

Columbia University's dynamic new sports center is the primary athletics facility for the university's outdoor sports programs and anchors the Baker Athletics Complex. The five-story, 48,000-square-foot building agilely accommodates a complicated site that is both steep and adjacent to an elevated MTA subway line. Within its four floors – each with a different plan – student athletes are exposed to the muscular structure of the building itself, which has been left largely visible. To serve the mind, the body, and the mind/body of Columbia's student athletes, the state-of-the-art building incorporates study rooms and lounges with strength and conditioning spaces. Offices for varsity sports and football, an auditorium, a hospitality suite, and a theater style meeting room are also part of the building program.



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