



Valley Engineer Newsletter

November – December 2018 & January 2019

Compiled by: Alexa Rooney, EIT, JD

UPCOMING PROGRAMS

- February 22, 2019 at 6:00pm at ArtsQuest SteelStacks – Engineer’s Week Banquet. More information to follow.
- March TBD – Tour of St. Luke’s Anderson Campus
- September 19-20, 2019 at Sands Bethlehem Casino – PSPE Annual Conference



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**LEHIGH VALLEY CHAPTER
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LVPSPE Holiday Party 2018

Alfred Gruenke, PE

Members and guests of the Lehigh Valley Chapter, Pennsylvania Society of Professional Engineers celebrated the 2018 Holiday Season at Kingfish American Bistro and Wine Bar, Bethlehem, PA.

The outstanding buffet and libations, appropriate for the season, culminated a very successful year for our Chapter. We had record attendance at our Annual MATHCOUNTS® contest and scholarship distribution, as well as many PDH events. Service to the engineering community, and to the community at-large.



Order of the Engineer Ring

Vice President Al Dezubay gave the invocation, in which he stated that engineering is an honorable profession, and thanked God for all He has provided to us.

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Angelika Forndran, PE, unveiled an Order of the Engineer ring, the original of which had been lost. It was donated by Greg Wiik of Penn Stainless, Quakertown, PA. The 12" diameter stainless ring is used for Order of the Engineer ceremonies at various college campuses and LVPSPE and PSPE ceremonies. Al Dezubay, PE, volunteered to fabricate a wooden base.

Bernie Bydlon PE of the Pennsylvania Turnpike Commission presented an update of the recently completed highway changes involving the Pennsylvania Turnpike, New Jersey Turnpike, and I-95.

on Scudder Falls Bridge, continuing South to I-195, then East, to continue north on the New Jersey Turnpike which becomes I-95.



This project has been in the planning for a long time. The EIS (Environmental Impact Statement) for the project started in the 1980s. But it was not until around 2005 that the PA Turnpike Commission started construction of Stage 1 to correct this anomaly by building an interchange connecting I-276, the Pennsylvania Turnpike, with I-95, and changing the designation of a number of main highways. This project completed the Interstate System, which was started under Eisenhower Administration back in the 1950s.

The main portion of this project was to build the I-95 to Turnpike interchange. Driving North on I-95 one can now go east onto the Turnpike, now designated I-95, to the New Jersey Turnpike Extension and north on the NJ Turnpike to New York City and New England. The NJ Turnpike Extension and the NJ Turnpike to the north also were re-designated I-95. The original I-95 north of the Turnpike became I-295. The interchange and highway re-designation was inaugurated in September 2018.



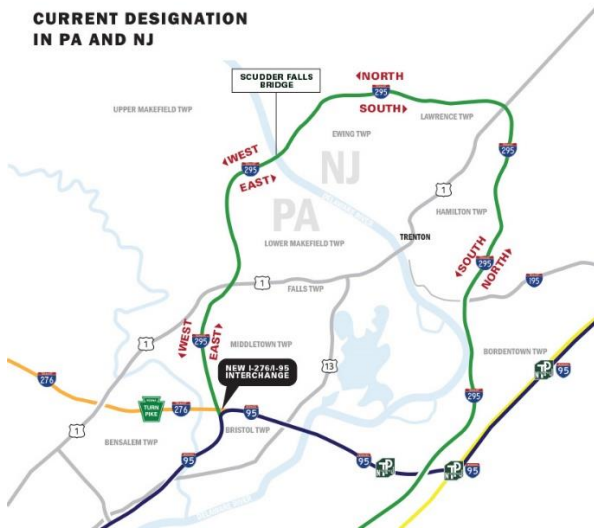
Bernie Bydlon PE of the Pennsylvania Turnpike Commission explaining the proposed interchanges

I-95 is a limited access Interstate highway that runs almost continually from Florida to Maine. The importance of I-95 cannot be over emphasized. I-95 serves 110 million people and facilitates 40 percent of the country's gross domestic product.

The last gap in I-95's route was in the Philadelphia-Southern New Jersey area. The main through routes had been I-295, I-195, and an unsigned portion of the New Jersey Turnpike.

As can be seen in the succeeding map, following I-95 through this area was confusing, at best. I-95 connected to an unsigned portion of the New Jersey Turnpike via I-295 near Wilmington, Delaware where drivers can bypass Philadelphia through South Jersey. Or, one can remain on I-95 onto a circular route, crossing the Delaware

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- Ramp A – I-276 (PA Turnpike) east to I-95 south
- Ramp B – I-276 (PA Turnpike) east to I-295 east (formerly I-95 north)
- Ramp C – I-295 west (former I-95 south) to I-276 (PA turnpike) west
- Ramp D – I-295 west (former I-95 south) to I-276 (PA Turnpike) east
- Ramp E – I-276 (PA Turnpike) west to I-295 east (formally I-95 north)
- Ramp F – I-95 north to I-276 (PA Turnpike) west.

Bernie presented photos of the various interchanges and “fly over” ramps under construction.

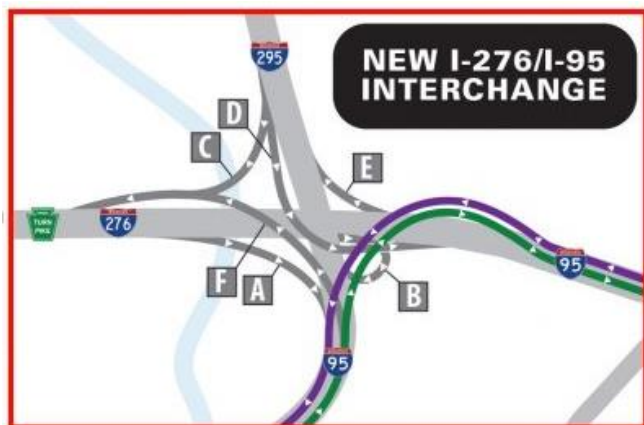
Bernie presented the many problems involved. Since the vast cost overruns of the Big Dig in the Boston area, all projects over \$600 million had to be approved by Washington. This necessitated breaking up the overall project into smaller segments. The Stage 1 portion cost \$425 million. Also, the project had to incorporate the different specifications of these highway systems. For example, PennDOT specifies concrete highways, the PA Turnpike Commission specifies bituminous (macadam) surfaces.

One of Bernie’s tasks was to coordinate over fifty consultants and contractors and over fifteen agencies such as PennDOT, PA Turnpike Commission, and the New Jersey Turnpike Authority. One can only imagine the issues that arose, and the construction management necessary to coordinate all the sometimes conflicting requirements!

The project is not complete; there are still a number of “You can’t get there from here” situations. Stage 2 consists of six ramps that are on the drawing board or under construction to totally inter-connect I-276, I-295, and I-95 in every direction. The estimated cost is \$550 million with 2025 the estimated completion date.

Bernie gave us a peek into the engineering, logistical, and managerial requirements needed for such a monumental project. We thank Bernie for the opportunity.

Show Pride in Your Profession
Eric Tappert, PE



Stage 2 interchanges

A great way to show pride in your profession is with a PE license plate on your car. These attractive plates feature the PSPE logo and allow for a five-character customization followed by the letters PE.

The original idea came from a member of the Lehigh Valley Chapter who was honorably serving as PSPE treasurer, our own Peter Staffeld. Customized plates for members go for a one-time fee of \$200, while getting the “next number off the line” (starting at 4001) is only a one-time fee of \$100.

Continued on page 4

Ordering details and a link to download the official PennDOT application form are at: <https://www.pspe.org/store/pe-license-plates/>.

A truly great way to show your pride in your profession and spread the word about Professional Engineers safeguarding the public health, safety, and welfare. Several of our members have already obtained the plates; see if you can guess who owns these:



National Engineers Week

Alexa Rooney, EIT, JD

Engineer’s Week (EWeek) was founded by NSPE in 1951. It is to foster a diverse and well-educated future engineering workforce. During this week we celebrate how engineers make a difference in our world and provide opportunities for the next generation of engineers to learn what it means for the future. In 2019, EWeek is February 17-23, 2019. Each year there are a wide variety of opportunities in the communities.

This year ASCE is hosting screenings of the film “Dream Big” for local middle school and high school students at ArtsQuest in Bethlehem. All

Screenings will be conducted at 9:00am and 11:00am on February 19-22, 2019.

ASCE is currently seeking volunteers of all disciplines to participate as members of Q&A panels during the screenings. Volunteers are welcome to serve at either or both screenings on any given day. You will need to be present 30 minutes prior to the start of each screening for which you are able to volunteer.

To volunteer contact Steve Ressler at sjressler@gmail.com. Let Steve know which days and screenings times you are willing to support. All help is appreciated and will go a long way to providing our next generation a peek at what their futures can hold within the engineering/STEAM community.



Another annual event during EWeek is the Engineer’s Week Banquet. The 39th Annual Lehigh Valley Engineer’s Week Banquet will be held on February 22, 2019, starting at 6:00pm at ArtsQuest Center at SteelStacks, located at 101 Founders Way, Bethlehem, PA. This year’s banquet is being sponsored by Lehigh Valley Engineering Council.

The Keynote Speaker will be Wayne Barz, Manager, Entrepreneurial Services – Ben Franklin Technology Partners of Northeast PA. He will be presenting “Lessons from 35 Years of New Venture Creation.”

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All Engineers, family & friends are welcome to attend. Registration received by February 8, 2019 is \$35 per attendee or \$20 per student attendee. Registration after this date is \$45 per attendee. Reserve your space now at www.LVPSPE.org/Events.

Sponsorship for the Banquet is also available. Contact David Toler toler-fes@rcn.com with any questions or to sponsorship a table. Table sponsorship levels are:

- Platinum Sponsor: \$1,000 (up to 12 seats)
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- Bronze Sponsor: \$100 (1 seat)

Engineers and the Holiday Season

Alfred Gruenke, PE

As we say a fond goodbye to the Long Night of the Winter Solstice, I wish everyone a wonderful holiday season and a sincere hope that 2019 will be the best year of your life so far!



Engineers have a world-wide reputation for honesty and integrity and these accolades are well deserved. In honesty/ethics polls of various professions engineers have a 70% favorability rating, exceeded only by nurses at 84% and pharmacists at 75%. I like the phrase Al Dezubay uses; "Engineering is an honorable profession," and the general population recognizes us for that. By comparison, the favorability rating of journalists is 33%, lawyers are at 19%. Members of Congress are only 8%, tied with used car salesmen.

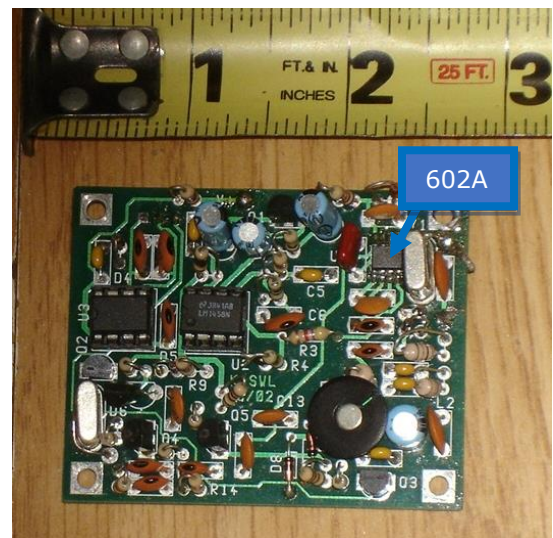
These accolades are well deserved. I think it's fair to say that engineers have been the primary instrument for improving the lives of humans throughout history. We built the pyramids, we

built the machines that went to the moon, and most everything in between. Engineers have even walked on the moon. We have, in fact, electrified the world!



New 7 Wonders of the World

Besides being the builders of civilization engineers are also pretty handy around the house. We know how to create electricity and how it gets to the receptacle, and we know how garbage disposals work and how to fix them when they don't. It is for these reasons that engineers make desirable spouses! In fact, a few of years ago there was a tongue-in-cheek internet article expounding on the virtues of marrying an engineer! It wasn't far from being factual. To take this a short step forward, I can only imagine and be jealous of the exquisite rational bliss of a married engineer couple! Dream On!



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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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Please note “LVPSPE Scholarship Fund” on the comment line.

Or, you may also 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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Board of Direction Meetings

The monthly Board of Direction meetings are 6:00 PM on the second (2nd) Monday of each month. Open to all members; they are held at the office of Liberty Property Trust, 400 Boulder Drive, Suite 200, Breinigsville, PA 18031

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However, all these glowing attributes come crashing down during the Christmas season when we are tasked with repairing strings of conventional Christmas lights! I hate to admit it, but these blankety-blank infernal gadgets will make strong engineers humble, tough ones tumble. I have, in my working careers, repaired all manners of devices, from transformer phase differential relays to variable speed drives to various temperature and pressure transmitters. I once built a 400 milli Watt amateur radio transceiver kit that didn't work. I analyzed the symptoms, made some measurements, and determined that the 602A modulator/demodulator chip was defective. The 602A is about 3/16" x 1/4" and is surface mounted. I bought another one and soldered it in place. I have a magnifying glass with an attached light for this purpose. Troubleshooting and repairing the transceiver gave me a deep sense of accomplishment, and pride in myself and in my profession!



The problem with these lights is that the light bulbs are in series. If one burns out the whole string is dead. Most strings are 50 bulbs, plus often another circuit of 50 bulbs. On a 120 Volt circuit, that's 2.4 Volts across each bulb. When the filament burns out there is 120 Volts across the bulb. Each bulb has a shunt that's supposed to short out, keeping the other bulbs lit. Sometimes this happens. I repeat, sometimes. The leads on the bulbs often corrode, increasing the resistance, reducing the voltage across the burned out bulb so that the shunt does not work. The string stays off, resulting in strong drink and/or strong language and a return to less stressful endeavors.

I've spent a lot of time, used various techniques, to repair strings of lights. My preferred troubleshooting technique is Analytical Trouble Shooting (ATS). Take measurements, analyze the data, figure out the cause and repair. This has failed me miserably! Using an ohm meter is useless. The high resistance of the bulb leads results in very difficult to interpret readings. I tried connecting the lights to 120 VAC and using a voltmeter, being careful not to electrocute myself. Same result. The impedance of the meter is so high that it gives erroneous and misleading voltage readings. I bought an "Electric Field Sensor" to find where in the string the voltage stopped. However, most strings have two (or more) circuits, plus a receptacle at the other end so another string can be plugged in. The 120 volts is carried the full length. The electric field is omnipresent, thus useless.

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There is a device that looks like a pistol that sometimes saves the season. Pull out a bulb, insert the socket into the pistol, and pull the trigger. The gun generates a higher voltage that zaps the corrosion and shorts out any burned out bulbs shunts, rendering the string usable. In my experience this works about 40% of the time, a worthwhile endeavor. If there are two or more points of high resistance, it doesn't work.

In summary, there are only two solutions to save our sanity, if not our pride. If one of the circuits in the string still works, hang it on bushes or trees. With the lights off, the dead circuit is not visible. With the lights on the dead circuit is also not visible! Convincing your spouse that this is acceptable may be more difficult, especially if your spouse not an engineer. The second solution is to quietly throw the whole string away. You may have to stomp on them so you can say, in truth, without a glimmer of mirth or glee, "These lights are irreparable."



In all instances, be ready to accept and ignore attempts at humiliation hurled your way! Be bold, stay strong, keep your head high, and constantly remind yourself that you are a member of an elite group on which humankind depends.

CAUTION: if the problem was a blown fuse in the plug and you never checked, all abuse is well deserved. Hang your head in shame as you walk away, to seek solace among the unlettered multitudes.

LED lights along with an engineering template for raising children and an ATS derived way to mend broken hearts will be analyzed in future articles.

 Back in the thirties we were told we must collectivize the nation because the people were so poor. Now we are told we must collectivize the nation because the people are so rich.

-William F. Buckley, Jr.

 Sometimes when I reflect on all the beer I drink, I feel ashamed! Then I look into the glass and think about the workers in the brewery and all of their hopes and dreams. If I didn't drink this beer, they might be out of work and their dreams would be shattered. I think, "It is better to drink this beer and let their dreams come true than be selfish and worry about my liver!"

-Babe Ruth

 Unless we make Christmas an occasion to share our blessings, all the snow in Alaska won't make it "white".

- Bing Crosby

 Life is short, break the rules. Forgive quickly, kiss SLOWLY. Love truly. Laugh uncontrollably. And never regret ANYTHING that makes you smile. Twenty years from now you will be more disappointed by the things you didn't do than by the things you did. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in you sails. Explore. Dream. Discover.

-Mark Twain





**Lehigh Valley Chapter
Pennsylvania Society of Professional Engineers
Lehigh, Northampton, Monroe and Carbon Counties**

Minutes for the November 12, 2018 BOARD OF DIRECTORS MEETING
6:00 pm at the Office of Liberty Property Trust 400 Boulder Drive, Suite 200,
Breinigsville, PA 18031

Attendees: Mary Rooney, Brian Kutz, Mike Basta, Al Dezubay, Al Gruenke, Frank Walsh and Chris Williams

I. Call to Order: Brian Kutz called the meeting to order at 6:00 PM

II. Programs:

- Activities – Al Dezubay
 - November: Westport Axle
 - Date and time: TBD, probably last week of November.
 - December: Holiday banquet
 - Presentation: PA Turnpike
 - Date and time: December 13th
 - Location: Kingfish American Bistro
 - Food: Family style buffet package, cocktail half-hour with appetizers
 - January: LVPC Transportation Plan Update
 - Date and time: TBD
 - February: Engineer's Week Banquet
 - Presentation: TBD, looking for a speaker/presenter
 - Date and time: February 22nd at 6:00 pm
 - Location: Arts Quest Steel Stacks
 - Chapter will provide use of website for signups and will sponsor a table
 - March: St. Luke's Anderson Campus
 - Date and time: TBD
 - April: Possibly Dorney Park
 - May: LVPSPE Scholarships and Installation of Officers Banquet
 - Date and time: TBD, probably 5/9/19 or 5/16/19
 - Other tour options – Deka Batteries in Lyons, Phoenix Tube in Bethlehem, Weyerbacher Brewery in Easton
- Newsletter – Alexa Rooney
 - Will be sending out tomorrow.
 - Al has article for December newsletter.

III. MATHCOUNTS:

- MATHCOUNTS coordination – Kevin Campbell
 - Date: February 9th (February 10th snow date)
 - Location: Lower Macungie Middle School

IV. Lehigh Valley EOY/YEOY & Scholarships

- Fundraising – Frank Walsh
 - Has reached out to 20 prior donors, received \$1,300 in new donations plus \$1,000 from PPL. Will continue soliciting.
 - Received \$2,300 to date.
 - Sample email and donation request letter available on Google Drive.
- EOY and YEOY awards – Al Gruenke
 - Nomination deadline: January 31st
 - Frank will also be sending requests for nominees with donation letters.
- Scholarships – Al Dezubay
 - Scholarship Committee – Al Dezubay, Chris Williams, Angelika Forndran, and Don Kohn
 - Nomination deadline: Due first Sunday in March
 - Brian can obtain administrative support.
 - Al will be moving on this soon.

V. Treasurer

- Treasurer report – Ray Szczucki
 - We owe \$250 to Cetronia Ambulance
 - Received \$1,000 from PPL
 - P.O. Box is now open

VI. State Director

- State Director report – Kevin Campbell, no report

VII. Past President

- Past President report – Al Gruenke, no report

VIII. New Business

- Mike Basta
 - PSPE is looking for any feedback on how the organization is operating.
 - Bill proposed to require PE/PLS seal on survey drawings.
- Frank Walsh
 - Chapter should set up Google Drive account for coordination of various documents.
- Chris Williams
 - Downloaded current member list from NSPE website.
 - Can cross-reference tour signups list and active member list to make sure non-members are paying correct rate.

IX. Adjournment at 6:56 on a motion by Chris, seconded by Mike