

# The Pittsburgh Professional Engineer

**A Newsletter Published by:**

The Pittsburgh Chapter of the  
Pennsylvania Society of Professional Engineers

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**Pittsburgh Chapter**

Pennsylvania Society of Professional Engineers

November 2014

## President's Message

Our upcoming November 20, 2014, meeting (which starts at 5:00 pm) will feature a presentation on the Fracture Critical Inspection of the Historic St. Johns Suspension Bridge in Portland, Oregon. **Mr. Thomas Howell, P.E., of HDR** will be our presenter of the evening. With no established precedent, numerous access methods and never-before-attempted innovations were used to gain arm's reach access to 100% of the specified bridge components. These included the use of hydraulic lifts of various capacities and configurations, structure climbing, confined space entry, industrial rope access, and the liberal use of winches and cutting/welding equipment to make on-site modifications to the structure. Concepts in field problem-solving and out-of-the-box thinking under real-world conditions are presented as they pertain to the successful performance of complex bridge inspections. Our November Meeting Notice and Sign-Up form can be found on page 8 of this newsletter. I hope you will be able to join us for what will prove to be a great evening!

Mark your calendars for our Annual Engineers Banquet, which will be held on Saturday February 28, 2015, at the Sheraton Pittsburgh at Station Square. We are looking for candidates for the following awards:

- ★ Distinguished Service Award
- ★ Dedicated Service Award
- ★ Young Engineer-of-the-Year Award
- ★ Nominee for PSPE Engineer-of-the-Year Award
- ★ Outstanding Engineering Achievement-for-the-Year Award

Refer to the 'Call for 2015 Award Nominations' article for what is required for each of the awards. Nominations are due by December 1, 2014, so don't delay in getting your nominations to us! Think about your completed projects or an outstanding engineer you work with and nominate them today.

In closing, I would like to wish all of our members and their families a wonderful Thanksgiving. Do not eat too much turkey; of course, I will be one of the many people who do. If you are one of those people who start waiting in line at 3 am on the day after Thanksgiving for that awesome television on sale, I wish you luck on Black Friday.

**Jennifer M. Nolan-Kremm, P.E.**  
**President**

President's Message	1
Request for Sustaining Associates	2
Application for Associate Membership	3
PSPE Sustaining Associate Member Profile	4
Construction of Las Vegas High Roller	5
Call for 2015 PSPE Award Nominations	6-7
APTA Members Urged to Work Together	7
State Officers, Directors, Chairs	7
Presentation of St. Johns Suspension Bridge	8
PSPE-Sponsored Review Courses	9
Chapter Calendar	9

## REQUEST FOR SUSTAINING ASSOCIATES

Becoming a Sustaining Associate in the Pittsburgh Chapter of PSPE provides tools to accomplish corporate objectives and more. Through the financial support of our Chapter Sustaining Associates, the Chapter is able to continue to provide many services to the Pittsburgh engineering community as well as to sponsor some wonderful outreach programs to the students in our area. The intention of these outreach programs is to get and keep students interested in the science- and engineering-related fields in junior and senior high school. These programs include the Engineering Apprenticeship Program, the MATHCOUNTS Program, and participation in several activities at the Carnegie Science Center during National Engineers week.

The Pittsburgh Chapter is proud to offer the following advantages and benefits of becoming a Sustaining Associate in the Pittsburgh Chapter.

### ***SUSTAINING ASSOCIATE MEMBERSHIP ADVANTAGES***

- Member firms may provide an article for the newsletter highlighting their firm's projects, individual accomplishments, services, products, or technical capabilities. The newsletter circulation reaches 300+ engineers, managers, and company officials and is published on the Chapter web site.
- Member firms may advertise positions available within their firm in the newsletter and on the web site free-of-charge.
- Member firms may be listed on the Pittsburgh Chapter, PSPE's Internet Web Site, free-of-charge. A link to the company's web site can be included.
- Member firms that employ personnel preparing for the Principles and Practice of Engineering (PE) and Fundamentals of Engineering (FE) Examinations are entitled to a 20% discount on the Chapter's review courses for the exams.
- Representative(s) of member firms are permitted to attend regular Chapter Business Meetings and are invited to the Chapter Meetings. Our Chapter presently offers a minimum of four (4) meetings with one (1) qualified PDH for continuing education requirements to maintain a Pennsylvania PE license.
- Member firms will be recognized as Sustaining Associates in our PSPE Newsletters and at the Annual Engineer's Week Banquet held in February.

The following is a list of Sustaining Associates who are paid up through December 2014:

D & D Engineering	The Gateway Engineers
GAI Consultants, Inc.	Trumbull Corporation
HDR Engineering, Inc.	SAI Consulting Engineers, Inc.
Michael Baker Jr., Inc.	

To become a Sustaining Associate (or to pay your 2015 dues), please complete and return the "Application for Associate Membership," which is on page 3.

Once your application and \$350 check are received, your firm will become a Sustaining Associate, paid through December 2015.



Pennsylvania Society of Professional Engineers

Pittsburgh Chapter

<http://www.PittsburghPE.Org>

Email: [PSPE@PittsburghPE.Org](mailto:PSPE@PittsburghPE.Org)

Application for Associate Membership in  
The Pennsylvania Society of Professional Engineers - Pittsburgh Chapter

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone Number ( ) \_\_\_\_\_ Fax Number ( ) \_\_\_\_\_

Individual Name/  
Contact Person \_\_\_\_\_

Contact Phone # \_\_\_\_\_

Position or Title \_\_\_\_\_

Email Address \_\_\_\_\_

Firm Website \_\_\_\_\_

Firm Description \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

**THANK YOU!**

Please enclose check for \$350, payable to "PSPE, Pittsburgh Chapter"

Please print, complete, and return form and check to:

Pennsylvania Society of Professional Engineers, Pittsburgh Chapter

337 Fourth Avenue, Pittsburgh, PA 15222

Questions: Call 412.391.0615 or email us at [PSPE@PittsburghPE.Org](mailto:PSPE@PittsburghPE.Org)

# PSPE Sustaining Associate Member Profile

**Trumbull Corporation**, one of three entities within a closely held family of companies, is recognized as a leader in bridge and highway construction. Since its inception in 1955, Trumbull has provided their clients with the highest level of expertise and unsurpassed commitment to quality in general contracting and construction management services.



As a major contributor to the local Pittsburgh and regional construction market, Trumbull has managed over \$2 billion of quality services to both government and private clients. Headquartered in Pittsburgh, Pennsylvania, Trumbull operates regional offices in Harrisburg, Pennsylvania, and project control centers wherever they have large construction projects. Trumbull routinely bids and performs work in Pennsylvania, West Virginia, Ohio, Maryland, Virginia, New York, and Washington D.C.

## Trumbull's expertise spans these types of projects:

- Roads and Highway Construction
- Excavation, Earthwork, Retention, and Drainage
- Commercial Development Site Work
- Dams and Locks Construction and Rehabilitation
- Bridges, Tunnels, and Heavy Civil Structures
- Airport Infrastructure
- Rail Infrastructure
- Industrial, Natural Gas, and Oil
- Pavement Improvement and Rehabilitation
- Construction Inspection and Management Services
- Design-Build Services



**Corporate Culture.** The cornerstone of Trumbull's business philosophy is partnership. They encourage partnering among their family of companies as well as with subcontractors, suppliers, and clients. By putting partnership into action, Trumbull has been able to build effective management teams, deliver quality results, and ensure customer satisfaction.

[www.trumbullcorp.com](http://www.trumbullcorp.com)



Figure 1: High Roller Observation Wheel

# CONSTRUCTION OF THE LAS VEGAS HIGH ROLLER

In the April 2012 edition of "The Pittsburgh Professional Engineer" we presented an article detailing the inception of G.W.G. Ferris & Company, Inspecting Engineers, a Pittsburgh firm specializing in the testing and inspection of metals for railroads started by George Washington Gale Ferris, Jr.

Ferris was a structural engineer by trade who was known for his work on some of the largest bridge projects of the day. In preparation for the 1893 "Chicago World's Fair," directors challenged American engineers to conceive a monument that would surpass the Eiffel Tower, built for the "Paris World's Fair" in 1889. During a banquet in 1891, Ferris scribbled a design on a napkin for a 250-ft rotating wheel that has come to be known today as the "Ferris Wheel." Planners initially contended that the design could not possibly be safe; however, after persistent efforts, Ferris convinced the committee to allow construction of this inimitable structure at a cost of \$400,000.00. Adjusted for inflation, Ferris's wheel would cost roughly \$10.2 million today. The construction costs of Ferris's original wheel likely wouldn't cover the design costs of the "High Roller Observation Wheel" recently constructed by the American Bridge Company (Coraopolis, Pennsylvania) as part of the \$500 million Linq Development project commissioned by Caesars Entertainment along the world-famous Strip in Las Vegas, Nevada.



Figure 2: George Ferris's Original Wheel



**Mr. Dan Schwarz, P.E., of American Bridge (AB)** gave an inspiring presentation on the construction of the wheel, which kept all in attendance at the September 25 PSPE Dinner Meeting cooing and aahing with the change of each slide. There is not enough room in this newsletter to do this presentation justice or to detail the project's impressive stats; therefore, I can only attempt to pique your interest for personal enquiry and leave you with direction on where to find additional information.

At 550 ft, the "High Roller" is currently the world's largest observation wheel, and the technologies employed in its design improve upon the concepts that George Ferris popularized over a century ago. Designed by consulting engineers ARUP of San Francisco, California, the wheel has a diameter of 470 ft carrying 28 cabins that can hold 40 people each and is supported by 112 3-inch locked coil cables attached to a hub that rotates about a fixed spindle on spherical roller bearings, which allows the wheel to rotate with precision speed at 1 foot per second. Mr. Schwarz detailed the yearlong construction of the "High Roller," providing a contractor's insight into the planning and coordination required to meet the demanding requirements of the complex design.



- American Bridge's contract included fabrication and erection of structural steel, forgings, locked coil cabling, spherical bearings, tuned mass dampers and erection of the cabins.
- Structural Steel fabricated by ZPMC, Shanghai, PRC.
- Forgings provided by Japan Steel Works, Muroran, Japan.
- Tuned Mass Dampers provided by Gerb Vibration Control, Berlin, Germany.
- Bearings provided by SKF, Gothenberg, Sweden.
- Cables provided by Redaelli Tecna, Milan, Italy under contract with Freyssinet USA, Sterling, VA.
- Cabins provided by Leitner Poma of America, Grand Junction, CO, under separate contract with Caesars.

American Bridge erected the brace leg in one morning, completing the process before coffee break. Ranging in diameter from 5.5 ft to 9.2 ft, the 6-piece leg sections were preassembled on the ground, hoisted into place, and affixed to a foundation comprised of 28 3-inch-diameter anchor bolts and a shear key. Two levels of false work bracing trusses (designed by AB) were used to construct the "High Roller" support legs while each section, ranging in weight from 43 to 105 tons, was pieced together. To support the pick weights, AB utilized a Manitowoc LR 1750, 750-ton crawler crane assisted by a Manitowoc M2250 crane with a 200-ft main boom and 160-ft luffing jib.

Due to the tremendous weight of the fixed spindle hub assemblies and crane capacity limitations, AB designed a transfer truss that allowed for the positioning of the west assembly after it was landed adjacent to the eastern support legs. The west and east hubs, spindle, and bearings were assembled on the ground and erected as a unit. With an inner bore diameter of 5.25 ft, outer bore diameter of 7.55 ft, and weight of 19,172 lbs, these are the largest spherical roller bearings SKF has ever manufactured. The 28 rim sections (weighing 46 tons each), radial struts, and cables were erected at the 6 o'clock position utilizing a chainfall platform (50 MT chainfalls) hanging from the hub. A tower-mounted hydraulic rotating mechanism (HRM) with adjustable tension guy cables was used to turn the unbalanced wheel during erection. Once the cables were tensioned, wheel trued, and geometry verified, the cabins were connected in a specified pattern to maintain wheel balance. Finally, the finishing touches were put on the wheel.

For more information regarding the construction of the "High Roller Observation Wheel" and to view the PowerPoint presentation put together by American Bridge, please visit the PSPE website at <http://www.pittsburghpe.org>.

# Pittsburgh Chapter, PSPE – Call for 2015 Award Nominations

Each February, the Pittsburgh Chapter, PSPE holds a banquet to honor outstanding individuals, engineers, and engineering projects in the Pittsburgh area. The next banquet will be held on Saturday, February 28, 2015, at the Sheraton Station Square. Up to seven different awards may be presented each year. The Awards Committee is requesting nominations for the five awards listed below. Award requirements are shown.

**All nominations are due by December 1, 2014.** Please include a description of the nominee and a brief write-up of why they are worthy of the award. The Awards Committee will make all final decisions on what awards will be presented and the recipients.

Please submit nominations to the following email address: [joseph.garlicki@stvinc.com](mailto:joseph.garlicki@stvinc.com).

For any questions, please contact Joseph Garlicki at the above email address or by phone at 412.880.5322.

Thank you for your participation. We encourage all members to be and stay actively involved with PSPE at the Chapter level and higher levels. You may be the next person winning one of these awards!

## ***Distinguished Service Award***

- Recognizes an individual for outstanding contributions toward the improvement of the social, economic, and professional status of the Professional Engineer.
- It is not necessary that the recipient be an engineer.

## ***Dedicated Service Award***

- Recognizes continuous years of active participation in, service to, and support of the Pittsburgh Chapter, PSPE, NSPE, and the engineering profession.

## ***Young Engineer-of-the-Year Award***

- Identifies and recognizes an outstanding engineer no older than 35 by January 1, 2016.
- The evaluation criteria include collegiate achievements, professional and technical society activities, engineering experience, publications/patents, major engineering project achievements, and additional activities such as civic, fraternal, or humanitarian endeavors.

## ***Nominee for PSPE State Engineer-of-the-Year Award***

- Nominee for the annual state award recognizing continuous years of active participation in, service to, and support of the Pittsburgh Chapter, PSPE, NSPE, and the engineering profession.
- Recognizes an outstanding, distinguished engineer not necessarily only for his/her work for, or in, PSPE but for his/her overall activities and achievements including occupational and professional achievements, civic, political, engineering affairs, and education.

## ***Outstanding Engineering Achievement-of-the-Year Award***

- Recognizes an outstanding engineering project in the Pittsburgh area.
- Project must be completed or substantially completed during the preceding year. *(cont'd on page 7)*

## Call for 2015 Award Nominations (cont'd)

Nominations will not be taken for the Lawrence W. Hornfeck Award and the Silvio Lorenzi President's Gold Star Award. The Hornfeck Award recognizes exceptional contributions to the Chapter during the preceding year. The recipient will be chosen by the Awards Committee and will not be announced until the evening of the banquet. The Gold Star Award recognizes someone who, in fulfilling his/her duties to the Chapter, extended outstanding support to the President. The current Chapter President always chooses the recipient.

Current Awards Committee (consists of the previous five Hornfeck Award winners):

- ◆ Joseph Garlicki – Chair
- ◆ Kirk Thompson
- ◆ Virginia Dailey
- ◆ Thomas Schwartzmier
- ◆ Reyman Branting

## APTA Members Urged To Work Together On Funding Issues

The **Engineering News Record** (10/22/2014, Houston) reports that members of the American Public Transportation Association “are warning of the increasingly dire consequences ahead for U.S. infrastructure without action on long-term federal reauthorization funding.” The group points out that public transit has seen its highest ridership in 57 years, while noting that the FTA “awarded a record \$15.7 billion for over 2,000 grants in FY 2014, acting administrator **Therese W. McMillan** said at APTA’s annual conference in Houston this month.” The article states that the funding situation is “so critical” that Transportation Secretary Anthony Foxx called on members to work beyond their own interests because short-term fixes are not working. “Now is the time to see this constellation of stakeholders come together to argue for transportation,” he said, adding, “Can we rally around a common group of solutions?”

2014–2015 Chapter Officers	
President – Jennifer Nolan-Kremm, P.E.	Executive Secretary – Kirk Thompson, P.E.
President-Elect – James Lombardi, P.E.	Treasurer – John Broschious, P.E.
Vice President – Jason Esser, P.E.	Financial Secretary – Reyman Branting, P.E.
State Director – Dave Briskey, P.E.	Immediate Past President – Gary Chodkowski, P.E.
2014–2018 Chapter Directors	
Matthew Kusic, P.E. – 2013-2015	Ed Telega, P.E. – 2015-2017
Kevin Spangler, P.E. – 2014-2016	
Chapter Committee Chairs	
Refresher Course – Matthew Kusic, P.E.	Sustaining Associates – Jennifer Nolan-Kremm, P.E.
Young Members – Jason Esser, P.E.	Web Site Coordinator – Jason Esser, P.E.
Newsletter – James Lombardi, P.E.	MATHCOUNTS Coordinator – Virginia Dailey, P.E.
Archive – John Broschious, P.E.	CLC – Kevin Spangler, P.E./Gary Chodkowski, P.E.
Apprenticeship – Reyman Branting, P.E./Dave Briskey, P.E.	



**PITTSBURGH CHAPTER  
PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS**

Invites all current and prospective members to the  
**Thursday, November 20, 2014, Meeting**

**Fracture Critical Inspection of the Historic St. Johns Suspension Bridge**

*(Seminar attendance qualifies as 1.0 PDH)*

*At the Engineers Society of Western Pennsylvania Building  
337 Fourth Avenue, Pittsburgh, PA 15222*



On Thursday, November 20, 2014, the Pittsburgh Chapter PSPE will proudly sponsor a presentation on the topic of the 2014 Fracture Critical Inspection of the Historic St. Johns Suspension Bridge in Portland, Oregon. The presenter will be **Mr. Thomas Howell, P.E., of HDR**. With no established precedent, numerous access methods and never-before-attempted innovations were used to gain arm's reach access to 100% of the specified bridge components. These included the use of hydraulic lifts of various capacities and configurations, structure climbing, confined space entry, industrial rope access, and liberal use of winches and cutting/welding equipment to make onsite modifications to the structure. Concepts in field problem solving and out-of-the-box thinking under real-world conditions are presented as they pertain to successful performance of complex bridge inspections.

**Cocktails – 6:00 PM Social (Cash Bar)**

**Dinner – 6:30 PM**

**Presentation by Mr. Thomas Howell, P.E. – 7:30 PM**

Dinner Choice: Choose one of the following (if more than one attendee, indicate the number of each choice):

- Tenderloin of Beef Medallions**, with Spinach and Mushroom Duxelle and White Sharp Cheddar Cheese
- Chicken Florentine**, with Prosciutto Ham, Spinach and Melted Swiss Cheese
- Virginia Spots**, Broiled English Style, with Lemon Butter Sauce

You may make your reservation by completing the form below and mailing or faxing it to Dave Teorsky, ESWP. You may also phone in your information to ESWP. If you choose to make your reservation via email, do not email your credit card information. Payment may be made by calling in your credit card information, faxing this completed form, or mailing this form with credit card information or enclosing a check.

**Phone: 412.391.0615**

**Fax: 412.261.1606**

**Email: [d.teorsky@eswp.com](mailto:d.teorsky@eswp.com)**

U.S. Mail: Pittsburgh Chapter PSPE, 337 Fourth Avenue, Pittsburgh, PA 15222

Name: \_\_\_\_\_ Phone/Email: \_\_\_\_\_

Name: \_\_\_\_\_ Phone/Email: \_\_\_\_\_

**Reservations, including payment, must be received by Monday, November 17, 2014. Cost per attendee is \$35.00 for PSPE Members and \$40.00 for Non-Members.**

Payment Options:

Credit Card:  MASTERCARD  VISA  AMEX

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_ CVV Code \_\_\_\_\_

Name (as it appears on credit card): \_\_\_\_\_

Billing Address: \_\_\_\_\_

Check enclosed payable to "Pittsburgh Chapter PSPE" and mailed to 337 Fourth Avenue address.

*Cancellations must be received three (3) days prior to the event.*



# PSPE-Sponsored FE/EIT and PE Review Courses

Each spring and fall, the Pittsburgh Chapter of the Pennsylvania Society of Professional Engineers sponsors review courses for the FE/EIT and PE (civil concentration) exams. The courses meet once a week for 10 weeks and provide a total of 30 hours of instruction. Topics covered include structural engineering, geotechnical engineering, highway design, traffic engineering, construction management, and environmental engineering. The FE/EIT course covers mathematics, engineering economics, circuits, chemistry, strength of materials, fluid mechanics, statics and dynamics, and thermodynamics.

A three-week Civil Engineering Mini Prep course is also offered. The mini prep is geared toward individuals who have passed the FE/EIT and would like to brush-up on certain subjects that will appear on the PE exam. These topics include mathematics, physics, statistics, strength of materials, engineering economics, and engineering ethics.

Tuition for the Review Course is \$505, and tuition for the Mini Prep is \$205. Please visit the Pittsburgh Chapter's website (<http://www.pittsburghpe.org>) for more information and how to sign up for upcoming courses.



*Pittsburgh Chapter PSPE – <http://www.PittsburghPE.Org>*

## 2014-2015 CALENDAR

### MEMBERSHIP EVENTS & MEETINGS

Date	Time	Description	Location
November 20, 2014	5:00 pm	Board of Directors Meeting and Chapter Meeting	ESWP
December 11, 2014	5:00 pm	Board of Directors Meeting	ESWP
January 8, 2015	5:00 pm	Board of Directors Meetings	ESWP
February 12, 2015	5:00 pm	Board of Directors Meetings	ESWP
<b>February 14, 2015</b>	<b>8:00 am</b>	<b>MATHCOUNTS Competition</b>	<b>A.W. Beattie Career Center</b>
<b>February 28, 2015</b>	<b>6:00 pm</b>	<b>Engineer's Week Banquet</b>	<b>Sheraton Station Square</b>
March 19, 2015	5:00 pm	Board of Directors Meetings	ESWP
April 2015	6:00 pm	Joint Meeting with Beaver Chapter	TBD
May 2015	6:00 pm	Meeting Presentation	TBD
June 18, 2015	6:00 pm	Induction of Officers	ESWP

**All Board of Directors Meetings are to be held at 5:00 pm at the ESWP Building pending further notice.**