



# Valley Engineer Newsletter

November, 2015

## UPCOMING PROGRAMS

- December 1, 2015, Cetronia Ambulance Corps, Allentown
- December 10, 2015, Holiday Party, Morgan's Restaurant, North Cedar Crest Boulevard, Allentown
- January 5, 2016, Fab Lab 3D Printing, etc., 511 East 3<sup>rd</sup> Street, Bethlehem
- February 6, 2016 (snow date February 7), MATHCOUNTS®, Northeast Middle School, Bethlehem
- February 26, 2016, Lehigh Valley Engineering Council Banquet, Holiday Inn, Breinigsville



**PENNSYLVANIA SOCIETY  
OF  
PROFESSIONAL ENGINEERS**

**LEHIGH VALLEY CHAPTER  
(ORGANIZED 1935)**

## President's Message

Alfred Gruenke, PE

When the goldenrod is yellow,  
And leaves are turning brown –  
Reluctantly the summer goes  
In a cloud of thistledown.  
When squirrels are harvesting  
And birds in flight appear –  
By these autumn signs we know  
Autumn days are here."  
-Beverly Ashour

One of the tasks that await us in the waning months of the year is soliciting for contributions to our Scholarship Fund and MATHCOUNTS. The process has started and the results so far have been heartwarming. The first response by many of the people have been warm and friendly, always a good sign! We gave \$2,000.00 to four graduates last year. I would like to improve on that in 2016.

The first contributions has been received from DME Alliance Inc., for \$250.00.

We have also contacted a couple of new firms for contributions, and again, the preliminary indications have been positive. It always gives me a thrill to be given the opportunity to increase our service to the community. MATHCOUNTS, and our Scholarship Fund, are outstanding endeavors and well worth the effort. I urge all our members to contribute, either as a business or as individuals. Don't stand on the sidelines, get in on the action! Contributions range from \$100.00 from individuals to \$2,000.00 from FLSmidth. For a mere \$100.00 (or more) you can have your name proudly displayed for a whole year in the pages of this Newsletter!

Continued on page 2

Plus, your contribution is tax deductible. So ask yourself this question: Who can make better use of your money: the government, or the Scholarship Fund? If your answer is the former you may need a personal attitude adjustment! I would be pleased to perform this task, for a mere \$100.00 fee.

Make the checks payable to **PA Engineering Fund**, send it to:

**LVPSPE  
P.O. 3441  
Allentown, PA 18106**

Every month we strive to provide interesting tours of industrial facilities in the area. We have had tours of Smooth-On and Eastern Exterior Wall Systems; a tour of Cetronia Ambulance Corps is planned for December 1<sup>st</sup>. If anyone has an idea for an interesting tour, please inform me. If you have a contact that would be great, but if I'm ok with cold calls.

Our Holiday Party is approaching. Last year we had it at the Buckeye Tavern in Macungie and was well received, but fate intervened so we have to change the venue. Instead, we are going to have it on December 10<sup>th</sup> at Morgan's, a fine dining restaurant on Cedar Crest Boulevard about 2.7 miles north of Route 22. It promises to be a fine evening of congeniality with a bit of practicality thrown in. The developer of Hamilton Crossing, Tim Harrison, will give a presentation on that project. So make it a "date", ask your significant other. If they say no, ask another.

See you all on December 10<sup>th</sup>.

-----  
As days get shorter,  
and the weather cools,  
We'd best prepare ourselves,  
Or be seen as fools.  
-Burma Shave  
-----

### **Eastern Exterior Wall Systems**

Set back a bit on the west side of Schoenersville Road in Bethlehem a bit north of Route 22 is an innocuous building with the sign EEWS on its front. It's one of the shops of Eastern Exterior

Wall Systems Inc., a company that proudly states its main product in its name.

There is another EEWS shop on William Penn Highway in Easton.

Around a dozen or so members and guests of the Lehigh Valley Chapter, Pennsylvania Society of Professional Engineers toured this location of EEWS guided by Plant Manager Donald Turissini, along with Ken Loush, PE, and Barry Check, PE.

The company is family owned, has been in existence for over 80 years, and at this location since 1982. As its name implies, EEWS manufactures pre-fabricated exterior walls. The contractor merely lifts the wall sections off the truck with a crane and sets them in place.

The walls can be almost any size that can be safely shipped, though the maximum size is around 15' x 40'. Most of the walls are panels, though the company recently moved into load bearing walls. They weigh up to 15,000 pounds.

Everything Eastern builds is as per customer's specifications.

Donald explained the process. Start with a frame, which consists of light gage galvanized steel. On top of that is a layer of cementous material and a layer of insulation. The final exposed surface can be anything the customer requires, from aluminum composite (two layers of aluminum with a layer of plastic between), to stucco or veneers of granite, or brick, or other. The veneer is around 5/8" to 3/4" thick. They are set in place similar to setting bathroom tiles. Mounting clips and other attachment devices are as per customer specifications. The addition of windows are a recent innovation. Again, the windows and doors are per customer's specifications

The choice for using prefabricated panels are many, though the obvious reason is reduced construction cost because the prefab panels arrive on site fully assembled. No carpenters or ironworkers to assemble the frame, bricklayers to lay brick, or other crafts. The saving in time and labor can be substantial.

Continued on page 3

The Schoenersville Road facility presently employs thirty people, soon to increase to forty. Five engineers are located at the main office at Two City Center in Allentown.

Structures in New York City are a major market, which presents a shipping problem. One can't ship large sections through the tunnels or the bridges without special permits, which often specify transporting them during off-peak traffic times such as 1:00 AM. Panels are often shipped to New Jersey and stored there until such time that the authorities allow.



Plant Manager Donald Turissini explaining the installation of the veneer.



A completed wall segment ready for shipment.

EEWS panels were widely used in the construction of many of the recent Allentown Center City buildings, including Two City Center, Renaissance Hotel, and the PPL Arena. Other area installations are Lehigh County Courthouse, Lehigh Valley Health Network in Bethlehem, and Mohegan Sun at Pocono Downs in Wilkes Barre, among others. Projects in New York are too numerous to mention but include Fordham University, Bronx; East River Plaza in East Harlem; and the Court Street Regal Theatre Complex in Brooklyn.

Eastern Exterior Wall Systems is a small local company with a wide area of impact. We thank Donald Turissini, Ken Loush, PE, and Barry Check, PE for a fine tour of this influential company.

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### The Allegheny Portal Railroad

Alfred Gruenke, PE

While researching material for the article in the October Valley Engineer on Horseshoe Curve, I ran across an interesting tidbit of historical trivia, the Allegheny Portal Railroad. I was somewhat aware of the APRR, but certainly not in any detail. The more I read the more I was determined to learn more. In the words of Winston Churchill, "This is a situation with which I cannot put." So we gassed up the Lexus, kicked the tires, put the E-ZPass on the dash and headed for the High Country, the Allegheny Portage Railroad National Historic Site operated by the National Park Service about ten miles West of Altoona.

I was able to convince the Park Ranger that both Joanie and I had lifetime Senior National Parks and Federal Recreation Lands Passes, so we didn't have to pay the \$5.00 fee.

In the late 1820s the Pennsylvania General Assembly, with the urging of Philadelphia businessmen interests, authorized to provide a path to open the region west of the Allegheny Mountains to commerce. It was in response to the construction of the Erie Canal in the early 1820s,

Continued on page 17

## **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:

LVPSPE  
P.O. Box 3441  
Allentown, PA 18106

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

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  
[Scholarship@LVPSPE.org](mailto:Scholarship@LVPSPE.org)

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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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Burma Shave



and the fear that Philadelphia would be supplanted by New York as the commerce center of the new country. The system would also open access to the coal regions of Pennsylvania which provided clean-burning anthracite coal to eastern cities. Construction started in 1831, and was completed three years later.

It consisted of five segments:

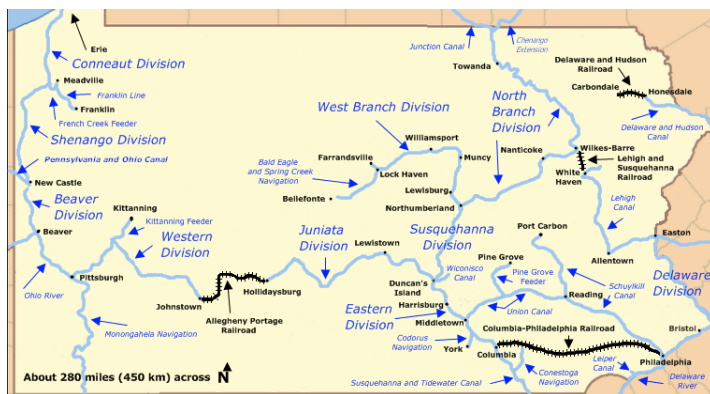
Philadelphia and Columbia Railroad: 82 miles from Philadelphia to Columbia, on the Susquehanna River.

Eastern Division Canal: 43 miles from Columbia to Duncan's Island at the mouth of the Juniata River.

Juniata Division Canal: 127 miles from Duncan's Island to Holidaysburg.

Allegheny Portage Railroad: 36 miles from Holidaysburg to Johnstown, across the Allegheny Ridge.

Western Division Canal: 103 miles from Johnstown to the terminus in Pittsburgh.



Pennsylvania's canal system.

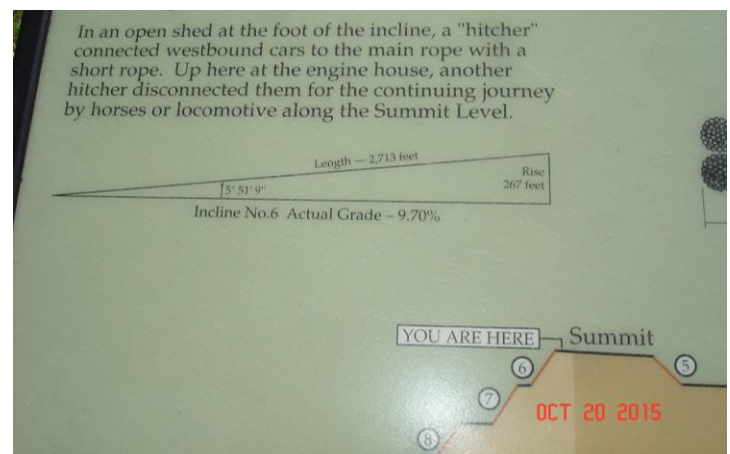
The system was an engineering marvel, exceeded even the achievements of the Erie Canal. There was a 1,140 foot aqueduct that crossed the Allegheny River just above Pittsburgh. The country's first railroad tunnel, the Staple Bend Tunnel near Johnstown, through 900 feet of solid rock. A second tunnel of over 800 feet went under Grant's Hill in Pittsburgh and linked with the Monongahela River. It featured an 817 foot tunnel at Tunneltown and a masonry aqueduct

over the Conemaugh between Tunneltown and Livermore.

There were 168 locks. Elevation went from near sea level in Philadelphia to 2,430 feet on Cresson Mountain to 720 feet in Pittsburgh. The canals and portage reduced travel time between Philadelphia and Pittsburgh from at least 23 days to just under four days. It was referred to as the Main Line of Public Works, a name that still exists as the Main Line of suburban Philadelphia. Charles Dickens was one of the passengers.

But the engineering crown jewel of the Main Line was the Allegheny Portage Railroad.

The Portage across the Allegheny Ridge ascended 1,398 feet on the East side, and 1,171 feet on the West side. It consisted of five inclines on the Eastern slope, and five inclines on the Western slope, with slight elevation changes between the inclines. The angles of inclination range from 3° 60' to 5° 40'. There were two sets of tracks, one elevating one descending. Hemp ropes three and a half inches in diameter and 2,960 to 6,234 feet long connected the two cars. Two 35-hp steam engines at the top pulled one set of cars up, as another set was being let down. There was a special safety car attached to the rope below the cars that stopped them in the event of an accident. In the 1840s wire rope replaced the hemp rope.



Display at Allegheny Portage Railroad National Historic Site operated by the National Park Service.

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At the beginning of the ride, canal boats were loaded onto a rail car, which was transported to the first incline by mules, later by steam locomotives. The rails on the flat sections were standard steel rails; flat iron bars on wooden rails were placed on the inclined planes. A typical voyage took between six and seven hours.



Plane No. 8.

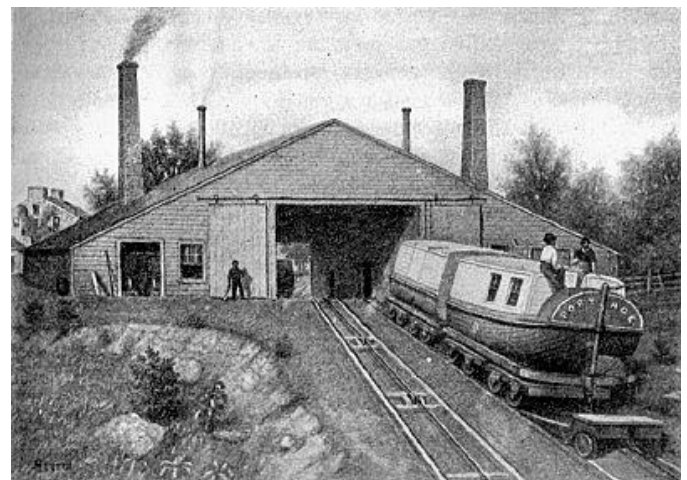
Plane 8. Sketch by Julia Smith McMillan, Pennsylvania Historical and Museum Commission, in the publication "The Allegheny Portage Railroad." Reproduced with the permission of the Pennsylvania Historical and Museum Commission.



Display at Allegheny Portage Railroad National Historic Site operated by the National Park Service. Note the "segmented" canal boat.



Gearing and sheaves on the inside of the rebuilt and restored engine house at the top of Incline #6. Note the rope and the flat iron bars on top of the wooden rails.



An 1839 drawing of #6 engine house by George Storm. Reprinted with permission.

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Although it never received the volume of traffic of the Erie Canal, it did have one advantage – weather. The Erie Canal was frozen three to four months a year. The Main Line stayed open two and sometimes three months longer.

The Main Line may have been an engineering success, but for the Commonwealth it was a money losing enterprise. The state spent an enormous amount of money, but the entire state canal system was a financial loser.

When Horseshoe Curve was completed in 1854 it reduced the travel time from Philadelphia to Pittsburgh to thirteen hours, putting the APRR out of business. It has since been reduced to a historical novelty of interest primarily to railroad and trivia buffs, but was certainly an interesting time in the history of the United States. Engineering in action, almost 200 years ago.

Thanks to the following for contributory information: John Meise, Curator, Altoona Railroaders Memorial Museum; Horseshoe Curve National Historic Landmark; Leaflet, "The Allegheny Portage Railroad" published by the Commonwealth of Pennsylvania Historical and Museum Commission; Booklet, "The Juniata Canal and Old Portage Railroad", by Harry A. Jacobs; National Park Service APRR National Historic Site, Gallatin, PA; Website, Dan Lawson - webmaster  
<http://exploringoffthebeatenpath.com/Parks/AlleghenyPortageRailroad/index.html>

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 "You can fool some of the people all of the time, or all of the people some of the time, but you cannot fool all of the people all of the time"  
 -Abraham Lincoln  
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It's supposed to be hard. If it wasn't hard everyone would be doing it. The hard, is what makes it great.  
 -Jimmy Dugan, in the movie "A League of Their Own"  
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One language sets you in a corridor for Life. Two languages open every door along the way.  
 -Frank Smith  
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Engineer's tool kit for all occasions.

**TEN THOUGHTS TO PONDER TODAY!**

10. Give a person a fish and you feed them for a day; teach a person to use the internet and they won't bother you for weeks.
9. Some people are like Slinkies . . . not really good for anything, but you still can't help but smile when you see one tumble down the stairs.
8. Health nuts are going to feel stupid someday, lying in hospitals dying of nothing.
7. Whenever I feel blue, I start breathing again.
6. All of us could take a lesson from the weather. It pays no attention to criticism.
5. Why does a slight tax increase cost you two hundred dollars and a substantial tax cut saves you thirty cents?
4. In the 60s people took acid to make the world weird. Now the world is weird and people take Prozac to make it normal.
3. Politics is supposed to be the second oldest profession. I have come to realize that it bears a very close resemblance to the first.
2. Never take life seriously. Nobody gets out alive anyway.
1. Health is merely the slowest possible rate at which one can die.



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



Minutes for the September 8, 2015 BOARD OF DIRECTORS MEETING  
6:00 pm at the Office of Barry Isett & Assoc. 85 S. Route 100, Allentown, PA

Attendees: Al Gruenke, Brian Kutz, Mike Basta, Chris Williams, Don Kohn, Ray Szczucki (phone), Kevin Campbell, Angelika Forndran (phone) and Al Dezubay

**Call to Order:** Chris Williams called the meeting to order at 5:58 PM

**Programs**

- Eastern Exterior Wall Systems – Tour held on 10/22.
- Cetronia Ambulance – Tour scheduled for 12/1 at 6pm.
- NCC Fab Lab 3D Printing – Al G. is going there on 11/12 to discuss possible tour.
- Holiday Party
  - 12/10 at Morgans Restaurant.
  - Room capacity is 40 people. If we have more, they can close portion of main dining room.
  - Speaker – Tim Harrison on Hamilton Crossings development. Barry Isett to provide laptop and projector.
- Hoover-Mason Trestle tour would be good for spring 2016.
- Possible tour of Allen Organ or Lutron at some point.
- May organize a dinner at DeSales in spring 2016 with two presenters.

**MATHCOUNTS**

- To be held at Northeast Middle School in Bethlehem School District.
- Two judges confirmed, one is new.
- Same group of volunteers organizing as last year.

**President – Al Gruenke**

- Al attended recent LVEC meeting.
- Was requested to provide recommendation for presenter at Eng. Week Banquet. Will recommend presenter on American Parkway and Rte. 22 Widening project.
- Contacted Pat Toomey's office. Received response from Marta Gabriel regarding availability for MATHCOUNTS and banquet.
- Al may also contact Ryan Mackenzie regarding banquet.
- Al has been contacting past scholarship contributors, received good feedback so far. Collected \$1,250 of \$13,000 goal.
- Al Dezubay to start scholarship efforts after the holiday season. Has good system in place with appropriate contacts at each school. Ken Lousch of Eastern Exterior Wall Systems to assist.



- EOY/YEOY – Al G. included request for nominees with scholarship letter. Don volunteered to sort through applications and come up with recommendations. Mike to assist. Nominations are due 1/31.

**Treasurer – Ray Szczucki**

- Ray reviewed account balances (checking: \$1,795.27, business mkt rate acct: \$27,075.11).
- Received \$500 because Chapter won trivia challenge at state conference.
- Paid state conference ad, P.O. Box fee, LVEC dues, etc. Discussed various other transactions.

**State Director – Angelika Forndran**

- Eric Tappert (Past President) encouraged chapters to keep members informed of events going on at state level.
- Angelika to provide article for an upcoming newsletter.

**Past President – Kevin Campbell**

- No report

**Adjournment** at 6:54 PM on a motion by Kevin, seconded by Don, all were in favor.