



# Valley Engineer Newsletter

March, 2016

## UPCOMING PROGRAMS

- April 7, 2016, Hoover Mason Trestle tour, Bethlehem, PA
- May 10, 2016, Installation of Officers and Scholarship Awards, DeSales University
- June 1, 2016, IronPigs baseball game.
- September 21-24, 2016, PSPE Conference, DoubleTree by Hilton Philadelphia – Valley Forge, 301 W. Dekalb Pike, King of Prussia, PA 19406



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**LEHIGH VALLEY CHAPTER**  
(ORGANIZED 1935)

CARBON, LEHIGH, MONROE, & NORTHAMPTON COUNTIES

## PRESIDENT'S MESSAGE

Alfred Gruenke, PE  
March, 2016

The week of February 21<sup>st</sup>-27<sup>th</sup> was Engineer's Week. Founded by the National Society of Professional Engineers in 1951, it is dedicated to ensuring a diverse and well-educated future engineering workforce by increasing understanding of and interest in engineering and technology careers. The local celebration is sponsored by the Lehigh Valley Engineering Council, an umbrella organization encompassing the various engineering organizations in the Lehigh Valley.

The culmination of the week's activities was the banquet, held on Friday, February 26<sup>th</sup>, at the Breiningsville Holiday Inn. The venue, and the program, was a tribute to engineers everywhere.

Chairman Robert Peruzzi was not able to attend due to personal issues. He was ably replaced by David Toler, Co-Engineer of the Year in 2013. The main speaker was Andrei G. Jablokow, PhD. His topic was "Think Like an Engineer, Speak Like a Leader," a very appropriate subject. Engineers concentrate on the technical, but we also have to inspire and motivate our project team. Their cooperation can lead to success, or failure, of a project.

Our Chapter, as always, was a major contributor to this event. We were a Gold Sponsor, plus we awarded the Young Engineer of the Year to Matthew Kawczenski, PE, SE; and Engineer of the year to Kevin Campbell, PE, LEED AP. Their bio are on our website, <http://www.lvpspe.org/page-1804225>. We congratulate both gentlemen on their achievements, and wish both continual success in the future.



YEYO Recipient Matthew Kawczenski, PE, SE



EOY Recipient Kevin Campbell, PE, (center) with last year's EOY Jason Coleman, PE, and LVPSPE President Alfred Gruenke, PE

Our Scholarship and MATHCOUNTS® fund has exceeded last year's contribution by a few hundred dollars, in spite us having lost a major contributor. But we were able to obtain a couple

of new contributors, which more than made up for this loss. Our thanks to all who stepped up!

Our Chapter received a proclamation from Governor Tom Wolf for Engineer's Week. There was some discussion of this at our monthly Director's meeting. In deference to the Governor's Office, there was only limited mention of the Governor's attempt to raise the state sales tax to 6.6%, and include professional design services. It should be noted that the engineering tax is a perennial issue in order to increase revenue. See <http://www.nspe.org/resources/issues-and-advocacy/voter-voice-legislative-action-center?vvsrc=%2fcampaigns%2f40586%2frespon>. But we do appreciate the sentiments.

We received a very nice letter from Larry Wiersch at Cetronia Ambulance Corps., thanking the Chapter for our donation. We toured the facility in December, and everyone was impressed!

Alex Dezubay has over twenty applicants for our scholarship. As usual, AI has done an excellent job contacting the various high schools in the area. For the future, AI is asking for help from the membership with the paperwork involved contacting the schools and sorting out the applications. Anyone may contact me at [agruenke@rcn.com](mailto:agruenke@rcn.com), or AI directly, at [adezubay@rcn.com](mailto:adezubay@rcn.com).

As we approach the end of our year with the installation of officers and award the scholarships at our May banquet, we can look back at a good year with expectations of even better years ahead.

Thank you for your support.

-----  
 The most pathetic person in the world is someone who has sight, but has no vision.  
 - Helen Keller

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 It is not enough to have a good mind, the main thing is to use it well.  
 - Rene Descartes

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 For those who do not think, it is best at least to rearrange their prejudices once in a while.  
 - Luther Burbank

## MICRO BOOT CAMP

Twenty-some members and guests attended a Chapter-sponsored Micro Boot Camp, held on March 17<sup>th</sup> at DeSales University. There were two PDH presentations with a buffet meal between.

There were quite a few attendees from the Bucks County Chapter. We welcome them, and thank Nicole Wilson of the Bucks County Chapter, PSPE for distributing our event announcement to that membership.

The first presentation was by Jeff Boerner, assisted by Anthony Lucrezi, and Brian Feldman from the Fab Lab in Bethlehem. They presented their home-built robotic arm, TOBOR the GREAT. TOBOR has been displayed at shows in New York Philadelphia, San Francisco other locales. It consists of a robotic arm and a hand, and follows the hand motions of person's arm and hand. The person wears a glove with various sensors implanted. The motion transmits the motion via a wireless signal using 802.15 protocol.

The arm has a number of Aduino microcontroller modules which control the various servomotors which move the arm and hand. Arduino is an open-source electronics platform based on easy-to-use hardware and software. The modules cost around \$25.00 and are available from various vendors. It is programmed in C++.

Fab Lab offers Aduino programming classes at nominal cost at their Bethlehem South Side location.

The second presentation was by E. J. Kleintop of Tyco/SimplexGrinnell, Allentown, who gave a riveting talk on the fire safety codes and their interpretation.

Code interpretation can depend on local or regional interpretation, conforming to custom and past practice. Architect and project managers often interpret fire codes to reduce the overall cost of a project, sometimes resorting to gadgetry over sound engineering principles.

Further, faulty installation can negate even the best of designs and equipment. Conduit routed so it can fill with water is a common culprit.

E.J. made himself available for more in-depth discussion in the future.

## THE PYRAMIDS OF TEOTIHUACAN

Alfred Gruenke, PE

Mention the word pyramid, and we automatically think of the three large pyramids on the plains of Giza, Egypt. But our continent also has pyramids, located in Teotihuacan on the Plateau of Mexico, approximately 30 miles north-east of Mexico City.

I've been to both, and been awed by both. The Egyptian pyramids were tombs of pharaohs, the Mexican pyramids were temples to the gods. Both have been compared to the array of stars on the belt of the constellation of Orion, and both have artifacts that originated from considerable distances. The former is interesting, and is fodder for ancient astronaut theories as promulgated by various cable TV networks. I'm just fascinated by how they were built so precisely, and why they were built in that shape! I'm not a "New Age"-er, so the so-called "concentration of cosmic forces" is alien to me.

While we know who built the Egyptian pyramids, and have a record of their history, the origin of the Mexican pyramids is shrouded in mystery. Not even the Aztecs knew of their origin. They called it Teotihuacan which means "birthplace of the gods" or "Place of those who have the road of the gods" in Nahuatl, the language of the Aztecs. There have been profound statements by learned individuals over the years, but it's all conjecture. Look up Pyramids of Teotihuacan on Wikipedia and the word "may" is used eight times.

As best as can be determined, this once was a city of over 100,000 people and influenced the area as far away as Guatemala. It lasted from 100 B.C until it was mysteriously abandoned around 700 A.D.

The pyramids of Giza stand alone, with little supporting structures evident. The Mexican pyramids, however, are part of a large, 32 sq. mile urban complex.

Continued on page 15

## **SCHOLARSHIP SPONSORS**

A great way to be involved in the LVPSPE Chapter is to contribute to the **LVPSPE SCHOLARSHIP FUND**. Please Contact the Valley Engineer Editor to sponsor scholarships for the remainder of the calendar year.

If you would like to contribute in any amount – please send your TAX DEDUCTIBLE donation to PA ENGINEERING FUND. Donations should be mailed to:

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Or, you may contribute via the LVPSPE website <http://www.lvpspe.org/Donations>.

Scholarship application is at <http://www.lvpspe.org/Scholarships>. Any questions regarding scholarships can be directed to

Alex Dezubay, PE  
610-597-2007  
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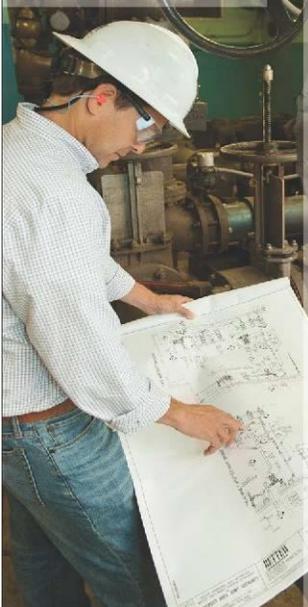
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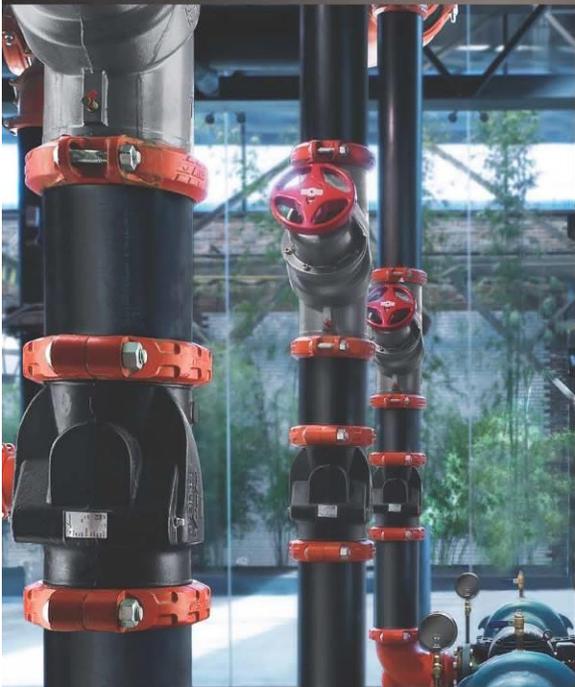
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## Board of Direction Meetings

The monthly Board of Direction meetings are 6:00 PM on the second (2<sup>nd</sup>) Monday of each month. Open to all members; they are held at the office of Barry Isett & Associates, 85 South Route 100, Allentown, PA.

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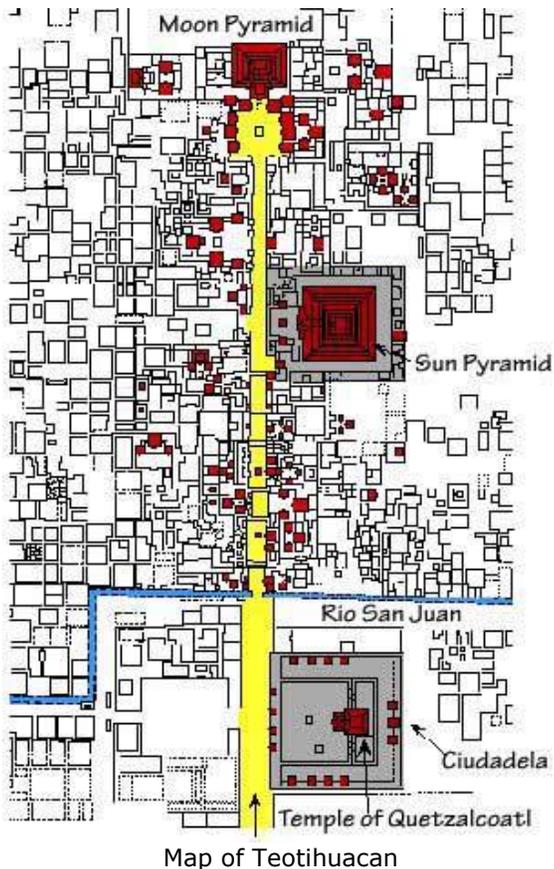
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The main structure, the Pyramid of the Sun occupies the same area as the Pyramid of Cheops, but is only half of the 480.6 ft height of the Egyptian pyramid. It has a volume of 42,000,000 cubic feet, Cheops has a volume of 88,000,000 cu ft.



Pyramid of the Sun

Egyptian pyramids were constructed of either mud bricks or cut stone, with slopes around  $\tan^{-1} 4/\pi = 51.8^\circ$  or  $\tan^{-1} 3/\pi = 43.7^\circ$ . The  $51.8^\circ$  pyramids built from mud bricks were a bit unstable and had a nasty habit of collapsing. History does not record what happened to the builder. The Khufu and Menkaure pyramids of Giza have an angle of  $51.8^\circ$ . The Khafre pyramid has an angle of  $53.2^\circ$ . The Pyramid of the Sun has an angle of  $\tan^{-1} 2/\pi = 32.5^\circ$ . I'll leave it for others to explain this.

There is a major difference in the manner of construction of the pyramids of Giza and Teotihuacan. The Pyramids of Giza are made of cut stone; the pyramids at Teotihuacan are constructed of stones about the size of a football piled into a pyramidal shape. They were held together and finished smooth with mortar. Not taking anything away from Teotihuacan, but hauling blocks of stone weighing tens of tons was probably harder.

There are two pyramids of note at Teotihuacan. The Pyramid of the Sun, and the smaller Pyramid of the Moon a half-mile away. Another pyramid, the Feathered Serpent Pyramid, is some distance away and is considerably smaller. The Pyramid of the Sun has been restored and is easily scaled. The Pyramid of the Moon has not been restored. There is a wide road connecting the two, called Avenue of the Dead. The ruins of numerous dwellings and temples are along the road, many with ornate frescos. Obviously, this was the center of a large urban center. The pattern of the road and buildings have been likened to the structure of a

microchip, but this is stretching the ancient alien theme a bit too far.

Because of the lower angle, one can easily climb to the top of the Pyramid of the Sun. A handrail has been installed to make it easier. Teotihuacan is located about 8,000 ft. above sea level. Unless used to this elevation, it's wise to pace oneself! I took care, but was huffing and puffing after climbing to the top. Then I noticed an old woman that appeared to be at least 105 years old selling beer. She had carried a full case all the way to the top, to sell to tourists! I was embarrassed, and made sure that no one was aware of my discomfort.

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Top of the Pyramid of the Sun; Note the size and shape of the stones.



Avenue of the Dead (street view). Pyramid of the Moon is in the background.



Temple of Quetzalcoatl

The Temple of Quetzalcoatl, the Feathered Serpent, is located a short distance nearby next to a large plain that was supposedly an athletic field. The temple has numerous fierce-looking sculptures that remind me of Tyrannosaurus Rex. I have always wondered the source of such grotesque images. What twisted mind could conjure them up?

Visiting the pyramids of Teotihuacan is a worthwhile experience, whether an archeological buff or not. Take the time, and marvel at the engineering skill required to build them so precisely.

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 During the French Revolution, three men were condemned to the guillotine. One was a preacher, one was a doctor, and the third was an engineer. When the preacher approached the deadly machine, he requested to be beheaded while lying on his back so that he could die while looking into Heaven. The doctor and the engineer thought that to be a good idea and requested the same. As the knife plunged down the track toward the preacher, it suddenly jammed just short of the man's neck. The executioner declared it an Act of God and let the man go free. The same thing happened to the doctor. As the engineer laid his head back in place he suddenly said, "Wait! I see the problem! Look up there where the rope has jumped out of the pulley groove!"

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 If you can't annoy somebody with what you write, I think there's little point in writing.  
 - Kingsley Amis

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 I personally think we developed language because of our deep need to complain.  
 - Lily Tomlin

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 You can lead a man to Congress, but you can't make him think.  
 - Milton Berle

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 I don't think anyone should write their autobiography until after they're dead.  
 - Samuel Goldwyn

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 The Red Sea was parted three times, and I did it twice.  
 - Cecil B. DeMille

Minutes for the March 7, 2016 Board of Directors Meeting  
6:00 pm at the office of Barry Isett & Associates, 85 S. Route 100, Allentown, PA

Attendees: Al Gruenke, Brian Kutz, Chris Williams, Don Kohn, Al Dezubay, Kevin Campbell and Angelika Forndran

- A. Call to Order – Chris Williams called the meeting to order at 6:00 pm.
- B. President – Al Gruenke
- Engineers’ Week was celebrated in late February, ending with the Engineers’ Week Banquet on February 26<sup>th</sup>.
    - i. Engineer of the Year award presented to Kevin Campbell, PE, LEED AP.
    - ii. Young Engineer of the Year award presented to Matthew Kawczenski, PE, SE.
  - We owe \$1,750 to LVEC for registrations through our website.
  - Al recently received the following documents:
    - i. Engineers’ Week proclamation from Governor Wolf
    - ii. Letter from Larry Wiersch at Cetronia Ambulance Corps thanking the Chapter for their donation
    - iii. Donations from Lutron, Rettew, Victaulic and Pennoni
  - Al has raised \$11,665 so far, slightly higher than last year.
  - March 17<sup>th</sup> – Micro Boot Camp set up at DeSales. Notification has been sent to Bucks County chapter as well.
  - April 7<sup>th</sup> – Hoover-Mason Trestle Tour at Bethlehem Steel.
  - May 10<sup>th</sup> (tentative) – Annual LVPSPE banquet and officer installation.
  - June ? – Considering an IronPigs outing on the ‘Party Porch’ with buffet meal. Al will follow up with more information.
- C. MATHCOUNTS – Kevin Campbell
- Kevin will provide final accounting spreadsheet at next meeting. Board will then discuss scholarship amounts, based on MATHCOUNTS expenses and final fundraising numbers.
  - State competition to be held March 19<sup>th</sup>.
- D. Scholarships – Al Dezubay
- Applications were due (postmarked) March 6<sup>th</sup>. Al has received 22 applications from students at 16 different high schools so far.
  - Once all applications are obtained, Al will need to verify information with guidance counselors and obtain transcripts.
  - A recommendation from the Scholarship Committee can be expected at the April meeting.
  - Al is looking for help with paperwork going forward. Brian offered to assist.
- E. Treasurer – no report

- F. State Director – Angelika Forndran
- Next directors’ meeting to be held in June in Harrisburg.
  - Brian may attend the following conference in September.
- G. Past President – Kevin Campbell
- Working on Nominating Committee report. Will discuss at next meeting.
- H. Adjournment at 6:39 pm on a motion by Don, seconded by Chris, all were in favor.

## PE License Plates



<http://pspe.org/store/pe-license-plates/>

PSPE members can order a vanity plate (five characters + PE) for a one-time cost of \$200, or you can receive the “next plate off the line” for \$100.

These plates feature PSPE’s official logo on the left and stacked PE letters on the right. You must be an active or retired Pennsylvania PE to order a plate.

Download an official PennDOT application here and order your PE license plate today!  
<http://pspe.org/wp-content/uploads/2015/09/PSPE-License-Plate-Application-Form.pdf>