ASHE scanner

WINTER 2025

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Smithland, KY

The Truss Span Turning Up the Cumberland River

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JUNE 4 - 8, 2025

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MISSION

Provide a forum for members and partners of the highway industry to promote a safe, efficient and sustainable transportation system through education, innovation and fellowship.

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Donato Di Zuzio, PE
ASHE National President 2024-2025

New Directions

By the time you read this, we will be right in the middle of winter, and I hope you all are staying warm and safe. I also hope you spent the holiday season with family and friends, spreading cheer and reflecting on those less fortunate and impacted by the recent hurricanes. We keep those people in our thoughts and prayers.

It has been an exciting and rewarding six months for me as your National President. The best part of my travels has been meeting so many ASHE members at various functions. The September National Board meeting and New York Metro Section's 20th-year anniversary celebration both took place in New York City. The support from the New York Metro Section's membership, clients and honored guests at their event made it a memorable occasion. I congratulate the New York Metro Section's Board, whom I had the pleasure of inducting for the group's two decades. I wish them many more years of success.

At the National Board's Friday afternoon workshop and Saturday morning meeting in New York, we discussed how to strengthen the National Committees and provide more value to members. We will continue to monitor the health of the Sections and offer support, whether by making exposure funds available or providing resources from the National Board. At future meetings we will look at our Region structural map, including the need for additional National Directors as we continue expanding our footprint and increasing membership. We have now grown to more than 7,400 members across 50 Sections in 19 states, and with that growth comes a responsibility to manage the team.

October saw many events at the Region and Section levels. Other members of the National Board assisted me by covering events when my schedule did not permit me to attend. The Inaugural Northeast Region Conference in Hershey, PA, where I spoke, was the first held in that area for many years. The Conference included presentations by agencies/owners across New York, New Jersey, Pennsylvania and Delaware. The efforts of Paul McNamee and his committee (Scott, Jen, Linda) resulted in a successful event. The standard has been set for many more Conferences in this Region. Congratulations to all on a job well done!

One of my favorite events that I attended was the ASHE Pittsburgh Section's Past Presidents Banquet at the Pittsburgh Winery. I want to thank Dave DeGioia, Dave Mikec, Mariya Rowley and Kathryn Fink for their hospitality and for organizing a fun event. A special thank you to my personal driver, Marc Garfield, for ensuring I made it safely to the event and for sharing the Garfield family's news during the car ride from my hotel. It was great to spend time with many friends, including Chuck Nash, Jerry Pitzer, Kevin Duris and Nancy and her husband, Tom, and making new friends, such as Danielle List, who is also an HNTB colleague. I look forward to meeting additional members/friends in my future travels.

We will continue to do great things and spread the news about our one-of-a-kind organization. My journey continues, and I want to thank all of you again for your support.

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From *scanner*'s Chair

Scanner Say Article of the Year AWARD

Happy New Year, everyone! I hope your holiday season was full of joy, laughter and cozy moments with loved ones. Now that the holidays are behind us, it's the perfect time to look ahead and reflect on the exciting roadways of the future!

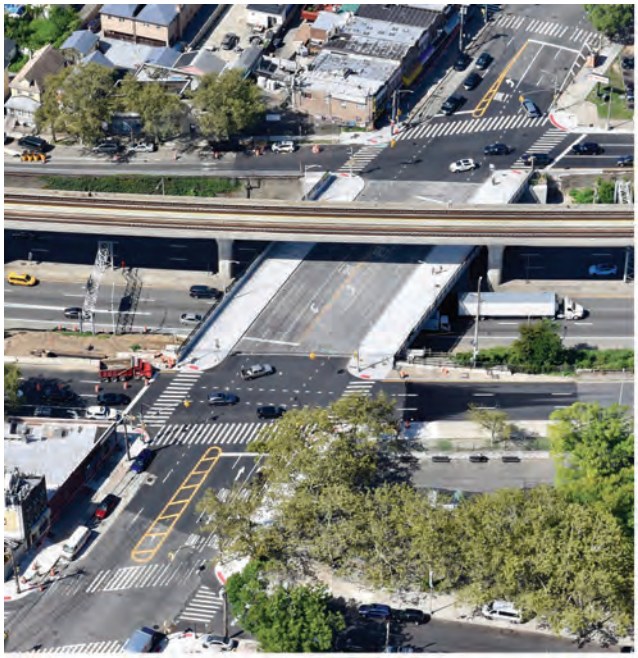
As we start this brand-new year, the progress we've made in highway infrastructure is something to be excited about. We're paving the way for smoother and safer journeys. Innovations are shaping the roads of tomorrow, helping us travel more efficiently while keeping us safe every mile of the way.

Keep sending your articles on what's new in your region, highlights of your project of the year, scholarships and panel discussions on sharing of innovative ideas.

As we kick off this new year, let's continue working together to build smarter, greener and safer roads for the future. Wishing you all a year filled with smooth travels, exciting journeys and, of course, lots of joy!

Here's to a fantastic 2025! Stay safe and keep on driving forward.

Rhonda Cardone
scanner Chairwoman
ASHE New York Metro Section



Driving Community Enga

by Patrick Norman, PE, Chief Engineer, North Carolina Turnpike Authority,
ASHE Carolina Triangle Section

Aerial view of the turbine-style interchange at I-540 and I-40

gement and Partnerships in North Carolina

When the Complete 540 Phase 1 project extended the Triangle Expressway near Raleigh, NC, it underscored a commitment to community involvement, technical innovation and enhancement of North Carolinians' quality of life.

Begun by North Carolina Turnpike Authority (NCTA) in November 2019, the project was one of the state's largest infrastructure undertakings. At an estimated cost of $1.3 billion, the project expanded the Triangle Expressway toll road by 18 miles, improving mobility throughout the greater Raleigh area during peak travel periods. It also reduced congestion on existing local roads, such as I-440, I-40, NC 42 and NC 55. By connecting communities such as Apex, Cary, Clayton, Fuquay-Varina, Garner, Holly Springs and Raleigh, these communities became more connected, resilient and prepared for future growth and economic opportunities.

Str engthening Community Support and Engagement

Driven by their commitment to being a good neighbor, NCTA's project team engaged communities, connecting with residents and strengthening their knowledge of the project. By blending traditional and digital outreach tactics, conducting presentations, distributing mailers and using social media, they created an effective communication network.

NCTA's Deputy Chief Engineer Alan Shapiro said of the project, "What truly sets us apart is our personal approach. We prioritize face-to-face interactions, fostering genuine connections and building trust within the community. By meeting people where they are, both literally and figuratively, we have created a lasting impact, ensuring every voice is heard and valued."

HDR, one of the design-build team partners, emphasized collaboration through community partnerships. An HDR representative said, "The high level of public engagement helped the design team understand what could be done to increase user satisfaction. The project is naturally going to ease congestion and reduce commute times for drivers, but the project is also going to provide benefits for other forms of transportation. For instance, we were able to coordinate with municipalities to better understand their bicycle and pedestrian needs and refine the design of the multiuse path within one of the interchanges and provide a crossing for a future greenway."

Shaping the Future of Innovative Transportation Infrastructure

From the outset, the project team was committed to integrating innovative technologies and design principles to create a roadway that would serve the community safely and efficiently for decades. One feature of the project was the implementation of a turbine-style interchange. Spanning over 480 acres, the interchange connected NC 540, I-40 and US 70 in southern Wake County and enhanced traffic flow and safety.

In collaboration with WSP, another design-build team partner, NCTA explored alternatives to refine the initial concept of the turbine interchange. One representative from WSP stated, "We successfully reimagined the interchange from a three-level to a two-level design. This approach reduced the schedule and cost of the project by requiring fewer bridge structures and minimizing earthwork hauling. Additionally, the simplified concept reduced long-term maintenance needs and improved traffic flow and safety during construction, ensuring a smoother experience for motorists."

The project also included the construction of a Diverging Diamond Interchange (DDI) at Holly Springs Road. The DDI is known for its efficiency in managing high traffic volumes and reducing congestion. The

(continued on page 8)

(continued from page 7)

Ebony Pittman, Deputy Secretary for Business Administration, North Carolina Department of Transportation, spoke at the ribbon-cutting ceremony.

integration of a DDI significantly reduced conflict points and improved traffic flow, according to a representative from Gannett Fleming, another design-build team partner.

In addition to traffic improvements, the team made contributions to ensure environmental sustainability and promote environmental stewardship. One example was the use of real brick to reduce noise and serve as a retaining wall, offering a cost-effective and eco-friendly alternative to traditional precast panels. The Gannett Fleming representative added that those innovations not only met the project's technical requirements but also enhanced its aesthetic appeal and environmental sustainability. The project team also worked to preserve local ecosystems and consider the health and well-being of communities. Those efforts included relocating beehives to support pollinator populations. The team also collaborated with the North Carolina Native Plant Society to transport native plants, helping maintain biodiversity and support local wildlife. Data recovery efforts at an archaeological site in the project corridor helped ensure preservation of historic artifacts.

Example of real brick noise walls along the project

Another innovation was the integration of wrong-way vehicle detection technology. NCTA's system employed sensors and alerts to detect and prevent vehicles from traveling on the roadway in the wrong direction, helping prevent head-on collisions. The addition of inlaid pavement markings will help to withstand the rigors of snow plowing, ensuring they remain visible and intact even in winter conditions.

Deputy Chief Engineer Alan Shapiro, North Carolina Transportation Authority, updated stakeholders on the project's progress.

Inclusive Business Practices Enhanced Success

The participation of Disadvantaged Business Enterprises (DBEs) was a cornerstone of the project. Ensuring that NCTA's contractors reflected the diversity of the communities they served was not just a goal but a guiding principle. DBEs played a pivotal role in the project, contributing over $80 million worth of work. This underscored the project's dedication to inclusivity and economic empowerment.

Ebony Pittman, Deputy Secretary for Business Administration, North Carolina Department of Transportation, emphasized, "This project was designed to be accessible to businesses of all sizes. Whether you are a large-scale construction company or a small, disadvantaged business, there's opportunity for you in this endeavor."

Committed to the Path Ahead

The Complete 540 Phase 1 project is a testament to the power of strategic partnerships, innovative designs and community engagement. By prioritizing communication and inclusivity, the project not only enhanced transportation but also drove sustainable change in the communities it served. With Phase 1 opening in September 2024, extension of the Triangle Expressway marked a milestone in improving connectivity and accessibility in the greater Raleigh area. NCTA now looks ahead to Phase 2, set for completion in 2028.

Ribbon cutting to open I-540

MileMarkers

News From Across ASHE-Miles

Albany Section Members Tour Quarry and Asphalt Plant

Members of the **ASHE Albany Section** recently toured Callanan Industries, Inc. (a CRH Company), stone quarry and asphalt plant in Selkirk, NY. They received a safety briefing and overview of the plant's operations before touring the stone processing center and quarry. The group got to observe a blasting of one of the quarry walls that produced over 90,000 tons of shot stone in one detonation. They also toured the asphalt plant, with a stop at the automated control center. ASHE Albany Section extends its thanks to the Callanan Team members for the tour.

Members of ASHE Delaware Valley Section Visit Bridge Project Site

In August, **ASHE Delaware Valley Section** members visited the Hawk Falls Bridge replacement project on the Pennsylvania Turnpike Northeast Extension. They observed construction and steel erection techniques as well as operation of a giant crane used to position steel at the site. The group, standing on the crane's track, flank tour leader/project resident engineer Terry Davies (in yellow hardhat) of STV. Thanks to Richard N. Cochrane, PE, ASHE National Past President and tour participant, for the photo.

Navigating Growth:

Roundabouts Overcome Congestion Headaches

by Brian Hughes, PE, Senior Project Manager, ms consultants, inc., **ASHE Cuyahoga Valley Section**

The intersections of Pittsburg Avenue with Shuffel and Orion streets in Jackson Township, OH, serve as critical links supporting local commercial and industrial businesses. These intersections significantly contribute to the region's economic vitality. With ongoing developments in the area, improving the infrastructure in this corridor became a priority.

Pittsburg Avenue, a two-lane road constrained by the North Canton Cemetery on the east side, had two signalized intersections 450 feet apart at Shuffel and Orion streets. Persistent traffic congestion during peak hours made commutes challenging, with bumper-to-bumper traffic causing long queues and frustration for drivers.

Traffic on Shuffel Street between Whipple Avenue and Pittsburg Avenue had more than quadrupled due to the nearby I-77/Shuffel Street interchange and the growth of new industries. This led to traffic volumes exceeding 25,000 vehicles per day, exacerbating queuing issues, compromising commuter safety and increasing crashes. Forty-two reported accidents occurred between 2015 and 2017.

To address these challenges, Stark County Engineer enlisted ms consultants, inc. (ms), and subconsultant American Structurepoint, who conducted the prior safety study, to complete the environmental planning and develop the preliminary and final roundabout design. They also provided right-of-way planning and acquisition services. Additional project partners included Stark County Engineer and Ohio Department of Transportation. Construction on the project began in early 2022.

Roundabout Design: Improving Safety and Traffic Flow

The initial feasibility study concluded that constructing roundabouts at both intersections would optimize traffic flow and improve safety.

Previously, left turns to and from Pittsburg Avenue into the Dunkin' driveway contributed to traffic bottlenecks. By adding splitter islands and a raised concrete median, the design would prevent left turns into the driveway, increasing traffic control. Customers could safely access Dunkin' via U-turns at the roundabouts, easing congestion.

Orion Street roundabout looking north

The I-77/Shuffel Street interchange contributed to traffic volumes exceeding 25,000 per day.

The North Canton Cemetery site needed precise planning to ensure that construction did not disturb gravesite markers.

The 400-foot retaining wall limited impacts to Advantage Home Health.

Navigating Stakeholder Complexities

Public involvement was vital for this project, as it affected many residents, businesses and nearby neighborhoods. These key stakeholders included the North Canton Cemetery, Dunkin', Advantage Home Health and residential sites, each presenting different challenges:

- **North Canton Cemetery:** Precise site planning had to ensure that construction activities did not disturb gravesite markers located two feet from Orion Street.
- **Dunkin':** This location previously had a second driveway that exited onto Shuffel Street. However, it was closed due to inadequate sight distance. To correct this issue, the team installed advance signage, added parking restrictions and removed taller vegetation, allowing for the driveway's reopening.
- **Advantage Home Health:** The Orion Street roundabout's footprint encroached on Advantage Home Health's site. To address this, the team designed a new driveway, an alternate parking area to compensate for lost parking and a 400-foot retaining wall to limit impacts to the business.

Establishing open communication and collaboration between the affected parties and the design team was necessary to instill a sense of ownership among those involved. This ultimately led to successful coordination with residents, businesses and stakeholders.

Another priority was to ensure that there were no impacts to the North Canton Cemetery roadway-adjacent headstones. Conducted by ms, the detailed electronic mapping of cemetery plots pinpointed crucial headstone locations. Plan notes explicitly outlined restrictions regarding any work near the gravesites, guiding the contractor to areas where their equipment could operate.

Creative Solutions

The project included a design that accommodated the steep nine percent grades along Pittsburg Avenue and Shuffel Street. These grades required close study to meet sight distance requirements, avoid cemetery plots and minimize disruptions to Advantage Home Health.

The early acquisition of a strategic parcel at the northeast corner of Orion Street allowed for adjustments to the roundabout's location. Relocating the roundabout into the newly purchased property reduced impacts on Advantage Home Health. It also provided additional clearance from the North Canton Cemetery and eased construction constraints.

Without purchasing the corner parcel, the project would have intruded into the Advantage Home Health property, severely disturbing the business's operations. Construction also would have been more complex, leading to an extended project timeline and increased costs.

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Navigating Growth:

Roundabouts Overcome Congestion Headaches

(continued from page 11)

Aesthetics and Sustainability

Aesthetics and sustainability were integral to the project. The splitter islands feature stamped, coral-tinted concrete finishes, and the retaining wall incorporated a decorative, stained brick treatment in warm tones. Native flowers, grasses and bushes support environmental sustainability and enhance the central island's appearance.

Design Elements and Services

The project included these additional design elements:

- Lighting
- Storm sewer systems
- Waterline installations
- Curbs and gutter installations
- Complex Maintenance of Traffic planning
- Full-depth roadway reconstruction
- Asphalt paving and pavement markings
- Signage

Native flowers, grasses and bushes support environmental sustainability.

Services provided by ms included environmental and traffic planning, geotechnical engineering, preliminary and final design services and a Phase I Environmental Site Assessment. The company also provided site surveying, right-of-way plans and acquisitions and asbestos inspection services. American Structurepoint developed the maintenance of traffic plans and designed the retaining wall.

The project, completed in June 2023, revitalized the Pittsburg Avenue corridor by alleviating congestion, reducing queue lengths and improving traffic flow and safety. It also eased connections between the Akron-Canton Airport, industrial centers and I-77, enabling more efficient travel and supporting economic growth in Stark County. Integrating aesthetics and sustainability features further enhanced the corridor's appeal. Positive community feedback has underscored the project's success in meeting the needs of residents, businesses and commuters.

By converting the intersections into roundabouts, the project transformed the Pittsburg Avenue corridor, alleviating congestion and increasing safety.

ASHE Northeast Region Holds Inaugural Conference

ASHE Northeast Region held its first Conference in October at The Hotel Hershey, Hershey, PA. The event featured executive-level speakers (shown below left to right) Eric Macfarlane (New York City Department of Design and Construction); Brad Heigel (Pennsylvania Turnpike Commission); John Caperilla (CDR Maguire); Paul McNamee (KCI); Shantē Hastings (Delaware Department of Transportation); Mark Compton (Pennsylvania Turnpike Commission); and Camille Otto (Federal Highway Administration).

The 2024 Northeast Region Projects of the Year (Fern Hollow Bridge Emergency Replacement (HDR) and Pennsylvania Turnpike Southern Beltway from SR 22 to I-79 (CDR Maguire Engineering) also received recognition. Don Di Zuzio, PE, ASHE National President, briefed members on the group's national activities and the 2025 National Conference, June 4-8, at Kalahari Resort in the Poconos.

The Northeast Region consists of 18 Sections from Pennsylvania, New Jersey, Delaware and New York, and the Conference attracted over 200 attendees from those states. The event included a reception with networking on Thursday evening and luncheon on Friday.

Many thanks to ASHE Harrisburg Section members Steve Guinter, Jen Hendricks, Dave Snively, Virginia Baily, Anita Osborne, Kristy Reichard and Ann Mark for their help with the Conference. Thanks also to all attendees for their support, along with 25 sponsors, in making the Conference a success. The Northeast Region Board looks forward to holding more Conferences in the future.

(Left) Nilesh Patibandha (NJDOT), Nisharg Dalwadi (NJDOT) and Scott Cortese (AECOM), ASHE Northeast Region President

Mike House (Modjeski and Masters), J.T. Lincoln (Dewberry), Curt Sanno (Dewberry), Rhonda Cardone (Dewberry) and Mark Geiser (Dewberry)

ASHE National and Regional Board: *(left)* Paul McNamee, Sam Mody, Scott Cortese, Don Di Zuzio, Linda Zug, JT Lincoln, Rob Prophet, and Glen Kartalis

Camille Otto, FHWA *(left)*; Cathy Kisenwether, AD Marble; and Heather Coons, Rossi Group

Sound barrier panels with artistic surface treatment

More Mobility, So Aesthetics on SR

by David Jackson, PE, Michael Baker International, Inc., **ASHE Pittsburgh Section**

Jack and bore pit

afety and 28

SR 28 sound barriers looking south

The freeway SR 28 is an urban, limited-access facility between downtown Pittsburgh, PA, and the Pennsylvania Turnpike. This road also serves as a major connector to I-579, I-279 and I-376, which lead into the area's suburbs. It is an important corridor for the traveling public and the movement of goods. Throughout most of the highway, SR 28 is a four-lane facility, two lanes in each direction. However, within SR 28 Highland Park Interchange, SR 28 became a two-lane section, one lane in each direction, resulting in a physical bottleneck to traffic flow.

Several partners collaborated to address these deficiencies by adding proper acceleration and deceleration lanes for the interchange ramps and four continuous travel lanes through the interchange. The group included Pennsylvania Department of Transportation (PennDOT), District 11, Michael Baker International, Inc., (environmental, preliminary-final design and construction consultation) and The Markosky Engineering Group, Inc., (structural support). It also included Monaloh Basin Engineers (surveying) and Gannett Fleming (geotechnical engineering). The project for construction was awarded to Golden Triangle Construction in October 2020.

The feasibility study phase included the development of 12 alternative solutions, varying in construction costs and impacts, to meet the need of the project. During refinement of the alternatives, design investigations followed a context-sensitive solutions approach, drawing on flexible design standards responsive to the corridor's urban context. The preferred option addressed the need to balance the corridor's functional requirements within the allotted budget and challenges posed by the project area's topographical, environmental and right-of-way constraints.

This alternative could meet project goals safely through the approval of 13 exceptions that reduced the design criteria for shoulder width, bridge width, stopping sight distance, superelevation and horizontal radius. This allowed the project to rehabilitate five bridges and four retaining walls instead of fully reconstructing them. It reduced overall construction costs and impacts on drivers by simplifying construction phases and reducing the overall duration of construction. The process included a quantitative benefit/cost analysis of each requested design exception, a safety study and the implementation of several mitigation measures to optimize safety in light of the reduced criteria.

Before construction, the average speed of vehicles on this section of SR 28 was below 15 mph during rush hours, and the physical bottleneck resulted in traffic queues up to one and seven-tenths of a mile long. There were 89 accidents in the project area over a three-year period, with the majority (92 percent) of crashes classified as either rear-end (67 percent) or hit fixed object (25 percent) crashes. Rear-end crashes at this location were attributed to the reduced speeds, queuing or aggressive lane changing due to the drop-lane conditions. With improvements to this section of SR 28, the safety of the freeway significantly improved. The number of crashes should continue to decrease with reduction of congestion and less frequency of lane changing at the drop-lane conditions in both directions.

(continued on page 18)

Aerial view of SR 28 Highland Park Interchange and SR 1001 Freeport Road Interchange

New two-phase traffic signal at SR 1005 and the Freeport Road Interchange

New traffic signal and pedestrian improvements at ramp terminal on Freeport Road

More Mobility, Safety and Aesthetics on SR 28 *(continued from page 17)*

Historical crash information revealed a major crash cluster on SR 28 southbound approaching the Highland Park Bridge. The team developed a low-cost solution and safety improvements to eliminate a 1,300-foot weave condition in this location by including double white line striping. This also entailed "Stay in Lane" signing to prohibit lane changing between successive ramps, as well as supplemental guide signing.

The project added safety on SR 28 with:

- Advanced warning signing
- Horizontal stopping sight distance improvements on ramps
- Upgraded roadside safety barriers and crash cushions
- High-Friction Surface Treatment to increase pavement friction and stopping distance
- Additional highway lighting
- Southbound emergency pull-off area
- Sufficient acceleration and deceleration lanes for interchange ramps

The team's design and implementation of the following project elements contributed to the success and cost-effectiveness of the project:

- A Design-Build Traffic Control Plan resulted in time and cost savings by allowing contractors to partner with designers during the advertisement.
- The development of alternate pavement designs for both asphalt and concrete pavement enhanced competitive bidding.
- Installation of retrofit vertical drainage channels in slag backfill and maintainable weep holes behind an existing retaining wall helped to relieve existing hydrostatic pressure and prevent additional future deflection.
- Carbon Fiber Reinforced Polymer Shear Strengthening wraps restored the lost shear resistance of existing beams to avoid beam replacement, enabling maintenance of two lanes of traffic during construction.
- The 830 feet of trenchless 30-inch jack and bore pipe avoided open-cutting Freeport Road carrying nearly 20,000 vehicles per day and avoided right-of-way acquisitions with the Norfolk Southern Railroad.
- Installation of a new two-phase traffic signal along SR 1005 northbound controlled traffic traveling north on the Highland Park Bridge and the on-ramp from Freeport Road to SR 28. This signal improved the existing short weave condition and on-ramp access, previously controlled by a stop sign.

More than 300 noise-sensitive receptors were analyzed in the vicinity of the project. In addition, 49 receptors were predicted to approach, meet or exceed the Noise Abatement Category or substantial increase criteria

for the Design Year Build Alternative. A noise analysis indicated that the construction of seven sound barriers benefited 158 dwellings by lowering the traffic noise by at least five dBA. Eight dwellings saw a reduction of traffic noise by greater than 10 dBA, the equivalent of halving the sound level heard by the human ear.

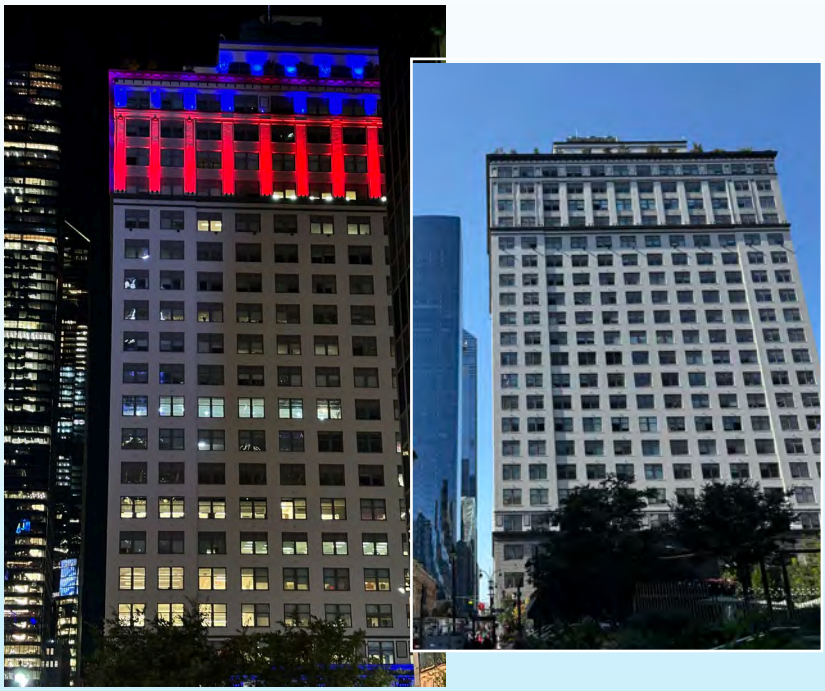
Through the Office for Public Art and the Greater Pittsburgh Art Council, local artist Brian Peters worked with PennDOT, designers and fabricators to develop a 3D design for the architectural surface treatment of the sound barrier panels. The pattern represents two intersecting ripples of water inspired by the neighboring Allegheny River, one of the defining features of Pittsburgh's topography.

In addition, approximately 2,100 feet of Freeport Road, a major Pittsburgh Regional Transit route and the only pedestrian link between the Sharpsburg, Aspinwall and O'Hara communities, was reconfigured as part of this project. With installation of traffic signals at two intersections, four pedestrian crosswalks, approximately 1,000 feet of sidewalk and seven curb ramps, the project enhanced pedestrian connectivity and safety.

The route was opened to traffic and completed before the close of 2023, at a total construction cost of $51.7 million.

MileMarkers

News From Across ASHE-Miles



Dewberry Moves New York City Office

Rhonda Cardone, Senior Associate at Dewberry, member of **ASHE New York Metro Section** and **ASHE *scanner* Chairwoman**, announced her company's recent move to the ninth floor at 5 Penn Plaza in the heart of Manhattan. The office is located across the street from Moynihan Train Hall and Penn Station, with Hudson Yards neighborhood in the background. The new offices also afford a view of the Empire State Building, One World Trade Center and Statue of Liberty.

Summiting Krumsville: Roadway Reconstruction of SR 78, Section 12M

by Richard H. Stanger, PE, Pickering, Corts & Summerson, **ASHE East Penn Section**

ASHE East Penn Section 2024 Project of the Year Award ***Over $12 Million***

Roadway prior to improvements

Serving as a vital commercial corridor in southeastern Pennsylvania, I-78 (SR 78) connects ports in New York and New Jersey with large distribution centers in the Commonwealth and points west. I-78 carried two through lanes in each direction with several long, steep roadway profiles, including grades up to five percent, which created significant speed reductions and congestion. Pennsylvania Department of Transportation (PennDOT), District 5-0, saw the need for significant improvements along the corridor.

To address the necessity for upgrades, an eight-mile-long roadway reconstruction project involved SR 78, Section 12M, on I-78 in Berks County. It extended from the western project limit near the Lenhartsville Interchange to the Lehigh County line to the east, improving safety and capacity along the corridor while balancing environmental impacts.

Project Needs

The original 1957 concrete pavement with bituminous overlays had severely deteriorated, exhibiting uneven joints and frequent potholes resulting in a poor riding surface. The existing outside shoulders were substandard in width with insufficient room for disabled vehicles and access for emergency services. Existing 1.5:1 cut slopes were unprotected and located within the clear zone. Severe deterioration and obstructions compromised the existing drainage system.

The poor riding surface, together with an inadequate drainage system, caused hazardous conditions for motorists. This roadway also had estimated demands on the system increasing from an ADT of 48,127 (2018) to 71,964 (2038), with 35 percent truck traffic and a high frequency of accidents involving trucks. Planning discussions and design recommendations prioritized safety improvements with minimization of environmental impacts. The $168 million contract for the project was awarded in December 2018.

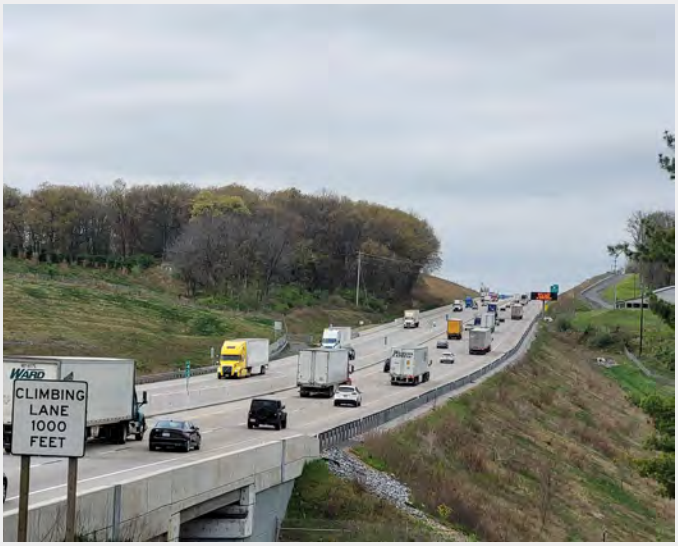
Improvements

Improvements within the SR 78, Section 12M, project limits included:

- Replacing deteriorated pavement with 14-inch Long-Life Concrete Pavement
- Designing the roadway for 70 mph speed limit

(continued on page 22)

Completed roadway section



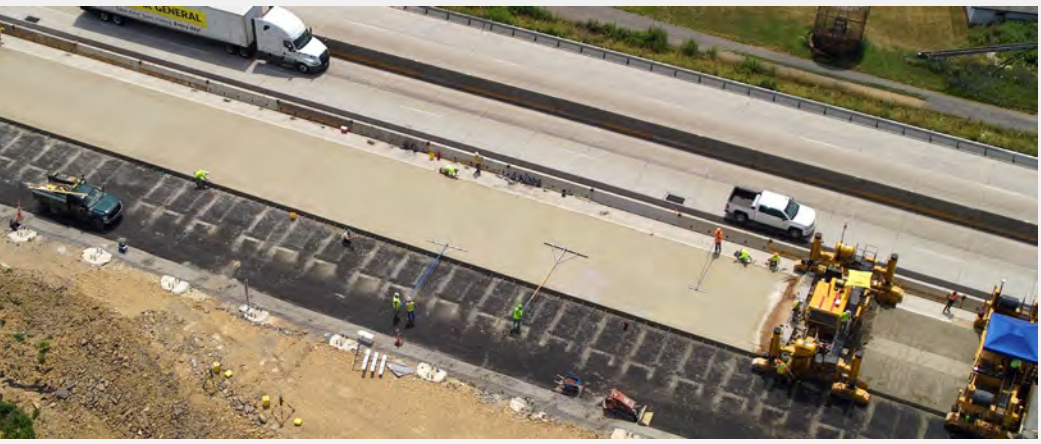
Truck climbing lane

Summiting Krumsville: Roadway Reconstruction of SR 78, Section 12M

(continued from page 21)

- Reconstructing the mainline using two 12-foot travel lanes with 12-foot outside and 10-foot inside shoulders
- Providing safety features compliant with the Manual for Assessing Safety Hardware
- Establishing 16-foot, six-inch underclearance at overpasses
- Replacing the roadway drainage system
- Managing increase in stormwater volumes
- Replacing six at-grade single span bridges
- Extending four existing culverts
- Installing sound barrier at three locations

Even with these design enhancements, the long, steep grades leading to nearby Krumsville would still result in speed reductions for trucks and restricted traffic flow. It would not improve safety and mobility for the traveling public. With future ADT and truck traffic demands, as well as a speed increase to 70 mph, five miles of truck climbing lanes in both east- and westbound directions were necessary. Better mobility and efficiency would also promote economic development and opportunities for the local communities.



Construction staging

Maintenance and Protection of Traffic

Two temporary lanes in each direction were maintained for all five construction stages. A secondary benefit of the truck climbing lanes included providing sufficient width to accommodate staging without over widening. Only two bridges at the eastern end required five feet of permanent over widening to accommodate staging.

A Real-Time Work Zone Traffic Monitoring System (RTWZTMS) monitored the eastbound and westbound traffic approaching the work area. This portable, real-time, automated, solar-powered system calculated and displayed queuing information through the work zones. PennDOT received secure access to the RTWZTMS to view and control the cameras and download traffic data via the internet.

Environmental Impacts and Mitigation

The existing fill slopes at 1.5:1 required widening to 2:1 and increasing the outside shoulder widths to 12 feet. Along with the new truck climbing lanes, these changes significantly affected the environmental footprint. Use of retaining walls to minimize impacts was eliminated to the maximum extent possible, using steepened rock embankments, geosynthetic reinforced soil slopes and extended height single face concrete barriers at the base of cut slopes. On-site mitigation of wetland impacts was considered, but no suitable locations were available. Off-site mitigation took place at the Kernsville

Geosynthetic reinforced slope

Wetland mitigation site

Dam Recreation Area. (40°33'46.15"N, 75°59'35.86"W). A separate construction contract (SR 78, Section WET) was let for two and six-tenths acres of wetland construction. The project also included walking trail and parking lot improvements, and creation of turtle basking structures. Construction cost was $1,950,000.

Stream impacts were mitigated off-site under the Tulpehocken stream restoration project on the Zartman farm property (40°22'17.60"N, 76°12'3.50"W). Placement of a one-and-five-tenths-acre riparian forest buffer used 265 native trees and shrubs to create a 35- to 50-foot-wide screen. Additional installations included a livestock crossing, channel cross-vane, channel bank protection, rock/log tip deflectors and mudsills. The construction cost was $250,000.

SUMMARY OF BMPs*		
2.2	AC	DETENTION BASINS (9)
1.1	AC	INFILTRATION BASINS (2)
4,630	SF	BIORETENTION AREAS
2,500	SF	INFILTRATION BERMS
15.0	AC	LANDSCAPE RESTORATION AREAS
62	EA	SUMP INLETS
21.0	AC	PRESERVATION AREAS
2.4	AC	RIPARIAN BUFFERS
3.5	AC	REVEGETATION AREAS
24,400	SF	VEGETATED SWALES

*Best Management Practices

SUMMARY OF MAJOR WORK ITEMS		
1,073,513	CY	EXCAVATION
381,900	SY	LONG LIFE CONCRETE PAVEMENT
690	EA	INLETS
57,759	LF	DRAINAGE PIPE
81,383	LF	TEMPORARY BARRIER
226,100	LF	RESET TEMPORARY BARRIER
85,941	SF	SOUND BARRIER
49,847	SF	BRIDGE REPLACEMENT
884	TON	REINFORCING BARS, BRIDGES

Stormwater Management

Topography of the western section between Lenhartsville and Krumsville hampered detention/infiltration basin installations. Old US 22 parallelled SR 78 to the south, and a tributary to Maiden Creek ran parallel to the north. Installation of stormwater management basins would require stream and US 22 relocations. The associated impacts of these relocations were considered unjustified, given the resulting impacts to surrounding wooded landscapes and local residences. The use of more preservation, restoration and revegetated areas in the western section helped offset the increase in runoff volumes. The eastern section from Krumsville to the Lehigh County Line was less restrictive where detention and infiltration basins could be accommodated.

With construction completed in May 2024, the improvements enhance safer, more efficient movement of motorists on I-78 in Berks County.

Westbound truck climbing lane

Engineering **the Perfect Communications Plan**

by Alex Denis, Assistant Bureau Chief of Public Affairs, and Beth Emmons, Director of Community/ Relations/Communications, Tennessee Department of Transportation, **ASHE Tennessee Valley Section**

The Public Affairs and Community Relations team of Tennessee Department of Transportation (TDOT) recently spoke to members of ASHE Tennessee Valley Section. Wanting to make our presentation engaging for engineers, we realized we could draw parallels between engineering and effective communication. Just like the technical expertise that goes into the construction of a new bridge or road, the same can apply to a well-executed communications plan.

The Communication Process

Just as construction projects do, every communication plan goes through phases and starts with an idea based on a need. For instance, if there is a need to replace an aging bridge, it is imperative to plan how to address community concerns. This involves meetings to define goals and identify the audience, whether that involves drivers, stakeholders or legislators.

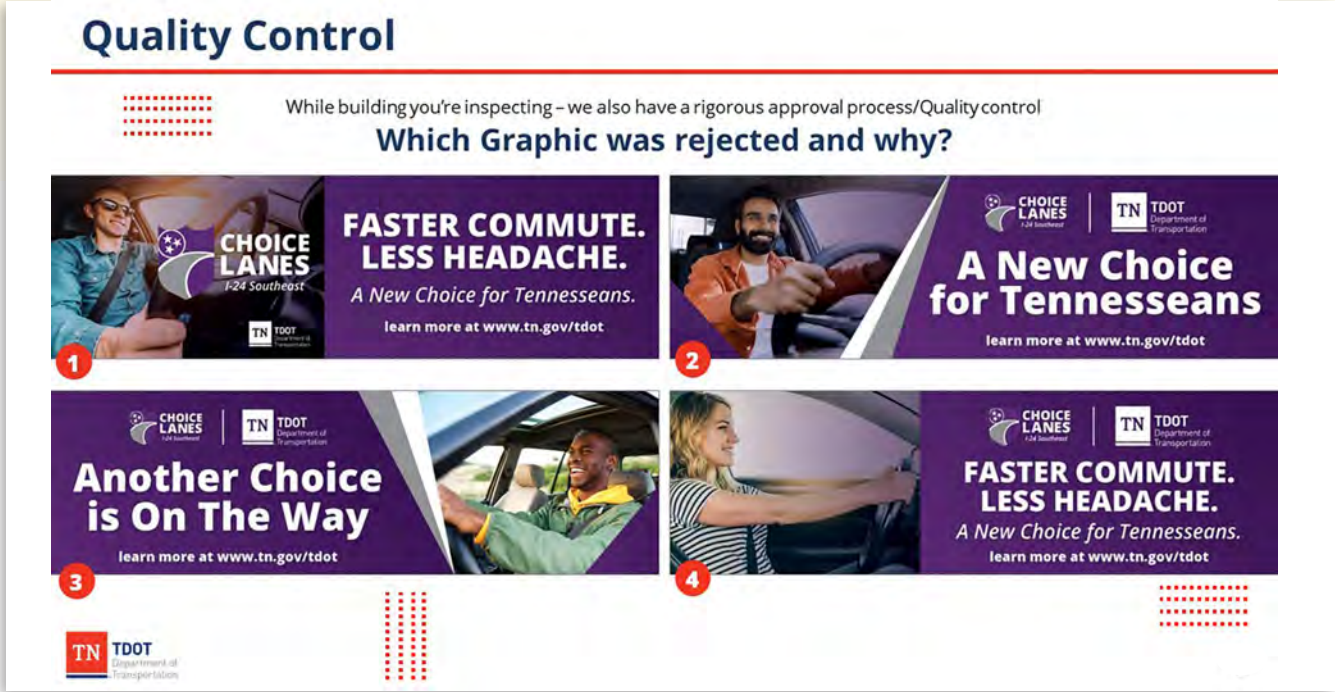
Next, the team enters the environmental phase, where it ensures that its messaging is inclusive and sensitive. We ask critical questions: Is our message diverse? Will it resonate with the audience? Are all stakeholders involved? We assess public perception and potential pitfalls. Once we have checked all the boxes, we move to the design phase.

Crafting the Message

In the design phase, we brainstorm what our communication will look like. Will we use graphics, videos, press releases or an event? After finalizing our strategies, we gather the necessary materials. This is our Right-of-Way phase, where we acquire the assets needed, such as videos and photos, or secure the site for an event.

Then comes the construction phase: creating graphics, editing videos, writing press releases and developing social media content. Quality control is crucial; every piece must receive approval before reaching the audience. For example, which image below did not pass the test? Did you find it? It was option two. The driver is not wearing a seatbelt.

After launching a campaign or, in your case, completing the project, we celebrate with a ribbon cutting and check social media engagement (i.e., views, likes, shares, comments) and traditional media coverage.



Accepting the Excel Award for TDOT's 2024 Work Zone Awareness Week Campaign at AASHTO's annual TransComm meeting were, from left: Mark Nagi, *Region One Communications Officer*, Beth Emmons, *Director of Community Relations/Communications*, Alex Denis, *Assistant Bureau Chief of Public Affairs*, Nichole Lawrence, *Region Four Communications Officer*, Erin Zeigler, *Region Three Communications Officer*.

Case Study: Work Zone Awareness Week

One example is our planning for Work Zone Awareness Week. Each year, we strive for a fresh angle to attract attention. For 2024, we embraced a comic book theme that led to a significant communications accolade: the Excel Award from American Association of State Highway and Transportation Officials (AASHTO). Our campaign included a public service announcement, one of 14 videos we produced. It also resulted in partnerships with the Nashville Sounds Minor League Baseball team, Tennessee Titans football team and interactive community events, such as school visits from the mascots of TDOT and Tennessee Highway Patrol.

We also spread our message by engaging with media outlets, putting up posters in Department of Motor Vehicles sites across the state and using social media to maximize reach. This comprehensive strategy helped us connect with a broader audience.

Crisis Communications

Unexpected events require a different approach, such as crisis communications during winter weather. In these situations, early and frequent communication is vital. We kick off with a press release that reassures the public of our preparedness. Our Regional Communications Officers often host press events to manage media interviews efficiently. As the situation unfolds, we share real-time updates on social media with pictures, graphics and videos, mixing humor and seriousness to keep the public informed. Afterward, we highlight the work of our employees.

High-Profile Projects

Communicating about significant projects involves additional layers. Recently, we celebrated the largest transportation investment in Tennessee's history, a $400 million federal grant for the I-55 Bridge over Mississippi River, also known as America's River Crossing. This event required meticulous planning, from securing a suitable location to creating promotional materials and organizing the event that included live music, federal and elected officials from two states, talking points and producing a video that same day. For this project, we also won an AASHTO award for the best logo (*see page 26*).

The Role of Social Media

Today we rely less on traditional media and more on social media to control our narrative and tell our stories. Each platform requires a tailored approach. For example, Twitter is ideal for quick updates, while Facebook works well for longer videos and photo albums. Instagram is good for short stories and trends. Social media trends are important, providing a chance to show personality and humor, when appropriate. Personality wins every time. It is engaging and entertaining. Our team has recently hired a Digital Media Officer to manage this expanding landscape effectively, which includes analytics. The communications team is also data driven.

One of our most successful social media campaigns involved rephrasing mundane traffic advisories in a style reminiscent of the television series "Bridgerton." This playful approach resulted in over 166,000 impressions and 26,000 engagements, highlighting how a touch of creativity can capture attention. We also gained 2,100 new followers in one month.

Internal Communication

We prioritize internal communication within TDOT. With around 3,000 employees, clear and engaging internal messaging is essential. Our new Internal Communications Officer focuses on producing content for TDOT TV and the Road Ahead weekly newsletter, ensuring our team stays informed and connected.

(continued on page 26)

Engineering **the Perfect Communications Plan**

(continued from page 25)

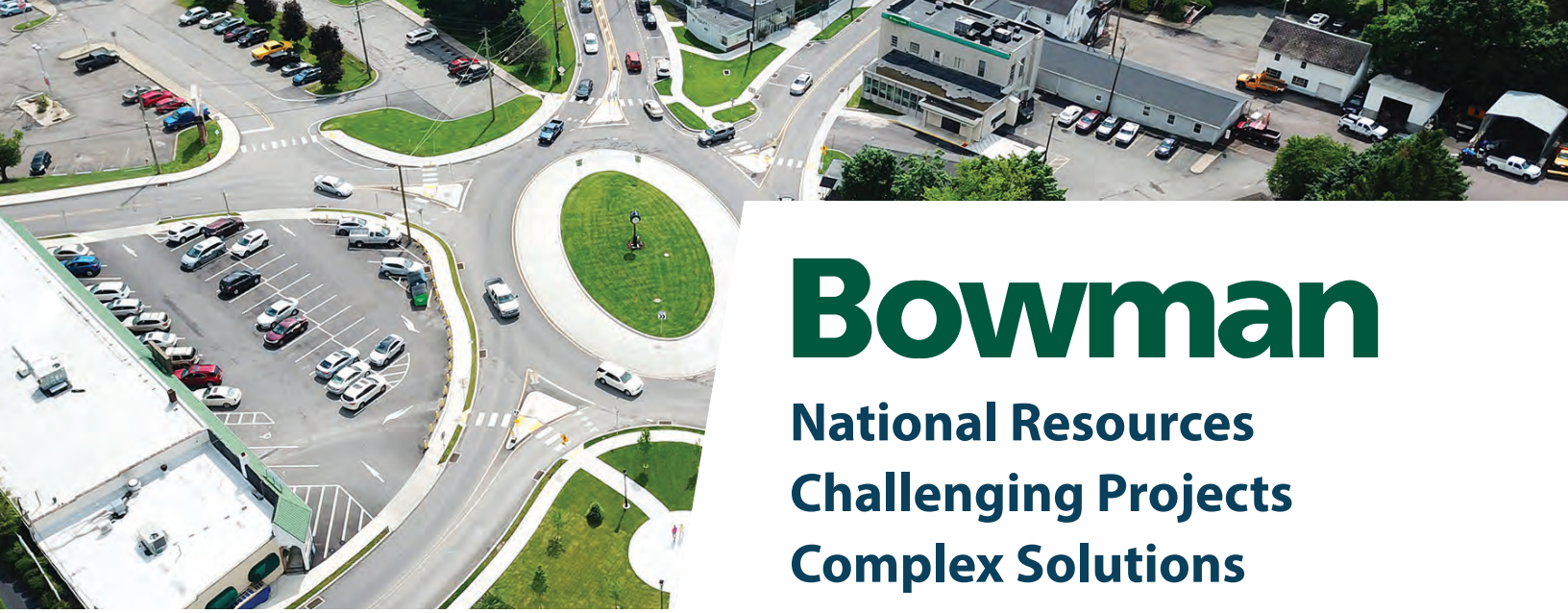
In Conclusion

At TDOT, we strive to exceed expectations in communication, both externally and internally. We take pride in our structured approach, which mirrors the careful planning of engineering projects. With seven million customers residing in Tennessee, we must operate as a high-functioning team with a product that exceeds what people may expect from a government agency. We hold ourselves to a higher standard. That is why we have constructed our team to manage the elevated work that we regularly produce. Our department now also includes our newly formed public-private partnership and alternative delivery division, which has its own Communications Officer to support our Choice Lanes program.

Here are just a few of our other responsibilities: community meetings, public hearings, TDOT Comments, proofreading all materials, the Commissioner's presentations and talking points, writing playbooks for high-profile issues, website management, public records requests, assisting other divisions with needs and an external monthly newsletter.

Effective communication is complex, but our aim is always to make it relatable and engaging. At TDOT we love our acronyms, so, I will leave you with this one: KISS, otherwise known as "Keep It Simple, Stupid." If only it were that easy.

AASHTO, Committee on Transportation (TransComm), Award for Best Logo for America's River Crossing



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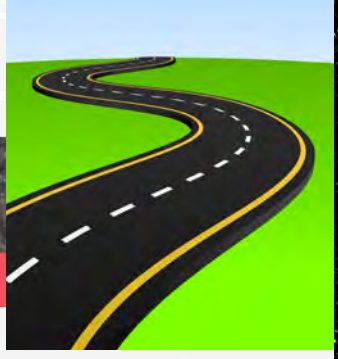
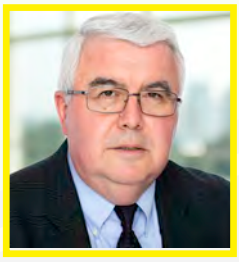
As The Wheel Turns

ASHE Members on the Move!





Wright Named 2024 Delaware Valley Engineer of the Year

Philadelphia, PA—**Robert M. Wright, PE,** was elected 2024 Delaware Valley Engineer of the Year by the Engineers' Club of Philadelphia. Wright, project manager at Bowman Consulting, is a senior member, **Past President and Section executive of ASHE Delaware Valley Section.** The award recognizes a local engineer who emulates the qualities and talents that define professional excellence, civic duty, society leadership and community stewardship. Wright manages traffic and transportation engineering projects for various private and public clients and assists with business development.

Strafaci Joins French & Parrello Associates

Wall Township, NJ—**Dr. John R. Strafaci, PhD, PE,** has joined the Transportation Group at French & Parrello Associates. Dr. Strafaci, **a member of ASHE North Central New Jersey Section and upcoming new ASHE Boston Section**, has over 15 years of engineering and project management experience in structural design, construction and urban planning. His career spans key infrastructure projects and thought leadership in sustainable urban environments. He has led strategic assessments and multimillion-dollar urban planning initiatives across the Northeast. As an educator, he serves as an adjunct professor, fostering the next generation of engineering talent.

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News From Across ASHE-Miles

ASHE First State Section Awards Scholarships

ASHE First State Section awarded $25,000 in 2024 to seven engineering students in Delaware. From left are the Nick Hetrick, PE, R.E. Pierson Construction Company, the Section's Chair of Scholarships, with award recipients Chloe Gerstenbacher, Georgia Angeletakis, Michael Bryant, Slade Goldman, Caden Brooks and Erika Nazareth Materan Galindo (Delaware Technical Community College). Not pictured: Luke Depireux. Gerstenbacher, Nicole Mnych and Angeletakis serve as President, Vice President and Treasurer, respectively, of the ASHE@UD student chapter, active since 2009 at the University of Delaware. The scholarship winners were guests at the Section's October professional dinner meeting. Nicole Mnych and Daniel Porotov also attended the event as guests. Mark Buckalew, Delaware Department of Transportation (DelDOT), Chief of Construction and Materials, spoke on DelDOT's progress with digitization of planning, design, construction, production, construction and operation. Since 1997, **ASHE First State Section** has awarded scholarships totaling $265,800 to support tomorrow's engineering leaders.

ASHE North Central New Jersey Section

Names New Lifetime Members

The following Lifetime Members recently joined the ranks of the **ASHE North Central New Jersey Section:** ASHE National President Don Di Zuzio, Rodney Pello, Rod Lewis and Tim Herlihy. Congratulations to all. Atly Botas *(left)*, ASHE North Central New Jersey Section President, celebrated ASHE National President Don Di Zuzio as one of the group's new Lifetime Members.

Awarding Student Scholarships in 2025

The **ASHE North Central New Jersey Section** anticipates awarding the following scholarships during its 2024-25 program year to students actively pursuing engineering degrees:

- One Member Undergraduate Student Scholarship in the amount of $3,500
- Engineering Student Scholarship(s) in the total amount of $11,500

The Section will send out applications later in the year.

Opened in 1931, the Lucy Jefferson Lewis Memorial Bridge in Kentucky's Livingston County carried US 60 traffic over the Cumberland River in Smithland, KY. The river crossing was vital to the region because the Cumberland River divides the county, with the only other crossing requiring nearly an hour's detour. The narrow lanes, nonexistent shoulders and severe weight restrictions of the existing bridge led to the Kentucky Transportation Cabinet (KYTC) initiating a replacement project in 2015. Stantec Consulting received the contract to provide both Phase One and Phase Two design services.

Smithland is located at the confluence of the Ohio and Cumberland rivers, with the bridge crossing the Cumberland River just one-quarter of a mile upstream from the Ohio River. The influence of the river and associated navigational demands impacted nearly every facet of the project. Large barge flotillas regularly used the waterway. The existing bridge had both piers within the water at normal pool elevation, presenting navigational challenges for flotillas maneuvering along the tight S-bend in the river.

Truss span at the Paducah Riverport Facility on the morning of the float

Through Phase One design, the project team focused on selection of a typical section, alignment alternative and structure type and span arrangement for the new bridge. Ultimately, an alignment offset 100-foot downstream from the existing bridge was selected. This allowed for construction of the new bridge while keeping the existing one open to traffic. The typical roadway section for the bridge was set to incorporate two 12-foot lanes, one in each direction, with eight-foot shoulders.

For the span arrangement study, the team worked with Seamen's Church Institute to perform navigation simulation modeling. During the simulations, the project team assessed different pier locations consisting of alternates with the piers both inside and outside the waterline. After consultation with the United States Coast Guard (USCG), the decision was made to completely span the river and locate the piers outside of the waterline at normal pool elevation.

With the main river span set, the team conducted a structure type study that evaluated alternatives for truss, arch, segmental and cable-supported bridges. The study concluded that the single-span alternatives, truss and arch, were the most economical and suited the project site constraints. The single-span truss was selected as the preferred structure type due to KYTC's familiarity with them. KYTC also had many in its inventory and could perform the long-term inspection and maintenance requirements.

In recent times, trusses were regarded as antiquated structure types that lacked aesthetic appeal and were difficult to construct. The design for the new Smithland Bridge aimed to embrace a more modern approach to truss design. It utilized a modified warren configuration that eliminated vertical members and used wider panel spacing. Traditional truss design uses sway bracing frames along the span to help provide lateral and torsional stability to the box. The Smithland design removed all sway bracing and required moment connections at the floor beam and top lateral bracing connections to provide lateral and torsional stability. These modifications to the classic truss framing approach helped to reduce total steel weight in the design. But more importantly, they reduced the number of connections and potential member fit-up issues, improving constructability. At 700 feet, four inches, the main span of the Smithland Bridge is the third longest simple-span truss in North America.

On April 24, 2020, the construction contract for the Smithland Bridge went to Jim Smith Contracting (JSC) as the prime consultant, with American Bridge as a major subconsultant responsible for erection of the structural steel. Construction cost was $63.6 million. The most challenging aspect of construction involved the erection of the main truss span. The narrow river and environmental factors in the vicinity of the project site limited the options that would allow for an in-place erection or a short float-in.

The contractor set out to search for alternative locations to construct the structural steel and discovered an underutilized riverport facility located on the Ohio River in Paducah, KY. The Contractor and Paducah riverport facility struck a mutually beneficial agreement, allowing the Contractor to use the site for the truss

(continued on page 34)

Floating a New Bridge Upriver to Ease Traffic on US 60

by Taylor Perkins, PhD, SE, PE, Stantec, and Austin Hart, PE, Kentucky Transportation Cabinet, **ASHE Bluegrass Section**

Opening ceremony for the new Smithland Bridge

Truss span moving into place after reaching lifting height

Floating a New Bridge Upriver to Ease Traffic on US 60

(continued from page 32)

erection. The riverport provided an ideal location to erect the bridge since it featured a secure space, with plenty of staging area, and a permanent tower crane available for setting the steel. While the riverport facility was perfect for the erection of the truss, it did present one challenge: it was approximately 15 miles down the Ohio River from the project site, which would make the float one of the longest known in North America. After weighing the advantages of the site and risks of the long float, the Contractor elected to move forward with the riverport.

Veritas Steel in Eau Clair, WI, fabricated the truss, which was shipped to the site and erected on four connected barges. Erection began in August 2021, and the steel was set and substantially painted by July 2022 with minor issues. The three-day float and lift operation took place in September 2022. Preparation for the float required coordination between all stakeholders, including the KYTC, Contractor, Designer, U.S. Army Corps of Engineers, USCG and local law enforcement officers.

Day One entailed the transport of the bridge, via tugboats, up the Ohio River and into the Cumberland River to the project site, a journey that took approximately six hours. Once at the project site, the bridge was moored to positioning barges anchored to the river bottom. The float required a moving closure of the Ohio River, a quarter-mile upstream and downstream of the moving bridge and a full closure of the Cumberland River. The USCG allowed a 72-hour full-closure of the Cumberland River for the operation.

After reaching the site, the bridge was parked overnight until lifting began early the next morning. To perform the 87-foot lift necessary to get the more than five-million-pound truss to elevation, the Contractor constructed lifting towers with a total of four strand jacks to pull the bridge up. The jacks operate at a rate of eight feet to 10 feet per hour, resulting in a planned nine-hour lift. This portion of the move had strict regulations for wind speed, river flow rate and minimum water surface elevation. In particular, the water surface elevation was a concern. The height of the towers did not leave much freeboard to allow the truss to clear the approach spans when pushed into place before setting down on the bearings. Although the water elevation was low, it was still above the minimum threshold. The wind and flow conditions were excellent, so the lift began as planned on the second day.

Early in the lift, it was obvious that things were progressing slower than expected. This was attributed to a failing hydraulic pump, which controlled the two jacks on one end of the bridge. Fortunately, a spare pump was available on-site and substituted into the system. However, it was not long before the backup pump also failed, leaving the bridge stuck 80 feet in the air. The Contractor identified another pump in the region available for delivery to the site within eight hours. The project team discussed different options and decided that the best course of action was to leave the truss at elevation overnight and remobilize in the morning to continue the lift with the new pump.

On the morning of the third day, lifting began without issue and the bridge was soon at the appropriate elevation to clear the approach span superstructure. The barges were then pushed upstream, and the truss was set down on the bearings already positioned on the pier. Later that afternoon, the truss sat on the bearings and the bolts were installed between the sole plate welded to the truss and the top plate of the bearings. After the truss was released from the jacks, the upstream towers were disassembled to allow the barges to be pushed out of the Cumberland River, and the waterway was reopened.

Once the bridge was set in place, work began to complete the final decking and barrier construction so that traffic could be switched to the new bridge. In May 2023, after an opening ceremony, traffic moved over to the new structure. With the original bridge already demolished, the project was to be completed by the end of 2024. A short video about the project, including footage of the float, can be found at https://www.youtube.com/watch?v=HGjJad4SclQ

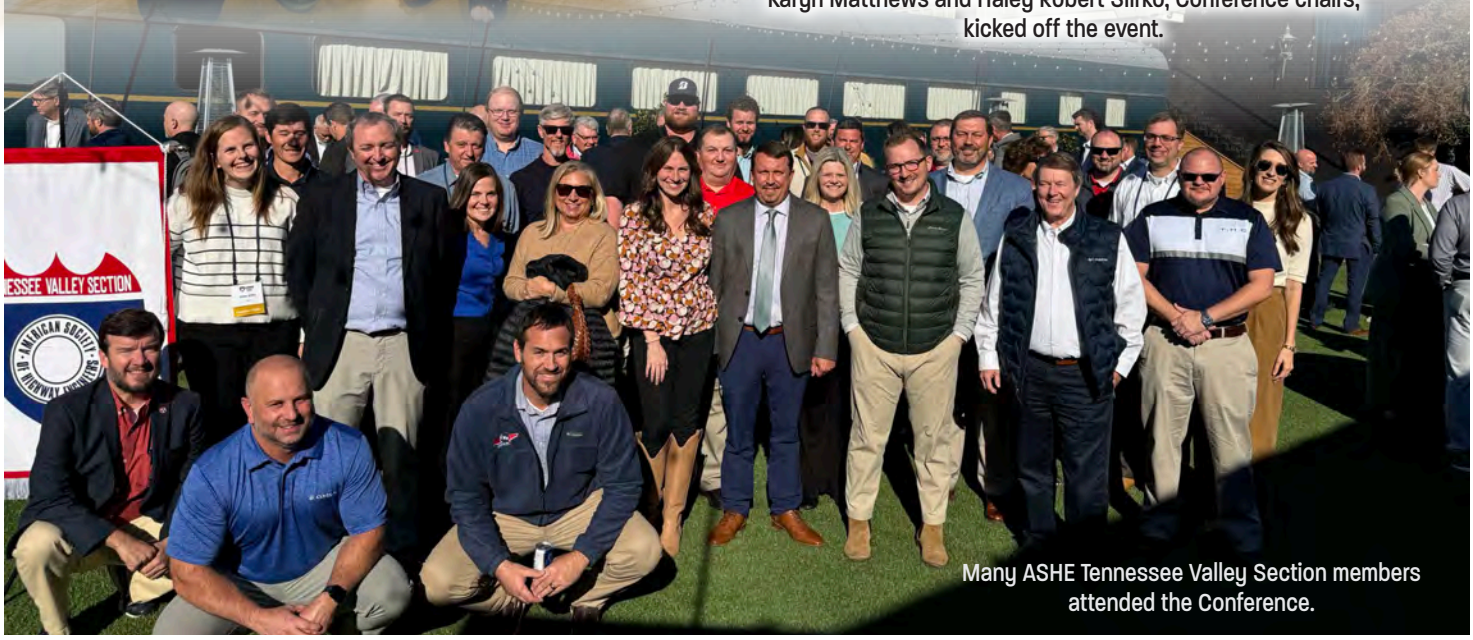
Tennessee Valley Section Holds Inaugural ASHE Southeast Region Conference

Sunserea Gates, ASHE Southeast Region President (*left*), and Kathryn Fink, ASHE National Second Vice President

ASHE Tennessee Valley Section hosted the Inaugural Southeast Region Conference in October at Chattanooga's Hotel Chalet. The event included five technical sessions with speakers from across the Southeast, lunch accompanied by a panel discussion and a happy hour in the afternoon. Southeast Region Board members attended, along with over 160 ASHE members and colleagues. Kathryn Fink, National Board Second Vice President, highlighted the special significance of the inaugural Conference in her presentation. The Section hosted its annual golf tournament the next day at Bear Trace, Harrison Bay State Park. Tennessee Valley Section and the Southeast Region thank all who made the Conference a success. Special thanks to Conference chairs Haley Robert Slifko and Karyn Matthews for their leadership and dedication in organizing the event. ASHE Southeast Region hopes to continue holding annual Conferences in the years to come.

Conference chairs Karyn Matthews (*left*) and Haley Robert Slifko

Karyn Matthews and Haley Robert Slifko, Conference chairs, kicked off the event.



Many ASHE Tennessee Valley Section members attended the Conference.

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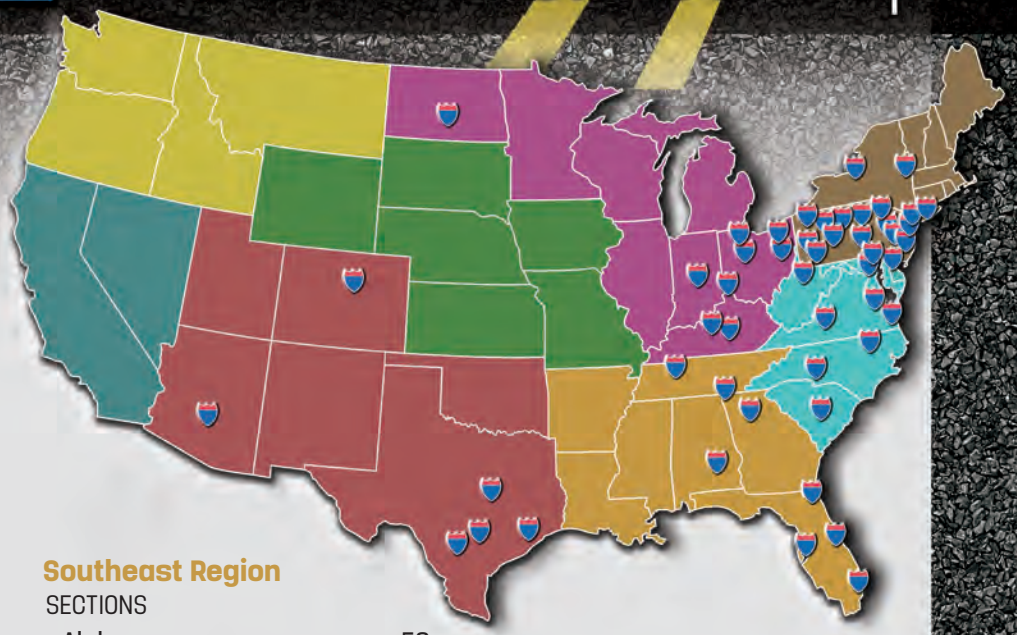

Regions *and* Sections

Northeast Region

SECTIONS	
Albany	84
Altoona	192
Central New York	49
Clearfield	190
Delaware Valley	340
East Penn	106
First State	226
Franklin	103
Harrisburg	403
Long Island	34
Mid-Allegheny	94
New York Metro	186
North Central New Jersey	119
North East Penn	138
Pittsburgh	536
Southern New Jersey	200
Southwest Penn	237
Williamsport	71
Subtotal	**3,308**

Mid-Atlantic Region

SECTIONS	
Blue Ridge	53
Carolina Piedmont	47
Carolina Triangle	218
Chesapeake	264
Greater Hampton Roads	74
North Central West Virginia	51
Old Dominion	80
Potomac	171
South Carolina	79
Subtotal	**1,037**

Southeast Region

SECTIONS	
Alabama	59
Central Florida	132
Georgia	642
Middle Tennessee	293
Northeast Florida	217
South Florida	17
Tampa Bay	41
Tennessee Valley	122
Subtotal	**1,523**

Great Lakes Region

SECTIONS	
Bluegrass	140
Central Dacotah	65
Central Ohio	204
Circle City	62
Cuyahoga Valley	102
Derby City	92
Lake Erie	249
Northwest Ohio	43
Triko Valley	149
Subtotal	**1,106**

Southwest Region

SECTIONS	
Central Texas	72
Colorado	40
Dallas-Fort Worth	67
Houston	101
Phoenix Sonoran	149
San Antonio	38
Subtotal	**467**

National Total	**7,441**
Professional Status	56%
Government	12%
Consultant	75%
Contractor	5%
Other	8%

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