



Columbus Engineer

Official Publication of the Franklin County Chapter of the
Ohio and National Societies of Professional Engineers

President's Message

by Kevin Ernst, P.E. - FCC President



As we wind up the Chapter's 2016 – 2017 activities, I would like to thank our members for giving me the opportunity to have served as the Chapter's President, and it is my pleasure to introduce our incoming 2017 – 2018 Chapter President, Ben Brown, P.E. I'm confident the Ben will provide

excellent leadership and service to the chapter as we begin planning for the 2017 – 2018 season. I would also like to congratulate and welcome our newly elected officers. Additional kudos go out to Professor Giorgio Rizzoli,

OSU Mechanical and Electrical Engineering, who gave a superb presentation about the "Buckeye Bullet" the fastest automobile powered by electrical motors at our April luncheon. Please plan on joining us on May 18th for the Chapter's Officer Installation/Awards luncheon at LaScala Italian Bistro in Dublin. Additionally, I encourage you to attend OSPE's All Ohio Engineering Conference on June 15 to 17th. See details later in this Columbus Engineer issue. The Chapter is hosting the event and if you would like to participate as a sponsor, or in the planning; or as volunteer, please contact me or Ben. We certainly would appreciate your help! Again, it was a pleasure to serve you and the engineering profession...Sincerely ~ Kevin.

OSPE-FCC

May Luncheon Program

Date: Thursday May 18, 2017

Place: La Scala Restaurant
4199 W. Dublin Rd., Dublin, OH

Time: Registration: 11:30 am
Lunch: 11:50 am

Closing Remarks: 1:15 pm

Cost: Members: \$20.00 & Non-Members: \$30.00.

Registration: Visit fccospe.org. Pay at door or online at (www.fccospe.org). No access to computer, contact Jim Arnold, 614-299-2133, to help with registration.

Program: "Officer Installation & FCC Awards"

- FCC members and guests come to the luncheon to show your support for the new officers being installed for 2017-2018.
- Honor the FCC Award Recipients



FCC Auxiliary May Meeting

The Auxiliary to the Franklin Co. Chapter of OSPE will meet for a noon luncheon Tuesday, May 16 at Scioto Country Club, 2196 Riverside Dr. Nancy and Walt Rohers will present a program on their "Trip To Ireland".

Guests are welcome. For reservations call Marlene March, 614-457-2973.
welcome.



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OUR FINAL 2016-2017 LUNCHEON PROGRAM

By Leon Winget, PE, PhD

Our 2016-2017 luncheon programs have come to an end. Dr. Georgi Rizzoni, very descriptively, discussed the new speed record set by the Buckeye Bullet 3 at the Bonneville Salt Flats track. The new record established a two-way average top speed of 341.4 miles per hour with a top speed of 358 mph. (The batteries were recharge after one way. The requirements were that the return run had to be within one hour.) The vehicle weighs 7900 pounds. The record-setting car was propelled by two custom electric motors and powered by over two megawatts of lithium ion batteries. The lithium batteries were place in trays of 7 units per tray, four trays for both the rear wheel drive and front wheel drive. Dr. Rizzoni stated the team of engineering students made significant advances in power electronic systems and automated transmission. Over 100 OSU undergraduate students participated in the development of the Buckeye Bullet 3. As PEs we can recognize the program's value in producing the next generation of engineers.

Dr. Rizzoni presented the development of the Buckeye Bullet 3, the fastest electric propelled vehicle. Dr. Rizzoni discussed the prospects of the electric vehicle in the coming years and the development of future batteries. After the presentation, the members toured the OSU car facilities where the Buckeye Bullet is housed. The program ran from noon to 1:15 pm, and most of our members stayed for the entire presentation and tour.



ATTEND THE "ALL OHIO ENGINEERS CONFERENCE"



OSPE is proud to present this Conference in conjunction with our technical society partners, the American Society of Civil Engineers (ASCE) and the Institute of Electrical and Electronics Engineers (IEEE).

Earn up to 12.5 CPD hours! (That's 12 CPD hours for those that register for the entire conference and a bonus 0.5 CPD hour for those that register for Friday's Legislative Luncheon.)

Register by June 8th. To see program details and register go to www.ohioengineer.com (OSPE- Home)

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Central District Science Day

By Yogesh S. Rege, PE

The Central District Science Day event was held on March 18th at Columbus State Community College. Projects devoted to any of the different engineering disciplines were eligible for the Franklin County Chapter awards. Grading was based on the knowledge achieved, effective use of the scientific method or engineering design process, clarity of expression, originality and creativity. Awards of \$150, \$100 and \$50 were presented to our top three finishers. 35 projects were graded.

This year's First Place Award went to Cole Tucker, a Junior at Thomas Worthington High School. His project was titled "Mars Habitation Constructor". Our Second Place Award

went to Eli Shaner. Eli is in the 5th grade at Evening Street Elementary and his project was titled "Capturing Carbon". The Third Place Award went to Nidin Nair, a 6th grader at Slate Hill Elementary School. His project was titled "Bolt Elevator".

Three Franklin County Chapter members judged the event. They were: Tina Sutermeister, Joe Sullivan, and Yogesh Rege. Three non-FCC members, Chad Roby, Mo Finy, and Baba Yahaya also helped with the judging.

Below are a couple of pictures of the Science Day Area.





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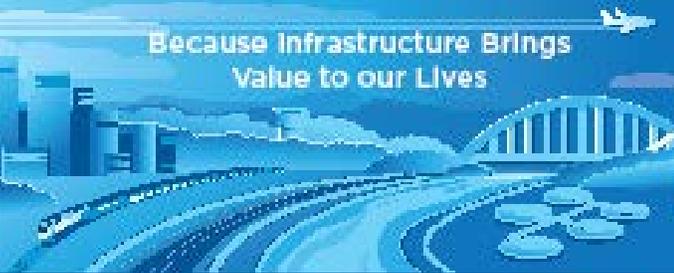


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2017 FCC-OSPE OUTSTANDING ENGINEERING ACHIEVEMENT AWARD Recipient is the City of Delaware, Public Works Department and ms consultants Inc. for the US 23-Pennsylvania Avenue Improvement Project

Every year the Franklin County Chapter of the Ohio Society of Professional Engineers has the opportunity to review projects that have been completed during the calendar year preceding the May Installation and Awards Banquet for projects that are located within the FCC-OSPE Chapter's geographic area. This award, the FCC-OSPE Outstanding Engineering Achievement Award, recognizes outstanding engineering accomplishments in manufacturing, construction or design, or a combination thereof. The nominated projects are evaluated for their innovation and the overall project's merit, value and worth in regard to maintaining the health, safety and welfare of the general public.

The FCC-OSPE Board has awarded the 2017 FCC-OSPE Outstanding Engineering Achievement award to the City of Delaware, Public Works Department and ms Consultants, Inc. for the US 23-Pennsylvania Avenue Improvement Project. The US 23-Pennsylvania Avenue Improvement Project (DEL-23-13.17) was a cost-effective, low-impact solution to provide a safer, more direct access to and from US 23 for north Delaware. More traditional alternatives of constructing a full interchange would have impacted the adjacent Historic Northwest District and the Olentangy River floodplain, and would have cost \$8 million more than this \$2.5 million project. By designing and building this less costly, innovative solution, the City was able to take advantage of available funding and accelerate the implementation of a safer, more efficient access to the north side of Delaware. The project did not preclude the construction of a full movement interchange if desired in the future.

The project was completed in 2016 and included the construction of:

- An extension of Sandusky Street - a new 1,040 foot long 3-lane street with sidewalk
- The widening of 1,170 feet of US 23 for new turn lanes
- A new traffic signal using mast arm supports at the Sandusky Street – US 23 intersection
- New City of Delaware gateway aesthetic features

IMPROVING SAFETY

The US 23-Pennsylvania Avenue interchange is located north of downtown Delaware. The interchange was constructed in the 1960s as a partial interchange in order to save cost and promote traffic movement through the downtown central business district. The interchange provided only for northbound entry to US 23 from Pennsylvania Avenue and a southbound exit from US 23 to Pennsylvania Avenue. There were no ramps to accommodate northbound traffic to Pennsylvania Avenue or southbound traffic from Pennsylvania Avenue.

In 2002, ODOT developed the US 23 Access Management Plan for US 23 in Delaware County. This plan identified high crash incidence locations throughout US 23 in Delaware County. The section of US 23 from just north of Pennsylvania Avenue to Hills-Miller Road was identified as having the highest crash rate in the corridor. Northbound US 23 motorists often attempted to make a U-turn, north of Pennsylvania Avenue, to access Pennsylvania Avenue via the southbound US 23 exit ramp. More than 60 vehicles made this U-turn movement during the peak hour every day.

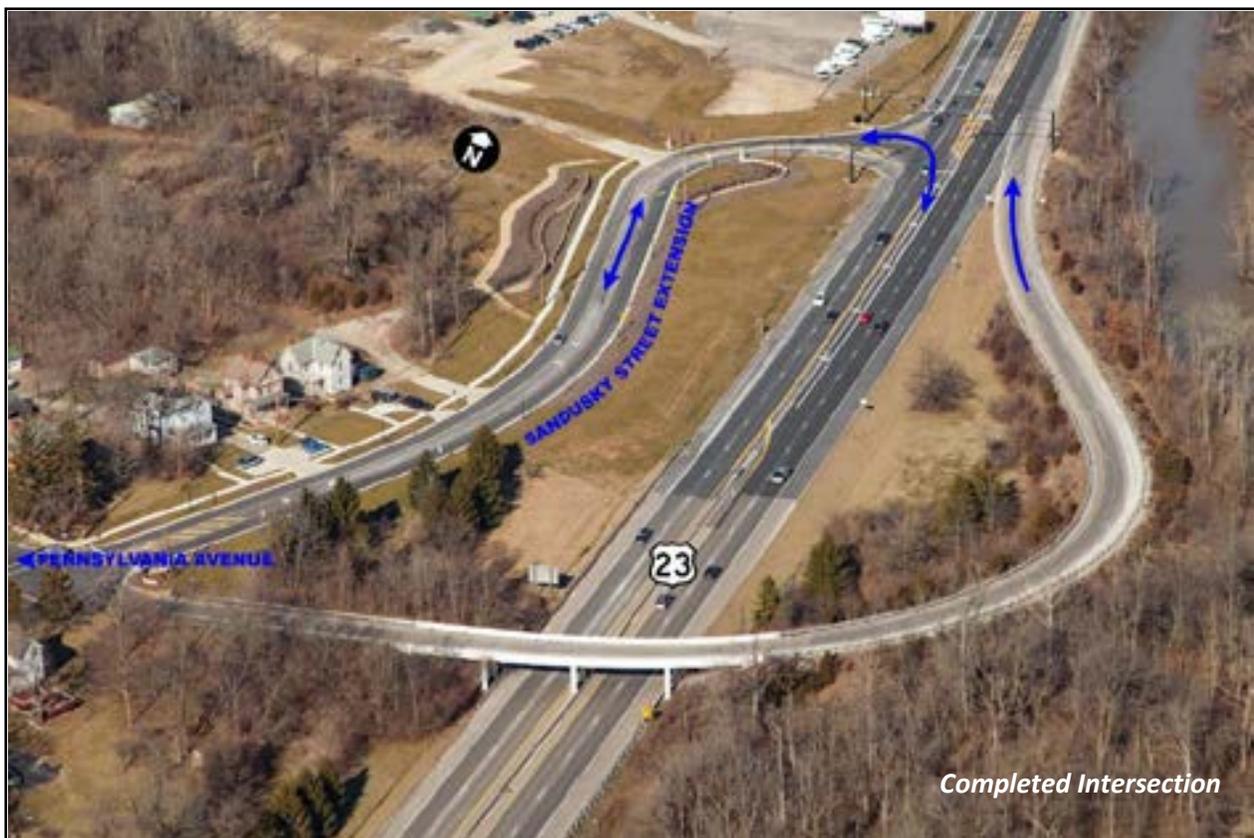


ACCESS NOW AND FOR THE FUTURE

The northern and western portions of the City of Delaware are projected to continue to grow at a rapid pace. The current and future residents and businesses in this area need good access to US 23 in order for the local street system to operate efficiently. Prior to this project, motorists attempting to access southbound US 23 from Pennsylvania Avenue had to choose one of several streets to travel south toward downtown, travel through the downtown business district, and then enter US 23 via William Street. Most of these north-south streets are residential in nature and are not designed to serve large volumes of through traffic. According to the Delaware Thoroughfare Plan, North Sandusky Street, south of Pennsylvania, carried over 1,000 vehicles per day that were cut-through volumes to/from US 23 to/from the south. Without improvements, cut-through traffic would have continued to increase as the northern and western portions of the City continued growing, aggravating a safety concern for local residents.

PROJECT DETAILS

The new, two-way Sandusky Street extension replaced the southbound exit ramp and now accommodates the missing turning movements. This project improves the circulation in the City by eliminating traffic that trickled through the local streets, south of Pennsylvania Avenue to access US 23. Northbound US 23 traffic can now safely get to Pennsylvania Avenue by using a new turn lane in the US 23 median to make a left turn at the signalized Sandusky Street intersection. Traffic from Pennsylvania Avenue uses the new Sandusky Street to make a right turn at the US 23 intersection to go southbound.



Southbound US 23 traffic exiting at Pennsylvania Avenue uses the new right turn lane and turns right onto the new street. The existing ramp continues to serve traffic traveling from Pennsylvania Avenue to northbound US 23, bypassing the new US 23 – Sandusky Street intersection. By allowing this traffic to bypass the intersection, it can operate with an efficient, two-phase traffic signal. Northbound US 23 through traffic has a continuous green indication. The northbound left turn movement from US 23 and the right turn movement from Sandusky Street operate in a common signal phase, minimizing delays to southbound US 23 traffic.

To serve the projected 10,600 vehicles per day, the Sandusky Street extension is 36 feet wide with one lane in each direction and a center left turn lane for driveway access. The project will also accommodate pedestrians with a 5-foot wide sidewalk along the west side of the street.

The project also included a new drainage system along the curbed Sandusky Street extension and drainage improvements along US 23. Since the project lies along the west bank of the Olentangy River, a 500 foot long vegetated biofilter was constructed to meet the requirements of the Ohio EPA Olentangy River Watershed Alternative General Construction Stormwater Permit.



New Retaining Walls & Landscaping

Special landscaping, decorative, modular block walls, and a monolith were built with the project to create a northern gateway into the City. The walls and monolith were designed to be similar to the southern gateway in order to create a common entryway treatment for Delaware. For this project, more than 2,000 square feet of decorative walls were constructed and 27 trees were planted along with shrubs, perennials and ground cover.

Decorative post-top street lighting was constructed along the Sandusky Street extension, matching Delaware's standard fixtures in other parts of the City.

MINIMIZED IMPACT AND LOWER COST

The City of Delaware retained ms consultants in 2005 to develop and evaluate alternatives to improve the interchange by providing full access between Pennsylvania Avenue and US 23. The traditional solution to provide better access would have been to construct new ramps and create a full interchange. But the non-traditional concept of modifying the southbound exit ramp to create a two-way street with an intersection at US 23 had less impacts to the adjacent Historic Northwest District and Olentangy River floodplain, and cost \$8 million less to build. This alternative provides safe access to and from US 23 at Pennsylvania Avenue with acceptable traffic operations - level of service D or better for all intersections. The total construction cost for the project was less than \$2.5 million.

By design and building this less costly, innovative solution to this regional access problem, the City was able to take advantage of available funding more quickly than what could have been done with a more traditional and expensive full interchange alternative. This approach accelerated the implementation of safe and efficient access to the northern and western portions of Delaware.

2016-17 CALENDAR		
May 9	5:30 p.m.	FCC Board Meeting @ Terracon Consultants, Inc.
May 16	5:00 p.m.	Deadline for June <i>Columbus Engineer</i>
May 18	11:30 a.m.	Chapter Officer Installation/ Awards Luncheon
July (TBA)		FCC Budget Meeting - Location to be announced
Terracon Consultants, Inc. Address: 800 Morrison Road, Columbus, OH 43230		



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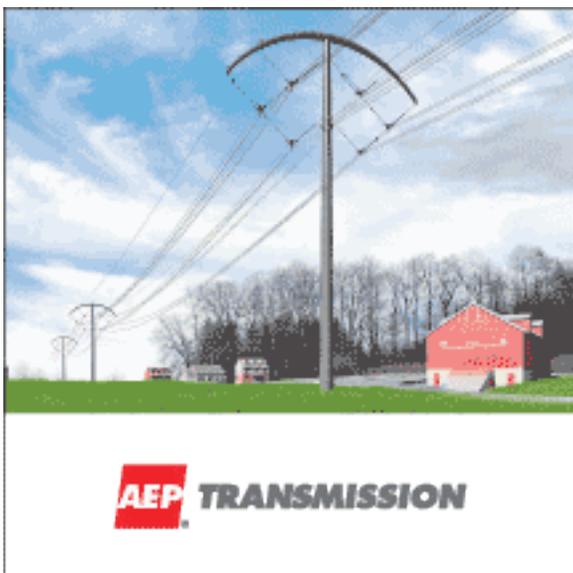
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Revised 5/4/2017

FIRST CLASS

OHIO SOCIETY OF
PROFESSIONAL ENGINEERS
Franklin County Chapter
P.O. Box 69
Reynoldsburg, Ohio 43068



This is a vertical advertisement for Terracon Consulting Engineers and Scientists. The top half features a collage of images including a modern skyscraper, industrial machinery, and a construction site. The company name 'Terracon' is prominently displayed in a large, bold, red font. Below the name, the text reads 'Consulting Engineers and Scientists' and 'Offices Nationwide • terracon.com'. Further down, contact information for Kevin M. Ernst, P.E., Office Manager, is provided, including his email address 'Kevin.Ernst@terracon.com'. The address '800 Morrison Road, Gahanna OH 43230' and phone number '(614) 328 5168' are also listed. At the bottom, there is a small image of a modern office building and a footer with social media icons for LinkedIn, Facebook, and Twitter.