cross sections

Magazine for the Structural Engineers Association of New York

2018 VOLUME 23 NO. 2

THE 2018 EXCELLENCE IN STRUCTURAL ENGINEERING WINNERS

THE *Awards Issue*

cross sections

2018 VOLUME 23 NO. 2

SEAoNY
536 LaGuardia Place
New York, NY 10012

www.seaony.org

CONTENTS

On the Cover
The Statue of Liberty at sunset during the 2018 SEAoNY Boat Cruise
Photo by Adam Kirk

Contact us at
publications@seaony.org

Check out previous issues at **seaony.org/publications**

President's Message

Most of us are structural engineers because we have an interest in and passion for structures. For the majority of SEAoNY members, we have found a way to pursue this interest and passion by working for structural design firms. These firms are businesses and as such, often end up competing against each other. This competition is generally both good and bad. I believe it challenges us to always keep improving, but it also sometimes gets in the way of us looking out for and learning from each other in the industry. What I like best about SEAoNY is that it gives us a chance to come together as structural engineers – to collaborate in committees and learn from each other, whether at formal seminars or in casual conversations at our more social gatherings.

The Excellence in Structural Engineering Awards is another instance where we are competing against each other, but it is also a chance to learn even more about what our peers are up to. In the past I've often gotten caught up in focusing on the projects that my company has entered into the competition and have not paid enough attention to the other entrants and winners. I now realize that was at my own loss, because so many of the projects entered by other companies were interesting, challenging and often very cool! Over the last two years I've gotten to be one of the people to announce the award winners on the boat cruise, which helped focus my attention beyond myself and my own company and has reminded me of the amazing and diverse work we do as structural engineers.

Please take the time to read through this newsletter fully as it is a true celebration of some of the best work by our fellow structural engineers.

Sara Steele

Editor's Message

Dear Friends and Readers,

Welcome to the Awards Issue of Cross Sections. As always, the competition was populated by a wide range of diverse and interesting projects completed by our membership over the past year. It is always a thrill to see what our peers have been up to, and to chat about the work on the annual Boat Cruise. This year, we are presenting those projects that were selected by the Judges as the best of the best. We also present the Finalists who put forth spectacular work of their own. Please enjoy!

In other news, the Publications Committee is hard at work on our next themed issue for this year, *Wood Construction*. If you are utilizing wood as a building material in your practice and interested in contributing an article to CrossSections, please reach out to us at publications@seaony.org.

Adam J. Kirk, PE

UPCOMING EVENT

Aug 23, 2018
4:00 PM
Related Companies
460 W 34th Street
8th Floor
New York, NY 10001

SEAoNY YMG Presents – Adhesive Anchor Seminar

Visit www.seaony.org/programs for additional information on these and other events!

RECAP OF JUNE SEMINAR:

NAVIGATING TODAY'S WORKPLACE FOR EMPLOYERS AND EMPLOYEES

A Multi-Panel Series Hosted by the SEAoNY Diversity Committee

SESSION ONE: BREAKING DOWN HARASSMENT

By Jennifer Anna Pazdon, PE, SEAoNY Diversity Chair
Guillermo Diaz-Fanas, PE, ASCE Met Diversity and Inclusion Co-Chair Alexander L. Herzog, PE

The SEAoNY Diversity Committee event "Breaking Down Harassment" was held on June 13th at WSP. The panel is the first of a multi-part panel series entitled "Navigating Today's Workplace for Employers and Employees." The inaugural panel session welcomed close to 70 attendees.

The session was moderated by Leadership from WSP, with panelist-advocates from industries including Architecture, Engineering, Law, and Human Resources who shared their expertise on the myriad ways harassment can negatively impact the workplace, how we can take action to prevent harassment, and what to do when we identify harassment. All shared the goal of ensuring our shared environments are free from exclusion and abuse to lay the best groundwork for productivity, workplace satisfaction, and to enable the talented minds of our profession to achieve to the best of their abilities.

The panel included Nicole Dosso, AIA, New York Technical Department Director of SOM who is currently serving on the Board of Directors for Professional Women in Construction; Deborah Chase, PE, Director of Structural Engineering at Greenman-Pedersen, Inc; Christina Joy F. Grese, Special Counsel for Duane Morris practicing in the areas of employment law and harassment litigation; Joel Peterson, COO and Director of Human Resources for Goshow Architects, a woman-owned architectural design firm; and the moderator Dr. Sissy Nikolaou, leader of WSP's geotechnical earthquake engineering practice and Technical Fellow of Earthquake Engineering of WSP.

Six areas of common concern were explored via questions submitted anonymously by registrants prior to the event. Topics discussed included: legal definitions of unlawful harassment, best practices for leadership to address misconduct, what responsibilities employers and employees have when harassment occurs, and what steps employees can take in the event their firm does not address misconduct.

SOME OF THE QUESTIONS SURROUNDING HARASSMENT:

Is this unlawful harassment?

What are firms required to do to protect their employees when harassment occurs?

What is the employee's responsibility for reporting harassment?

What are best practices for firm leadership to address misconduct and maintain a safe workplace?

What can you do as an employee if your efforts to address misconduct are not supported by your firm?

RECAP OF JUNE SEMINAR:

NAVIGATING TODAY'S WORKPLACE FOR EMPLOYERS AND EMPLOYEES

A Multi-Panel Series Hosted by the SEAoNY Diversity Committee

CASE STUDIES PROVIDED ANONYMOUSLY BY REGISTRANTS
CASE STUDY #1:

Protection Outside of the Office

"While at a job site I overheard a Project Manager for the General Contactor making a comment about the appearance of one of my co-workers.

Is this harassment? Should I report this? What might be the consequences?

Is my firm responsible for instances that occur outside of the office?"

The first major topic was "Protection Outside of the Office", where panelists commented on how employees and employers represent their firm outside of the office. Whether it is during work or non-work hours, at the work place, construction site, out-of-town conference, non-work-related events, or even social media, everyone must behave professionally. In the event of an incident, the law requires involved parties to take action, even if one is solely a spectator and is not directly affected by the offense.

The panel also touched on the role of "Harassment or Discrimination in Career Advancement". The panelists advised that clear discrimination affecting one's career path is illegal. When discrimination is suspected but cannot be confirmed, an effective first step may to start with a self-check to be sure one is analyzing the situation rationally. Following this, one can look for support in a champion within or outside of the office who may be able to provide support and an unbiased outlook. It was suggested that a best practices for firms would be to perform reviews with a larger group of reviewers rather than a single supervisor to reduce the likelihood of one person's bias affecting the employee's career advancement.

The next topic explored how to manage addressing situations that are difficult or uncomfortable to communicate to HR or firm leadership. The panelists expressed that firms could support in these situations

by having clear and transparent office policies in place to remove the uncertainty that may prevent one from reporting harassment. Providing employees with multiple reporting options, such as a resource outside of the office was also suggested. It was noted that New York State recently passed legislation specific to sexual harassment requiring mandatory workplace training and reporting of performance by firms.

Lastly, the panel addressed best practices for those wishing to advocate for colleagues who may be suffering harassment as well as those who express fear of unintentionally creating an uncomfortable position for their co-workers. Advice on these matters included stressing the importance of training provided in the office, both on recognizing harassment, and how to provide a safe place for colleagues to approach you with issues.

Following the discussion, attendees and panelists broke into small groups over food and drinks to further explore the topics discussed and ask questions of the speakers.

SEAoNY Diversity Committee would like to give a special thanks to all of our speakers, the ASCE Met Diversity and Inclusion Committee for their co-sponsorship, and to our Venue Sponsor, WSP. Very special thanks to the SEAoNY Diversity Committee members for their work and commitment to supporting our Mission.

We hope you will join us at our upcoming events in the 2018-2019 year. Please direct inquiries to seaonydiversity@gmail.com

CASE STUDIES PROVIDED ANONYMOUSLY BY REGISTRANTS
CASE STUDY #2:

Harassment vs Discrimination and Career Advancement

"My managers have not said anything to me specifically, but I feel they are uncomfortable with me being transgender. It has seemed to create a distance between us and affect how involved they are with my work versus my coworkers. I'm concerned it may be affecting my career advancement. What do I do?"

CASE STUDIES PROVIDED ANONYMOUSLY BY REGISTRANTS
CASE STUDY #3:

How to Find Support

"What can I do if I do not feel comfortable speaking to HR about a situation, or what if there is no HR at my firm?

Can I report a situation anonymously? Are there outside sources I can turn to?"

More on the Series: This multi-panel series is aimed at providing both employers and employees with insights into navigating the workplace in today's environment in order to promote engagement and retention. The goal is to engender a highly productive, satisfied, and safe workplace by creating transparency for all, preventing conflict, and promoting resolution of disputes and other unsatisfactory conditions. The series' topics are developed to be relevant to those from entry level to leadership positions, to empower you to elevate the AEC industry for yourself and your colleagues.

ADDITIONAL CASE STUDIES PROVIDED ANONYMOUSLY BY REGISTRANTS:

Reporting And Supporting Co-Workers
"A female co-worker told me that the owner of my firm, a devout and evangelical Christian with a large family, took her out for lunch recently as he does with all employees when they get their professional engineering license.

My co-worker is soon to be married, and at one point he steered the conversation to religion and told her how important motherhood is. She told me afterward how uncomfortable she felt, but she didn't know what to say at the time.

I don't think this is harassment, but I do think it's highly inappropriate on many levels. How should I have counseled my co-worker?"

How to Approach Management
"My project manager is verbally abusive and curses a lot during meetings. They behave like they want everyone to be terrified of them."

Best Practices for Advocates
"I am white and I want to be sure that I do not offend my black coworker by saying something offensive.

How can I learn how to navigate situations where I'm not sure how to act or what to say?

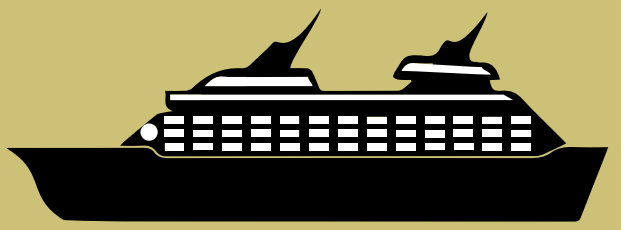
How can I become aware of transgressions I may be unaware of making?"

For More Information: SEAoNY Diversity Committee:

http://seaony.org/event-2934025

ASCE Met Diversity and Inclusion:

http://www.ascemetsection.org/committees/diversity-and-inclusion



On June 25, SEAoNY members once again embarked on the annual boat cruise around Manhattan. After a gorgeous evening sunset, members sat to enjoy dinner and the Excellence in Structural Engineering Awards ceremony and raffle prize drawing.

call for writers *(and nonwriters!)*

Interested in writing about our profession?
Do you have great ideas, but no time to write?

Contact us at **publications@seaony.org**
Check out previous issues at **seaony.org/publications**

2018SEAoNY

Excellence in Structural Engineering Awards Winners

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 2018 Awards, projects must have been sufficiently completed between January 1, 2016 and December 31, 2017 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 of structural design (20%)*
- *Complexity of criteria or unique problems (20%)*
- *Innovative application of new or existing materials or techniques (20%)*
- *Ingenuity of design for efficient use of materials and labor (20%)*
- *Exceeding client / owner's needs or expectations (10%)*
- *Suitability of the structure for its environment and sustainability of design, including social, economic and environmental design considerations (10%)*

Awards finalists and winners were recognized on the SEAoNY Annual Boat Cruise on June 25, 2018, with each being represented by a project display board and, of course, their engineers. 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.

JUDGES

Joseph F. Tortorella *Silman Structural Engineers*

Doug P Gonzalez *LERA Consulting Structural Engineers*

Nadine Post *ENR: Engineering News Record*

Hayes Slade *Slade Architecture*

Delia Shumway *New Line Structures*

NEW BUIDLINGS #1

National Museum of African American History and Culture (NMAAHC)

GUY NORDENSON AND ASSOCIATES & SILMAN

The 376,000sf Smithsonian National Museum of African American History and Culture (NMAAHC) required a number of unconventional structural approaches—including composite cores, a cantilevered three-tiered "Corona" screen wall, a long-span "Porch" structure and multiple foundation systems and waterproofing measures below ground—to accommodate the museum's challenging architectural design. A prominent site with limited staging area and a compressed construction schedule created additional design challenges. Only through close, consistent collaboration were GNA and Silman able to achieve a building that makes a powerful and inspiring public statement on Washington DC's historic National Mall.

THE 2018 EXCELLENCE IN STRUCTURAL ENGINEERING WINNERS

Shum Yip Upperhills Tower One

SKIDMORE, OWINGS & MERRILL

The 400m (1300ft) Shum Yip Tower One rethinks conventional legacy systems to achieve supertall performance requirements. The Ladder Core System improves ductility, redundancy, and uniformity of structural stiffness without conceding architectural or mechanical flexibility. The Ladder Core System features eight mega columns at the perimeter connected to the core with composite coupling beams to create a comprehensive lateral system. Long span beams at each level direct gravity loads into the mega-columns, eliminating tension from overturning moments. The Ladder-Core System is defined by unobstructed occupant views, floor plate simplicity, and inherent structural stability—it exemplifies seamless integration of building disciplines for an enhanced overall design.

Tata Innovation Center

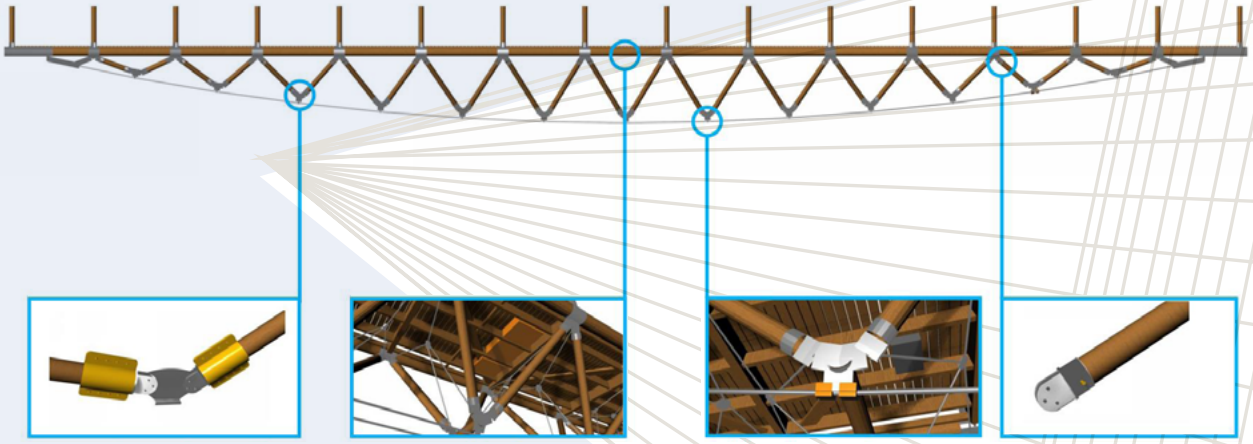
THORNTON TOMASETTI

The Tata Innovation Center is a six-story, 240,000 square foot building. It is a co-location space housing academic facilities alongside tech firm offices to foster innovation. The massing consists of two volumes bridged at each floor by a causeway. Super-trusses wrap the perimeter of each volume, allowing the upper five stories to perch on top of a small number of columns and to cantilever 80 feet over the campus. We used modeling and analysis tools created by our in-house research and development group, combined with traditional truss-tuning and erection procedures to deliver an extremely efficient steel structure despite the complexity.

THE 2018 EXCELLENCE IN STRUCTURAL ENGINEERING WINNERS

FORENSIC ANALYSIS
RENOVATION
RETROFIT
REHABILITATION OF STRUCTURES

Squibb Park Bridge Peer Review and Retrofit



Connections enhanced
At select locations the bridge's steel to timber connections will be enhanced using steel collars

Dampers added
Dampers installed below the deck of the bridge will reduce some of the 'bounce' of the bridge

Cables Clamped
Clamps will be added to the cable connections to prevent them from sliding or lifting-off

Connections pinned
Steel pins through the connections will prevent the timber logs from pulling out of the steel cups

ARUP

The Squibb Park Bridge was closed in August 2014 due to excessive deformation. Arup was hired to review the original design and assess the performance of the bridge in October 2014. Arup identified critical issues with the original design and developed retrofit solutions to simply and elegantly resolve the issues. Arup's retrofit design was implemented in 2016 and the bridge reopened to the public in April 2017. Since then it has performed well and reinstated an important connection between Brooklyn Heights and the waterfront.

BROOKLYN BRIDGE
PARK

THE LONE TREE PEDESTRIAN BRIDGE PROJECT WAS ALSO THE RECIPIENT OF THE 2018 ENGINEERS CHOICE AWARD, VOTED ON BY SEAONY MEMBERS!

Lone Tree Pedestrian Bridge

THORNTON TOMASETTI

The new Lone Tree Pedestrian Bridge enables walkers, joggers and bicyclists to safely cross a busy roadway. Spanning 170 feet, the cable-stayed structure features a large, leaf-shaped mast on its south end that rises 78 feet. Six pairs of cables extend from the leaf to support the bridge. The bridge sizing was a balancing act between the strength, stiffness, economy and close attention to aesthetic vision. The Thornton Tomasetti project team worked closely with the fabricator and developed local finite element models of connections to optimize the configuration and sizing of the pylon and to facilitate an accelerated procurement process.

THE 2018 EXCELLENCE IN STRUCTURAL ENGINEERING WINNERS

NEW BUILDINGS
Finalists

THE 2018 EXCELLENCE IN STRUCTURAL ENGINEERING WINNERS

55 HUDSON YARDS
WSP

55 Hudson Yards project is part of the Manhattan Western Expansion project by Related/Oxford Properties. Located on 11th Avenue between 33rd and 34th Street, the 51-story tower reaches 760 feet in height and encompasses 1.3 million square feet of gross area. Amongst the most significant engineering challenges of the project are the site and load-carrying constraints due to large interaction with existing MTA infrastructure, as well as the maximization of both column-free spaces and flexibility for future modifications. These challenges were successfully addressed by incorporating postensioned concrete elements in three distinct ways, and a unique construction sequence aimed at creating a specific vertical load path.

512 WEST 22ND STREET
DESIMONE CONSULTING ENGINEERS

512 West 22nd Street is a 12-story, 150-foot-tall, commercial mixed-use building located in Manhattan's Chelsea neighborhood. Designed by CookFox Architects for The Albanese Organization, the property features exterior landscaped terraces, wrap-around exterior stairs, and exposed concrete columns. The structure totals approximately 175,000 square feet and contains 11 floors of office and retail space with an occupiable rooftop. The exterior is clad with ribbon windows and fluted terra cotta spandrels. An existing 5-story parking garage was partially demolished and incorporated into the new building as part of a New York City Buildings Department Alteration Type 1 (ALT 1) application. The structure abuts the landmarked High Line elevated park and provides unobstructed views of the posh Chelsea art district.

ARIZONA STATE UNIVERSITY, BEUS CENTER FOR LAW AND SOCIETY
BUROHAPPOLD ENGINEERING

The new 280,000 sq. ft. Beus Center for Law and Society at Arizona State University, located in downtown Phoenix, is a state-of-the-art facility that combines low energy use with high occupant comfort. Our team determined a steel structure was the ideal solution to meet programmatic requirements for long-span, column free interior spaces while maximizing the amount of clear foor height. The superstructure features five stories of suspended outdoor pedestrian bridges linking buildings together, a sloped exterior V-column supporting five stories above, and cranked long-span composite beams formed using steel construction engineered to achieve an ambitious architectural vision and a high performance building.

NEW BUILDINGS *Finalists* (CONTINUED)

NORTH PARK TOWER AT 1399 PARK AVENUE
GACE CONSULTING ENGINEERS DPC

1399 Park Avenue is one of the largest new developments in East Harlem, Manhattan. The 23-story condominium tower, dubbed North Park Tower, overlooks both the East River and Central Park. Eighteen stories along the east side of the building cantilevers 23' over the adjacent building. The entire building is constructed of reinforced cast-in-place concrete, including the exposed architectural-grade concrete façade. The building features a series of interlocking cubes extending from a central structural spine.

THE AMERICAN COPPER BUILDING
WSP

The steel Skybridge connecting the American Copper Buildings in the east end of Murray Hill in Manhattan is one of the most iconic elements of the ambitious project at 626 First Avenue. The three-story, 85-feet long bridge between the 27th and 30th floors connects two high-rise residential towers otherwise connected only at their foundation. The Skybridge is the first major structure of its type to be built in New York City in the last 80 years. The steel bridge is located 300 feet above ground and includes a lap pool and jacuzzi, an amenity floor and an outdoor terrace with spectacular views.

THE INSTITUTE FOR CONTEMPORARY ART AT VIRGINIA COMMONWEALTH UNIVERSITY
SILMAN

Virginia Commonwealth University's (VCU) new 41,000 sf LEED Silver Institute for Contemporary Art (ICA) in Richmond, VA, houses multiple gallery spaces, a café, a 240-seat auditorium as well as classrooms and workshops. With its landmark geometric form and double entryway—openings that allow entering or exiting from the east or west—the ICA acts as a gateway connecting the surrounding community to the VCU campus. Its superstructure consists of three different systems that were weaved together throughout the building to achieve its complex architectural form, which includes a distinctive curving and sloping north wall and long concrete forking galleries.

FORENSIC ANALYSIS • RENOVATION RETROFIT • REHABILITATION OF STRUCTURES

Finalists

KEW GARDENS HILLS LIBRARY
LERA

This comprehensive renovation and expansion wrapped the existing 8,660-sf Lindsey library with an 18-ft-deep, 3,000-sf zone of public space, including new interiors, MEP upgrades, full ADA accessibility and a sloped green roof. The new zone provides a series of reading rooms for all ages, distinguished by an articulated roofscape that touches the ground to provide privacy, rises at the most public corner to effect monumentality, and lifts again at the kids' corner to provide child-sized views to the south. Serving 540 visitors per day, the library has been transformed into a public institution for the diverse Kew Gardens Hills community.

UNIVERSITY OF CONNECTICUT DOWNTOWN HARTFORD CAMPUS
SILMAN

At the University of Connecticut's new Hartford Campus, retaining an important piece of Connecticut history, the existing Hartford Times Building (Donn Barber, 1920) facade, presented unique structural challenges. The facade was repurposed as the framework for a new state-of-the-art facility built around a public courtyard. Retaining the historic facade required Silman to employ modern techniques to problem-solve, which resulted in innovative solutions like detaching the north and south walls and designing a reinforcing system for the west wall. The 5-story building includes space for classrooms and offices for academic programs that were previously located at UCONN's West Hartford Campus.

OTHER STRUCTURES

CAST & PLACE
SCHLAICH BERGERMANN PARTNER

The Cast & Place pavilion, the winner of the 2017 City of Dreams design competition, was a portal frame consisting of a series of 1.5 ft. x 10 ft. aluminum panels, each formed by casting recycled aluminum into the naturally-formed cracks of desiccated clay. Uncertain material quality and experimental fabrication produced a striking but variable product. This seemingly straightforward yet innovative structure was created by a first principles approach to design and through close collaboration among engineers, architects, artists, and builders. The result demonstrates how small-scale projects provide opportunities for structural and artistic experimentation with unconventional materials.

SEAoNY
536 LaGuardia Place
New York, NY 10012

SEAoNY THANKS ITS SUSTAINING MEMBERS & CORPORATE SPONSORS

Gilsanz Murray Steficek LLP
Severud
Silman
Thornton Tomasetti
SOM
Arup
Buro Happold
GACE
Howard I Shapiro & Associates
Leslie E. Robertson Associates
McNamara Salvia
Murray Engineering
New Line Structures
Pullman
Rosenwasser Grossman Consulting Engineers PC
SGH - Simpson Gumpertz & Heger Inc
Tishman/ AECom
WJE
WSP/PB
New Millenium
Cast Connex Corporation
Pieresearch
ADAPT