



## NATIONAL COUNCIL OF STRUCTURAL ENGINEERS ASSOCIATIONS

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**OCTOBER 24, 2011** - The National Council of Structural Engineers Associations (NCSEA) announced the 2011 Excellence in Structural Engineering Awards on the evening of October 22 during the 19<sup>th</sup> Annual Conference in Oklahoma City, Oklahoma. Three awards were given in eight categories, with one project in each category being named the Outstanding Project. Our categories for 2011 were as follows:

- New Buildings under \$10 Million
- New Buildings \$10 Million to \$30 Million
- New Buildings \$30 Million to \$100 Million
- New Buildings over \$100 Million
- New Bridge and Transportation Structures
- International Structures
- Forensic / Renovation / Retrofit / Rehabilitation Structures
- Other Structures

The names and locations of the projects, the firms receiving the award, and a contact at each firm are listed below under each category.

### **Category 1: New Buildings under \$10 Million**

#### **Outstanding Project**

Fishers Island Residence - Fishers Island, NY  
Skidmore, Owings, and Merrill, LLP, contact: David Horos

The design of the Fishers Island Residence is a response to its unique island setting and the very specific personal interests of the client. To this end, Thomas Phifer and Partners designed a 4,600 square foot house that is unmistakably modern, but equally organic in its relation to the surrounding garden and landscape. As the project's structural engineers, SOM faced a unique challenge: to develop structural systems that could simultaneously meet the aesthetic architectural requirements and be economically viable and constructible given the site constraints and limited contractor capacity.

#### **Award Winner**

A. Zahner Company Facility - Kansas City, MO  
Wallace Engineering Structural Consultants, Inc, contact: Steve Huey

The Zahner Metal Expansion houses fabrication and functions as the primary loading dock for their campus. Well-known for producing iconic structures, Zahner gave the architect free reign to push the envelope on curtain wall design in a desire to create an icon in their hometown of Kansas City. The result is a billowing wave of aluminum that flows down the wall and around the corner. Daylight passes between the deep structural "fins" which act as mullions. The fins are built up aluminum plate girders comprised of a cut plate web that has a shaped, closed section flange attached

#### **Award Winner**

Raymond and Susan Brochstein Pavilion - Houston, TX  
Haynes Whaley Associates, contact: Walley Ford

The Brochstein Pavilion at Rice University is a 6,042 square foot coffee house with 10,700 square feet of covered outdoor seating that is square in plan. But as the saying goes, "the devil is in the details." The architecture is understated simplicity. The building has floor-to-ceiling glass on all sides. The structure, glass framing, perforated metal ceiling, overhead shading devices, and interior elements are all white. This

simplicity puts the structural design and details front and center. The modern design is a break from Rice's traditional architecture, and Brochstein Pavilion has become the social hub of the campus.

## **Category 2: New Buildings \$10 Million to \$30 Million**

### **Outstanding Project**

HL 23 - New York, NY

DeSimone Consulting Engineers, contact: Stephen DeSimone

Located in Manhattan's West Chelsea District at the corner of 23rd street and 10th Avenue, the HL23 project creates a new 14-story, 85,000 square foot ultra-luxury residential building. The floor plate of the building, which is smaller at the base than at the top, owes its uniqueness to the existing elevated Exposed Retrofitted Highline Railway, located at the eastern portion of the building lot. A steel plate shear wall (SPSW) is located at the elevator and stair locations, and braced frames have been utilized for the secondary lateral system at the building perimeter.

### **Award Winner**

Airport Traffic Control Tower - Dayton, OH

AECOM, contact: David Kilpatrick

In celebration of the 100th anniversary of flight, AECOM drew architectural and structural inspiration for the design of this new Federal Aviation Administration tower from the Wright brothers' legacy of ambition, discipline and vision. The design goal was to provide an icon for the city of Dayton that exhibited both function and beauty. A diamond patterned tapered steel structure veiled in glass encloses the central core of the tower as it reaches 225-feet above the surround site. The 12-million-dollar tower now stands as a landmark for tourists as well as a tribute to the Wright brothers.

### **Award Winner**

Pasadena Department of Water & Power Building - Pasadena, CA

Brandow & Johnston, Inc, contact: Kim Carvalho

This 31,400 square foot two-story new office building will also serve the City of Pasadena as an Emergency Operations Center. Due to the building being located in a very high seismic zone, a state-of-the-art Buckling Restrained Braced Frame (BRBF) system was utilized as the lateral system. The BRBF system was exposed along these faces and provided a clean and more aesthetically pleasing finished system.

## **Category 3: New Buildings \$30 Million to \$100 Million**

### **Outstanding Project**

Shriners Hospitals for Children - Portland, OR

Catena Consulting Engineers, contact: Gretchen Hall

The Shriners Hospitals for Children™ is a network of 22 hospitals specializing in the care of children with orthopedic conditions, burns, spinal cord injuries, and cleft lip and palate. With an aging facility in Portland, the Shriners expanded the existing hospital on a constrained site that demanded a creative structural solution. The result: a five-story, 73,000 square foot hospital addition that spans 90 feet over an existing four-story parking structure. The concept saved the owner \$20 million in project costs by using Buckling Restrained Braced Frames for seismic resistance, an innovative system that saved in construction over 10% in structural costs.

### **Award Winner**

Irving Convention Center at Las Colinas - Irving, TX

Datum Engineers, Inc., contact: Gregory Diana

The Irving Convention Center is the first of several phases of a new entertainment district. In order to minimize the building footprint to conserve land for other development, as well as to act as a landmark visible from many points in the surrounding area, the architect and owner wanted to utilize a stacked design. In this arrangement, the lighter convention functions—ballrooms, meeting rooms, and food service—were located

on multiple elevated floors above the main convention space. While efficient for land use, this arrangement presents unique engineering challenges due to the long spans and vibration transmission through the floors. Other architectural elements, such as the long cantilevered roof elements and elevated terraces above column-free glass entries, created additional considerations that required carefully-coordinated solutions.

#### **Award Winner**

Gateway Center, Westchester Community College - Valhalla, NY  
Leslie E. Robertson Associates, RLLP, contact Nayan Trivedi

This 70,000 square foot (6,500-sm) project consists of three new buildings. The Gateway, a large and open pavilion serving as a lobby, is flanked by two buildings which house classrooms, offices, an auditorium, student lounge and a cafeteria. The Gateway's unique structural design consists of architecturally exposed, stackable steel "boxes," which are prefabricated and bolted together on site. A steel bridge crosses the Gateway and links the three campus buildings. The site is further distinguished by a 65-foot (20-m) tall steel tower, which is lit at night to serve as a beacon for the campus. This facility received a LEED Gold rating.

#### **Category 4: New Buildings over \$100 Million**

##### **Outstanding Project**

University of California, San Francisco, Ray and Dagmar Dolby Regeneration Medicine - San Francisco, CA  
Forell/Elsesser Engineers Inc, contact: Steve Marusich  
Nabih Youssef & Associates, contact: Michael Gemmill

This new 70,000 square foot facility, located on a steep hillside, houses 25 Principal Investigators and their teams studying tissue development and cell-based approaches to treating disease. The design-build team was challenged to design and construct this serpentine building supported on a triangular space frame, perched on a steep, unstable hill. The structure, which is supported on "Triple" Friction Pendulum isolation bearings capable of translating up to 26 inches, was analyzed using non-linear response history analyses to verify that the superstructure would remain essentially elastic during an MCE event, and to assess the tendency of the structure to uplift at the uphill edge. Through the use of Integrated Project Delivery techniques, the building was completed in the fall of 2010, just two-and-one-half years after the design-build contract was awarded. Forell/Elsesser Engineers was the engineer of record utilizing a design based on the "bridging" concept drawings developed by Nabih Youssef & Associates. The bridging team served as Peer reviewers during the design-build process.

##### **Award Winner**

Arena Stage at the Mead Center for American Theater - Washington, DC  
Fast + Epp, contact: Gerald Epp

Arena Stage involved the upgrade of two heritage theatres and the addition of a new experimental theatre and support spaces under a new roof and timber façade - a catalyst for redevelopment of a derelict Washington, D.C. neighborhood one mile south of the National Mall. Significant acoustic issues in the heritage components were a challenge to resolve while providing aesthetically and functionally excellent new facilities on a tight budget. The 500-foot-long roof is supported on the new concrete 'Cradle' theater; and the 650-foot-long glazed timber façade forms an acoustic barrier around the freestanding heritage theatres.

##### **Award Winner**

Bank of Oklahoma Center (BOK) - Tulsa, OK  
Thornton Tomasetti, contact, Darren Hartman

The anchor of Tulsa's Vision 2025, the city's comprehensive downtown revitalization effort, is the new \$178 million, 18,500-seat Bank of Oklahoma (BOK) Center. The elliptically-shaped, 600,000-square-foot, multi-purpose event facility features lower and upper bowl seating and a premium level composed of 32 suites and club seating, accommodating concerts, hockey, arena football, basketball, and community events. Since its completion in 2008, the BOK Center has become an icon for the City of Tulsa and has helped shape the downtown area. The building is dynamic and exciting, a physical interpretation of the spirit of the people of Tulsa.

## **Category 5: New Bridge and Transportation Structures**

### **Outstanding Project**

Mike O'Callaghan-Pat Tillman Memorial Bridge – Nevada / Arizona  
T.Y. Lin International, contact: David Goodyear

Soaring 890 feet above the Colorado River, the Mike O'Callaghan-Pat Tillman Memorial Bridge is the first concrete-steel-hybrid arch bridge in the United States. The innovative hybrid structure is designed to complement the historic Hoover Dam with the high-performance concrete arch, while limiting the load demands with a modern steel superstructure. The 1,900-foot-long Colorado River crossing is the highest and longest concrete arch bridge in the Western Hemisphere, featuring the world's tallest precast concrete columns of their type. With a 1,060-foot main span, America's newest wonder exemplifies creative achievement and innovation of modern-day structural engineering.

### **Award Winner**

Mexicantown Bagley Street Pedestrian Bridge - Detroit, MI  
HNTB Michigan, Inc., contact: Matt Simon

Detroit's new Mexicantown Pedestrian Bridge is the first cable-stayed bridge in the world designed with a single plane of stays and an eccentrically supported deck system. It is also the first cable-stayed bridge in the USA designed with a curved alignment, a single pylon inclined in both directions supporting a single plane of stays, a single, variable-width steel box girder composite deck system, and tuned mass dampers for both vertical and lateral responses to pedestrian dynamics. It re-integrates a community and operationally and aesthetically enhances the busiest international trade crossing route in North America.

### **Award Winner**

Washington Bypass - Washington, NC  
Flatiron with AECOM of North Carolina, contact Brian Witte

Commissioned by the NCDOT, the Washington Bypass was a design-build project consisting of a 6.8-mile greenfield bypass route around the city of Washington, N.C. on U.S. 17, including a 2.8-mile bridge over the Tar River and surrounding wetlands. To minimize the construction footprint, the Flatiron-United joint venture team developed an innovative top-down construction approach using a now patented overhead Tilting Lead Gantry (TLG). This winning competitive bid resulted in minimal impact to the wetlands and an accelerated construction schedule and has since been recognized with the Federal Highway Administration's Environmental Excellence Award, the Construction Innovation Forum's NOVA Award, the American ARTBA's Globe Award (honorable mention), and the AGC of America's Aon Build America Award.

## **Category 6: International Structures**

### **Outstanding Project**

Bitexco Financial Tower - Ho Chi Minh City, Vietnam  
Leslie E. Robertson Associates, RLLP, contact: Nayan Trivedi

An iconic landmark, the 263m Bitexco Financial Tower provides a model for Vietnam's global emergence through a sophisticated and sustainable structure built with 21st century construction standards. Innovative structural engineering decisions which influenced basement excavation, helipad assemblage, and the outrigger truss design, along with high safety practices onsite, ensured that the project finished before the targeted national celebration. Constructed with locally produced concrete and numerous sustainable features such as LED lighting, the office tower appears as a symbolic beacon towards the future of Vietnam at all hours, with an energy and material saving design considerate of the world of tomorrow.

### **Award Winner**

U.S. Embassy, Beijing  
Skidmore, Owings & Merrill LLP, contact: Peter Lee

The new U.S Embassy in Beijing has redefined the possibilities of embassy design by responding to the strictest of security requirements with elegant, integrated solutions. SOM Structures creatively reorganized

conventional materials and assemblies of architecturally exposed reinforced concrete, structural steel, and blast-resistant glass to create a secure compound that presents an open and welcoming face to the City of Beijing. Through this innovative application of conventional embassy design materials, SOM created an expressive response to difficult design conditions. At 500,000 square feet, the new U.S. Embassy is the second largest non-military compound ever undertaken by the United States government.

#### **Award Winner**

Altra Sede Regione Lombardia - Milan, Italy  
Thornton Tomasetti, Inc., contact Darren Hartman

Thornton Tomasetti provided structural design services for the Lombardy Regional Government's new headquarters complex, known as the Altra Sede Regione Lombardia. A competition to design the new government seat and civic square required entrants to consider a visible symbolic and functional presence in their designs. The final Pei Cobb Freed and Partners design was inspired by the region's interweaving mountain peaks, rivers and valleys and includes general assembly spaces, offices and areas for social interaction. The project includes five nine-story, wave-like buildings, totaling an area of 98,000 square meters, a 43-story tower, three parking levels and a plaza.

### **Category 7: Forensic / Renovation / Retrofit / Rehabilitation Structures**

#### **Outstanding Project**

Warner Drive - Culver City, CA  
Structural Focus, contact: Sara Means

The Warner Drive project involved renovating an existing one-story warehouse to create an upscale venue for parties or production space. A new 110 foot steel truss supports the roof, allowing for the removal of interior columns, and special construction sequencing allowed for truss installation without shoring the roof. In addition, a new one-story parking garage was built below the existing building, and a two-story office space was added to the front of the warehouse. The exposed truss and exposed wood framing create a functional and architecturally inspiring space, giving new life to a once forgotten building.

#### **Award Winner**

The Carquinez Senior Apartments - Richmond, CA  
Tipping Mar, contact: Steven B. Tipping

For a low budget of \$1 million, Tipping Mar created a ground-floor retrofit for the Carquinez Senior Apartments that achieved life-safety performance at the DBE hazard and collapse prevention at the MCE hazard. To accomplish this, we applied the insights that we'd gained from our development of the Relative-Strength Method for *ATC 71-1: Guidelines for the Seismic Retrofit of Weak-Story Wood-Framed Buildings*. The retrofit strategy was to toughen the ground story and create base absorption; the ground story would act as a filter designed to absorb most of the seismic energy and protect the upper floors. The analysis shows that the scheme significantly reduces the tendency for the building to twist and form a weak-story collapse mechanism.

#### **Award Winner**

Pier Stabilization and Partial Demolition - Chester, PA  
William J. Castle & Associates, contact William Castle

In 2009 W.J. Castle, P.E. & Associates, P.C. provided the engineering and construction management for the removal of a partially collapsed section of dock measuring approximately 150' x 80', located in Chester, Pennsylvania. Due to shifting of the structure and severe deterioration of the piles, the pier had to be stabilized prior to demolition to prevent further damage or possible injury. To accommodate the confined location and limited capacity of the area to be removed, a precision method of removal was utilized for the demolition of the deteriorated concrete and steel section. Demolition was completed by January 2010.

### **Category 8: Other Structures**

#### **Outstanding Project**

Left Coast Lifter - San Francisco Bay, CA  
Liftech Consultants, contact: Michael Jordan

The Left Coast Lifter is a barge-mounted crane designed to erect the major components of the San Francisco-Oakland Bay Bridge self-anchored suspension span. Owned by American Bridge/Fluor Daniel Joint Venture, and fabricated by Shanghai Zhenhua Heavy Industries Co, Ltd., it is the largest barge crane on the West Coast. The boom, or arm, is 25 stories tall and can lift 1700 metric tons, equivalent to approximately one thousand automobiles. The barge is towed by tugboat and adjusted using the barge's computer-controlled positions system. The structure can be folded down onto the barge for transport overseas or within United States waterways.

**Award Winner**

Staring Lake Observatory - Eden Prairie, MN  
Larson Engineering, Inc., contact: Kesh Ramdular

Staring Lake Observatory, located in Eden Prairie, Minnesota, is a truly unique public building. Unassuming by design, this 16 foot by 16 foot "cabin in the woods" structure is an atypical public observatory and blends beautifully into its wooded lakeshore setting. Most telescope observatories have a track-supported sliding roof or dome-with-sliding-window through which a telescope is aimed at the sky. Staring Lake Observatory has two rustic, wood-sided walls that swing open and a green, metal rotating roof that allows an unobstructed view of the sky, showcasing one of the largest reflecting telescopes in Minnesota.

**Award Winner**

Cai Guo-Qiang: I Want to Believe Exhibit, Inopportune: Stage One - New York, NY  
Gilsanz Murray Steficek, contact: Jessica Mandrick

The Cai Guo-Qiang: I Want to Believe exhibition in New York's landmark Guggenheim Museum was a site-specific installation, designed by the artist. *The I Want to Believe Exhibit*, Cai's largest installation to date, presented cars suspended in the void of the central atrium of the Frank Lloyd Wright rotunda. GMS provided structural engineering for all facets of the installation: they determined the cable tensions, checked the skylight ribs, analyzed the rotunda floor, and assessed the system for hanging each car – the cables, winches, shackles, etc., and provided reinforcing as needed within each car.

**ABOUT THE NATIONAL COUNCIL OF STRUCTURAL ENGINEERS ASSOCIATIONS**

NCSEA serves to advance the practice of structural engineering and, as the national voice for practicing structural engineers, protect and serve the public's right to safe, sustainable and cost effective buildings, bridges and other structures. Visit our website for more information at [www.NCSEA.com](http://www.NCSEA.com). For more details regarding this press release, please contact Jeanne Vogelzang, Executive Director, NCSEA: 312-649-4600 ext. 201.