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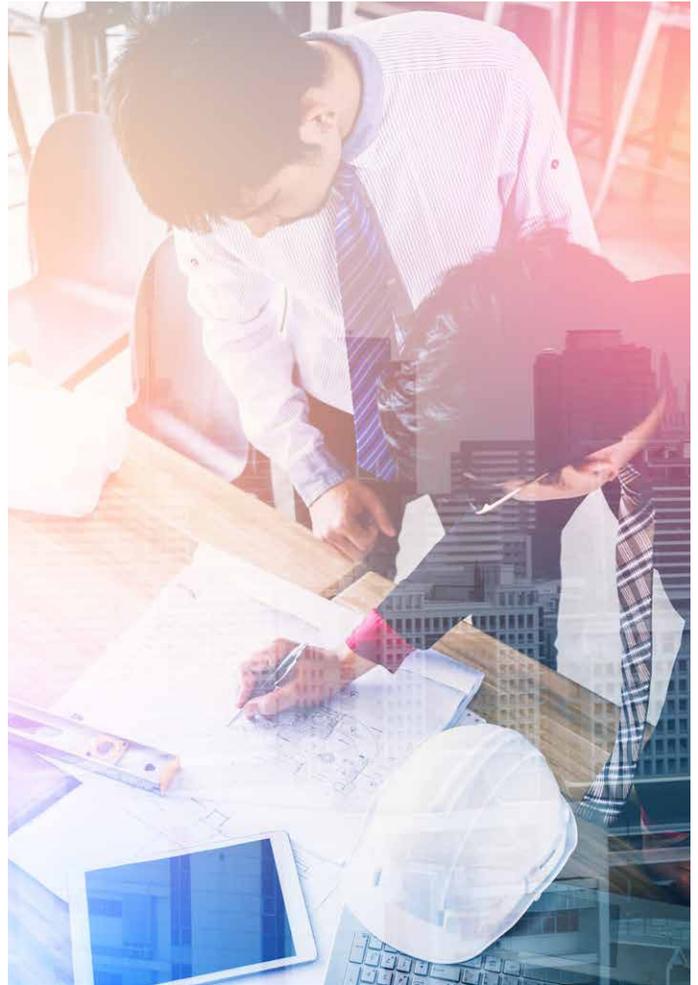
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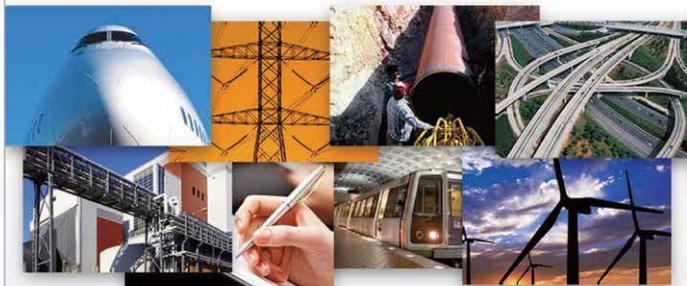
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Richard N. Cochrane, PE
ASHE National President 2018-2019

New Directions



I am both humbled and excited to serve as President of the transportation industry's premier networking organization. I find it hard to imagine that I can truly fill the rather large boots of those who have preceded me. Fortunately, I have the support of many highly experienced people, including the previous Presidents who have given me guidance; the National Board; our National Committees who do the work necessary to keep this Society moving forward; the North East Penn Section; and of course, my family, who have supported me through all my travel and time devoted to ASHE. My late father, Norman Cochrane, served as the second President of the Pittsburgh Section, so I guess you could say ASHE is in my blood.

I can still remember my first ASHE experience. I was in high school, and my father took me along to an ASHE tour of a lock and dam on the Ohio River near Pittsburgh. I've never forgotten that first experience and the valuable education, support, and fellowship that ASHE provides to our members. As a member first in the Harrisburg Section, and now in the North East Penn Section, I have always enjoyed and been inspired by the professional interactions of my ASHE membership.

When I joined that ASHE tour in the late 1960s, our organization was composed of about 1,400 members, and we had 12 Sections. We now have a record number of members—over 6,500—and 43 Sections. We have chartered two Sections in the past two years (Bluegrass and Houston), and have interest in several other locales. I believe we are poised for a growth spurt that will increase our membership even more. But our goal is not to grow for the sake of growing, but to grow so we can provide the ASHE experience to a larger number of our fellow professionals.

So, what is the ASHE experience? As our website says, we are "The Highway Industry Networking Organization." Some groups lobby better than we do; some address Civil Engineering theory better than we do; some organizations have bigger conferences than we do. But when it comes to providing opportunities to interact with other professionals who have the same interests, whether in highways and bridges, aviation and freight or bicycles and pedestrians, no group does it better than ASHE.

In the coming year, with the help and guidance of the National Board of Directors, I hope to streamline and energize ASHE so we can take advantage of opportunities for growth, both with new Sections and larger Sections. I hope to ensure that we provide opportunities for professional growth through quality technical sessions and presentations that allow members to obtain professional development hours so they can meet their state's requirements. I hope to grow our outreach to students through our Student Chapter Committee. And I hope to increase our exposure through key partnerships with kindred organizations. ♥

Issue	Materials Due (ads and articles/photos)	Distribution
Fall '18	August 15	October
Winter '19	October 15	January



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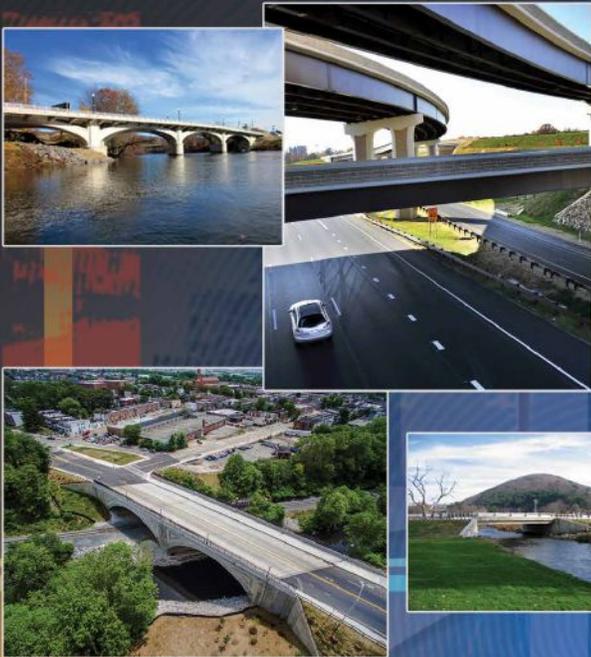
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This has already been an eventful year for ASHE—and for me as well, as some of you already know. I want to extend my most heartfelt thanks and appreciation for all of your good wishes, notes and prayers. Your kindnesses have surely aided in my healing, and I am very grateful for your patience and understanding about needed changes in the production schedule for the scanner. The scanner will continue to appear a little later this year, but we will return to the normal schedule for the winter 2019 issue.

I also want to express, once again, my gratitude for the honor of receiving the President's Award, announced at this year's National Conference. It is a great joy and privilege to serve the ASHE organization, and I am committed to helping ASHE maintain its best possible image to continue to grow in the future!

Tammy

Tammy Farrell, editor of ASHE scanner and designer/owner of TNT Graphics.

VISIONARY DESIGNS THAT CONNECT COMMUNITIES



WVDOT, I-64 Widening and Kanawha River Bridges, South Charleston, WV. Prime Consultant and Engineer-of-Record for this \$127M project that involved the widening of approximately 4.53 miles of I-64. Design included adding a third travel lane in each direction on I-64; improvements at three intersections; redecking and widening of 12 structures; reconstruction of two structures to provide clearances and widening; and a new record-setting and award-winning bridge over the Kanawha River that includes the longest concrete box span in the United States. Eastbound traffic travels on the new bridge (foreground) and westbound traffic remains on the rehabilitated and retrofitted existing bridge (background).

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New Washington, DC Office

June 1, 2018



Located in the heart of DC's Capitol Riverfront community, TYLI's new office at 80 M Street SE, Suite 320, allows TYLI to better serve our DC-area clients and expand our services within the District. We look forward to becoming an integral part of one of DC's fastest-growing neighborhoods.

Paving the Way for Warren County's Beach Road

▶ A three-inch top course and six-inch base/binder course along Beach Road comprise the heavy-duty version of a porous asphalt system.

by Thomas Baird, PE, Barton & Loguidice, D.P.C., **ASHE Albany Section**

Beach Road serves the south shore of Lake George in Warren County, NY. In spring 2013, this four-lane, one-and-one-tenth-mile urban collector and principal transportation corridor was reconstructed using a Heavy Duty (HD) porous asphalt system design. The project was sponsored by the Warren County Department of Public Works, designed by the engineering firm Barton & Loguidice, D.P.C. (B&L) and constructed by Kubricky Construction Corporation.

Significant support, funding and backing from the New York State Department of Transportation (NYSDOT), the Federal Highway Administration and the New York State Environmental Facilities Corporation were essential to the project's success. Data from their experiences with porous asphalt were also provided by the Maine Department of Transportation. Five years later, the roadway shows no sign of distress and is functioning as designed.

Most guidance discourages construction of porous pavement immediately adjacent to

a lake, especially with a fluctuating water table as close as three to four feet below the finished grade of the roadway. A design was needed to accommodate the potential for total saturation, store five inches of rain in a 24-hour period, support the design loading, and resist rutting during paving operations. The solution was a 21-inch thick reservoir course that consists of 100 percent fractured, washed two- to three-inch stone. This larger stone resists movement from the fluctuating water table, provide a 40- to 45-percent air void space and "locks" together well. Especially important when using limestone is that the larger stone size, compared to smaller gradations, has a reduced surface area that is easier to clean and has less potential for stone dust accumulation at the bottom of the system. The larger reservoir stone was placed over a six-inch-thick section of three-quarter-inch, 100 percent fractured and washed stone to protect the underlying nonwoven geotextile from punctures.

With traffic volumes in the corridor reaching nearly 9,000 vehicles (4 percent trucks) daily, a

Stone surface is ready for paving. Note distribution of choker course stone at 80 percent and the reservoir course stone at 20 percent.



Four lanes of heavy-duty porous asphalt border the southern shoreline of Lake George.

heavy-duty asphalt design was also required. The open-graded base/binder course consisted of a single seven-and-one-half-inch loose lift utilizing a polymer modified (PG64-22 ER at two-and-one-half percent) asphalt binder compacted to six inches at a density of approximately 128 pounds per cubic foot (lb/CF). The top course asphalt mix consisted of six-tenth percent mineral fibers, uniformly graded stone (typical size: three-eighth-inch) and a polymer modified (PG76-22ER at five-and-nine-tenths percent) asphalt binder. Placed at a loose lift of four inches, the top course compacted to three inches and a density of approximately 133 lb/CF. In total, 2,100 tons of top and 3,800 tons of base/binder were placed.

While the numerous quality control procedures developed are important, temperature is the most influential metric in the installation of porous asphalt. Whether it is production, transporting or placement, nowhere in this process should temperatures exceed 295 degrees F. By adding fibers combined with a 290-degree F. mix temperature, asphalt drain reduced down to less than four-hundredths of a percent. Drain down is the undesirable process of asphalt binder “draining away” from the stone



A stable and rut-resistant stone matrix provides consistent pavement thickness, in-place density and overall quality of the entire porous system.

aggregate, resulting in less film thickness and overall integrity of the pavement.

The Beach Road project has proven that “less is more” when it comes to the choker course layer. Our design uses a one- to one-and-five-tenths-inch maximum thick choker course of NYSDOT #2 (three-quarter-inch) 100% crushed stone installed on the already vibratory rolled reservoir course. The choker course is then rolled on mild vibrate until the

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Production, transport, installation and quality control procedures were fine-tuned prior to full-scale construction.

Paving the Way for Warren County's Beach Road in Lake George, NY

(continued from page 7)

reservoir layer and choker course layers are locked in place. The result is a stable platform that does not rut when the asphalt trucks are backed up to the paving hopper or when making turns. This design differs from most guidance that calls for four inches or more choker course, or even just specifying paving to take place on only three-quarter-inch stone. The optimum stability was found when, after vibratory rolling, 70 percent to 80 percent of the exposed stone consists of the three-quarter-inch stone choker course and 20 percent to 30 percent of the two- to three-inch reservoir course.

Other important elements of HD porous asphalt include increasing dry mixing time at the plant; density meter calibration; dealing with varying weather conditions—such as a thunderstorm; and rolling temperatures for initial, interim and the critical final rolling temperature range where peak density is achieved between 110 degrees F. and 140 degrees F. There are also special procedures for paving porous asphalt in cold weather during early spring and late fall, or the unexpected late night, that have proven successful.

The specifications, process and quality control procedures were further refined by Barton & Loguidice and NYSDOT during the design of the 2014-15 \$5.5 million project where the New York State Department of Environmental Conservation (NYSDEC) reconstructed the Lake George Beach Day-Use Area facility. The project site, located between the two sections of Beach Road, included more than 7,100 tons of HD porous asphalt and approximately 7,800 tons of conventional asphalt encompassing approximately six acres of the 10-acre facility. From a performance perspective, the 15,000 tons of crushed stone, 700 cubic yards of Portland cement concrete and 50 percent of the asphalt hauled to the NYSDEC project used the Beach Road porous asphalt section. Beach Road was continuously monitored for any deflections, pavement distress, rutting, etc., and none were found. The performance in this situation and the stability in the stone course design provide a strong indication of the structural stability that can be obtained with a design system that uses 20 percent to 45 percent air as a component.

Beach Road is now in its fifth year since construction and has just endured its fourth winter season. Even with frost penetrations of five feet in 2015 and four feet annually, there are no distress, cracks or the slight hint of pothole formation. This differs from the eastern section of Beach Road where pavement displacement and cracking along the centerline is present in multiple locations. This section was reconstructed with conventional asphalt,



Top course consisting of 6 percent polymer modified PG 76-22 with elastic recovery (60 percent) binder (a.k.a. PG 76-22ER.)

12 inches of compacted subbase course, dual underdrains, geotextile and a new closed drainage system. Porous asphalt could not be utilized in this section since the steep grade of 12 percent prohibits a practical method of storage and infiltration below the pavement. The maximum recommended roadway grade is five percent when using a "stepped" reservoir section.

Since the Beach Road construction, the refinement and enhancement of porous asphalt systems continue with new procedures, material, designs, use of additives and structural testing planned for this year. 🇺🇸

Project Awards

Beach Road:

- 2014 ACEC New York Platinum Award for Transportation
- Nationally Ranked #8 in *Roads and Bridges* magazine, 2014
- American Public Works Association, NY State 2014 Environmental Project of the Year

NYSDEC Lake George Beach Day-Use Area:

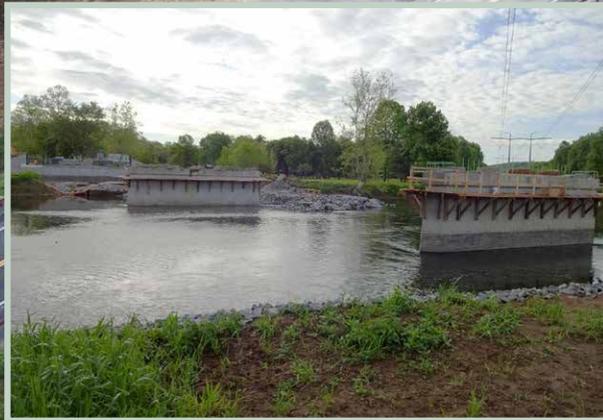
- ACEC NY Diamond Award, Top Environmental Project in NYS 2016

SR 926 over Brandywine Creek, Chester County, PA: A Vital New Connection for Added Safety and Accessibility

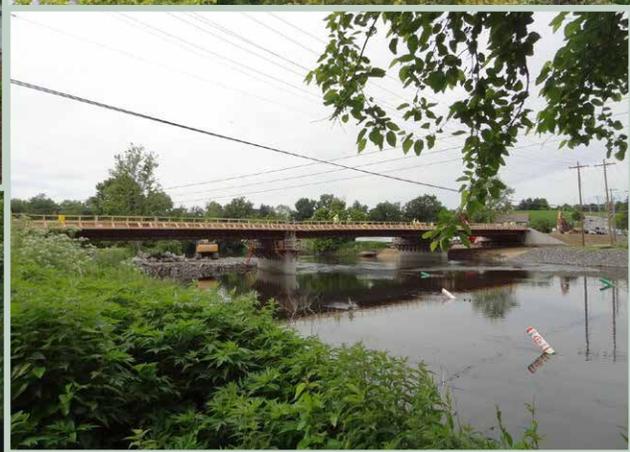
by ASHE Delaware Valley Section

Instrumental to the connectivity of southeast Chester County, SR 926, Section 53S, provides a critical passage across Brandywine Creek. The \$8.8 million bridge replacement solves a crucial flooding challenge and allows greater emergency service access throughout the area.

Beginning construction in December 2016, the project team—Gannett Fleming, Clearwater Construction, Dawood Engineering and CHRS, Inc.—provided the Pennsylvania Department of Transportation, PennDOT District 6, with a final design in eight months.



Piers and construction of abutment 2 of Brandywine Creek bridge



Beams placed and forms for Type 10M barrier of Brandywine Creek bridge

The project team collaborated to bring a 30-year unfinished job to completion—one week earlier than expected. In just five years, the team accomplished all public coordination, design, permitting, and construction tasks.

With five Brandywine Creek crossings spanning an eight-mile stretch near the Delaware state border, roadway options are limited for the average commuter. Crossing the creek becomes an even larger issue when flooding occurs. Historically, four out of the five Brandywine bridges flood on an annual basis, closing each roadway and hindering accessibility. Flooding creates a road closure on SR 926, with neighboring SR 52 as the only thruway.

The SR 52 crossing is a substandard, 18-foot-wide, historic arch structure that cannot handle higher traffic volumes during a flood. Since SR 52 was historically the only thruway, traffic would stretch for miles in both directions until water levels lowered and opened other roadways. This condition impacted emergency service providers and the local Unionville-Chadds Ford School District. With the nearest hospital in West Chester Borough east of the creek, there was not an open, congestion-free roadway for incident response west of the creek when flooding occurred.

Additionally, although Unionville-Chadds Ford schools are located west of Brandywine Creek, half of the students reside east of the creek. The district does not allow school buses to travel when the creek floods, forcing parents to cross the narrow SR 52 causeway twice during school commutes.

Upgrading the SR 926 bridge was

paramount to increase accessibility during floods and divert traffic from SR 52. In its existing condition, SR 926 flooded upwards of nine times annually due to the approaches, including a 1,000-foot stretch on the east side that was too low to handle even a small stream event.

A primary consideration was to replace the structurally deficient bridge and raise the approaches to minimize flooding. However, any solution required a complicated hydraulic analysis of both Brandywine Creek and Radley Run. Because of the project's location at the confluence of Radley Run and the Brandywine Creek, multiple alternatives were required to analyze both streams. Since the bridge required constant maintenance, finding a timely and efficient solution was essential.

The final design solution included a new three-span, 315-foot-long bridge over Brandywine Creek and two new 48-foot-span arch culverts. The approaches were raised nine feet while reconstructing 1,700 feet of pavement. Creek Road was realigned and raised to better connect with the raised SR 926. Using a full detour, the SR 926 bridge replacement was constructed in approximately six months. The contractor constructed the Radley Run culverts and majority of raised roadway in approximately 10 weeks.

In preliminary design, the construction schedule was estimated to be 18 months. However, the public charged the Gannett Fleming team to look for ways to reduce the project schedule. Gannett Fleming, in collaboration with PennDOT, agreed to investigate a shorter construction time frame. Using a six-day workweek, 10-hour workdays, and a system of incentives/disincentives, the total project schedule was reduced to six months.

Considering a tight construction schedule, the construction team led by Clearwater Construction, Inc., in coordination with the design team and PennDOT

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Aerial view looking west to east of the new Brandywine Creek bridge

**ASHE
Delaware
Valley Section
2017 Project of the
Year Under \$10
Million**

SR 926 over Brandywine Creek, Chester County, PA: A Vital New Connection for Added Safety and Accessibility

(continued from page 11)

reviewers, exceeded PennDOT's September 1, 2017, completion date and finished the project August 25, 2017. Through public involvement and stakeholder coordination, the bridge replacement project garnered significant community interest and increased public safety capabilities.

Environmental Concerns

To complete the project in a tight time frame, the Gannett Fleming team embarked on a multi-layered collaboration with various agencies and parties. The design team created a viable solution that required an in-depth understanding of flood zone and Federal Emergency Management Agency (FEMA) floodway parameters.

Upon coordination with FEMA and the Pennsylvania Department of Environmental Protection, the team applied the environmental parameters to the project design in relation to impacting the adjacent historic properties. They determined that any increase in the flood elevation from Brandywine Creek (FEMA Zone AE) would require a historic building demolition. This adverse impact would have required extensive coordination with the National Park

Service, Pennsylvania Historic Museum Commission, and Chester County Preservation Society.

Radley Run (FEMA Zone A) allowed a one-foot flood raise on all structures before requiring demolition. After abiding by this guideline, the project morphed into reconstructing a significant bridge while raising approaches, designing new culverts, and incorporating nine-foot raises on the approach roadways.

Community Collaboration

The project team created a public involvement process, including two public meetings, each with more than 200 attendees, and two stakeholder meetings. The design team presented a preferred alternative and elicited citizen opinions on storm design (flooding frequency), construction method, and duration and detour route work. Through this process, Gannett Fleming organized disparate criteria, public needs, and necessary mitigation measures into a final design solution that addressed environmental concerns, agency criteria, and public issues.

In collaboration with PennDOT after the first public meeting, it was agreed that the design team

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Construction of twin arches for Radley Run

would investigate a shorter construction time frame.

Using the longer workweek and 10-hour workdays, a two-stage detour scenario was devised. Construction of the Brandywine Creek bridge would commence first, lasting a total of six months, with the eastern approaches, the Radley Run culvert and the Creek Road connection open to the traveling public. Over 10 weeks in the summer, construction of the eastern approaches and Radley Run culverts ensued when the Unionville-Chadds Ford School District was not in session.

Design Solution

Reconstructing the SR 926 bridge required strategic design of the profile to keep the adjacent Brandywine Battlefield National Historic Landmark and the historic Painters Farm and Mill Complex free from flooding issues. The profile was also kept below PECO electric transmission wires on the western side of Brandywine Creek. To properly mitigate potential future flooding concerns, the entire roadway was replaced to meet design storm requirements.

Blending the SR 926 bridge into adjacent historic districts was key to satisfying community stakeholders. Structural form liners were included to match the stone facing of the original bridge, and an epoxy overlay was incorporated to minimize the appearance of the white concrete deck. Brown painting on guide rails, bridge railings and bridge beams blended the bridge into the background. A quarter-acre wetland mitigation site was included, and standard slopes with seeding were used,

in lieu of retaining walls and split rail fences, to match surroundings.

Safety

Upgrading the SR 926 bridge crossing was imperative to minimize future flooding events. As a result, road closures were decreased from a maximum of nine times per year to three times in 18 years. Prior to construction, flooding conditions impacted the ability of emergency service providers west of Brandywine Creek to access Penn Medicine's Chester County Hospital, the only hospital in the immediate area located east of the creek.

Adding to the safety concern, Unionville-Chadds Ford school buses do not travel during floods, forcing parents to cross the creek multiple times to drop off and pick up their children from school. Flooding affected the Unionville-Chadds Ford School District to a degree that school officials created built-in flood days to accommodate the lost school days.

Modernizing the SR 926 bridge crossing, while keeping historic aesthetic appeal, provided a safer, quicker, and more reliable roadway for emergency service providers and the average commuter. The new structure is also wider, making it a safer environment for bicyclists and pedestrians.

As reported by PennDOT, the SR 926 bridge replacement project met all safety evaluation requirements, and there were no safety-related incidents during the construction process. 🇺🇸



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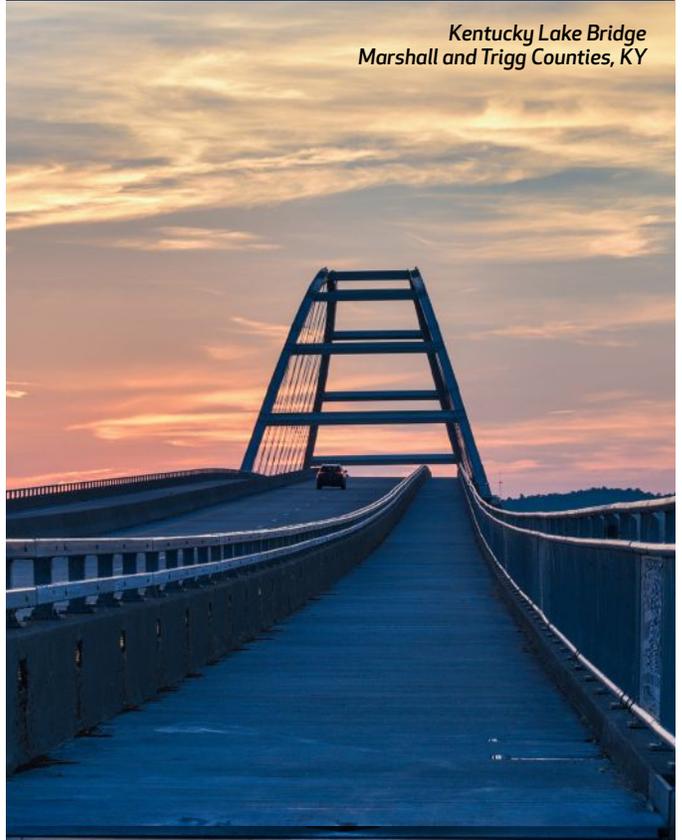


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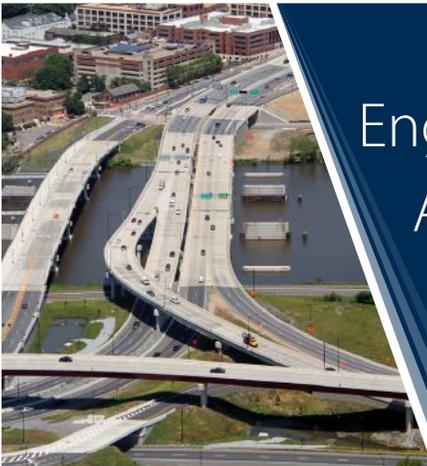
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AsTheWheelTurns

ASHE Members on the Move!



Dewberry Announces Promotions and Awards



Bloomfield, NJ—**John J. Coffey, PE**, has been promoted to associate vice president in the firm's Bloomfield, NJ, office. A member of the **ASHE North Central New Jersey Section**, he has more than 35 years' experience in program and project management, design and value engineering for transportation projects.



Mechanicsburg, PA—**Curtis Sanno, PE, CBSI**, was promoted to senior associate in Dewberry's Mechanicsburg, PA, office. Sanno, a member of the **ASHE Mid-Allegheny Section**, manages the bridge structures department and has technical expertise in preliminary design, as well as preparation of final plans, specifications and estimates for bridge elements.



Mechanicsburg, PA—**Lee Smith, PE**, was promoted to associate in Dewberry's Mechanicsburg, PA, office. A member of the **ASHE Altoona Section**, he is a senior project manager in the structures department, overseeing design and preparation of preliminary type, size and location reports, as well as final plans, specifications and estimates for new and rehabilitated steel and concrete bridges.



Mount Laurel, NJ—**Lauren Ohotzke, PE**, transportation engineer in Dewberry's Mount Laurel, NJ, office and member of the **ASHE Southern New Jersey Section**, was named Young Professional of the Year for 2018 by the American Council of Engineering Companies' NJ Chapter. The award recognizes contributions she has made to her local community through engineering design and construction.

Two Promoted at SAI Consulting Engineers, Inc.



Pittsburgh, PA—**Glenn Stickel, PE**, has been named president of SAI in Pittsburgh, PA. Stickel, a member of the **ASHE Pittsburgh Section**, will lead and oversee SAI's technical and business operations companywide. He has been with SAI since 1982.



Pittsburgh, PA—**Kevin Lettrich, PE**, was promoted to vice president, construction, at SAI in Pittsburgh. A member of the **ASHE Pittsburgh Section**, Lettrich will oversee all of the company's construction management and inspection services. He joined SAI in 1990.



Cheryl Moon-Sirianni,
PennDOT District
Executive for
District 11-0.

Engineering a Diverse Future

by Laurie Kolich, SAI Consulting Engineers, Inc., ASHE Pittsburgh Section

Panel members, left to right: Jeanna Fisher, PennDOT Secretary Leslie Richards, Cheryl Moon-Sirianni, Roseline Bougher, and Masha Rowley.

In the early morning of April 7, 2018, a portion of US 30 in East Pittsburgh failed and created a slope slide. A rainy March had contributed to the landslide, which consequently damaged an apartment building, displacing approximately 31 people and creating a traffic headache for the 21,000 vehicles that use the route.

Since becoming the District Executive for PennDOT District 11-0, Cheryl Moon-Sirianni has encountered some tough challenges—the US 30 slide among them. At the fifth Women’s Forum held in Cranberry, PA, on April 11, (just four days later), Moon-Sirianni, who moderated the event, seemed to be taking things in stride. “If some of your colleagues aren’t present today,” she said, “it’s because they’re working on a solution to the slide. And I know they’ll find one quickly.”

This year’s Women’s Forum focused on accomplishments both in and outside of the transportation industry. For example, Jeanna Fisher, Allegheny County Department of Public Works, has spearheaded the “Pittsburgh Won’t Forget U” initiative to memorialize opioid victims. Pennsylvania Secretary of Transportation Leslie Richards was selected by the Pennsylvania WTS as the 2018 Woman of the Year. Cheryl Moon-Sirianni was promoted to the post of PennDOT District 11-0 Executive. And while the forum organizers are considering ways to integrate their male colleagues at future forums, there is an understanding that success requires female mentors.

As Roseline Bougher, president and CEO of A.D. Marble, noted, “We need to trust ourselves and to know that other women are there to help us, especially those of us who have made the journey—we know the ending and want to help women navigate it. As women, we need to stand up for our fellow employees and to let them know that we have their backs.”

On their career paths, some of the female transportation professionals have navigated obstacles, while receiving support from both men and women eager to show the way, which raises the question about the value of female-centered forums and organizations.

Bougher, who became president and CEO of A.D. Marble in 2005 when Anne Marble took an early retirement, stated: “I have been fortunate to have the support of an amazing leadership team that believed in me from the beginning and do to this day. One of my goals is to make sure that I share my story and experiences with as many young women and minorities as possible to help them pave a way with less challenges.”

For Bougher, forums such as the Women’s Forum “provide women with resources and conversations that they wouldn’t have otherwise. They allow us to discuss issues that are more of a private nature in a non-judging environment.”

Although women’s forums are perceived as a positive environment, Bougher acknowledged, “I don’t believe that creating female-centered organizations



is as productive as integrating everyone in the engineering organizations.... If we continue to make a distinction, we may be perpetuating the problem more than solving it."

At times, this is the challenge. For the women, there is a desire to have a safe place to speak. This need, especially given the history where women had to struggle in a male-dominated profession, often co-exists with the understanding that all voices contribute to change. Perhaps, in part, this struggle represents the difference in experiences of women who have been in the field for 20+ years, versus those of women who are just entering the field.

Mara Pritchard, PE, SAI Consulting Engineers, with 30+ years of professional experience, observed: "Women are still the minority in the transportation field, and, as such, they rely on men to mentor them; however, many men did not make mentoring a priority when I was working through the ranks. Many times, early in my career, women were pitted against each other. And for many women, skills like networking and self-promotion do not come easily. I think there are many women who don't know how to grow their careers. It is important to have organizations that offer women a place to learn these skills and to find mentors. Further, it elevates the responsibilities of industry leaders and encourages them to support women to reach beyond."

Katelyn Johnson, PE, SAI Consulting Engineers, began her career seven years ago and agreed that "women-

(continued on page 19)

SAI Female Professionals (*below*), left to right, first row: Rona Stankus, Michele Hinds; second row: Mara Pritchard, Dot Griffin, Mary Lynn Kiefer; back row: Katelyn Johnson, Patricia Polasky.



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Engineering a Diverse Future

(continued from page 17)

centered organizations and events are beneficial for women engineers to network with each other in a male-dominated field." For Johnson, the forums provide an opportunity to hear how others have navigated challenges. And to that end, Bougher and Moon-Sirianni are paving the way for younger engineers.

Johnson observed that the number of women in the engineering field is steadily increasing, including those in upper management and in leadership positions. In keeping with Secretary Richards' position that it's important for women to see other women in leadership roles, Johnson would like for consulting firms to provide leadership training for all new engineers. She wants to see consulting firms partner with local schools so that female students can job shadow and connect personally with female transportation professionals.

It seems that the work of consulting firms is to listen and to implement programs that support mentoring and leadership training. Glenn Stickel, Vice President, SAI Consulting Engineers, agreed. Over the course of his career, he's watched the industry include more women. He realizes that it is vital for consulting firms to provide opportunities for women professionals and to foster programs that develop transportation careers for all employees.

On the day of the Route 30 slide in East Pittsburgh, the weather was cold and misty. Moon-Sirianni stepped out of the PennDOT truck to survey the damage and understand the engineering challenge. That's when a man called out to her, "Hey, are you



Katelyn Johnson, Mara Pritchard, PennDOT Secretary Leslie Richards, and Michele Hinds

the flagger (for traffic)?" (Note: Flagger are positions traditionally held by females.) She smiled and said, "No." "Then who are you?" he asked. His intentions were good—he was protecting the site from curious bystanders. "I'm District Executive for PennDOT," Moon-Sirianni replied. "Oh," he stumbled. There was work to be done and people who had been displaced from their homes; that was her concern. She was getting ready to meet them, and she wanted them to know that their voices and concerns were heard not only by PennDOT but by her. And for the women who hear her story, they see not only a professional leader but a person whose leadership qualities they want to emulate. ❤️



Creating a Safer Passage for All:



McCord Road underpass during construction

by Judy DeDonato and Richard J. Spino, **ASHE Northwest Ohio Section**

Every day, nearly 100 mainline trains traveling between New York and Chicago speed across McCord Road in Springfield Township, OH, making it one of the busiest rail lines in the country.

Located barely 100 yards from Springfield Local High School and its athletic fields, the four-lane McCord Road at-grade railroad crossing was a safety concern for the community and a source of significant travel delays for the public. Because of these concerns, the Office of the Lucas County Engineer began studying the crossing more than 20 years ago, with plans to separate the roadway and railroad tracks. Working with Mannik & Smith Group, Inc. (MSG), the Lucas County Engineer evaluated different alternatives before deciding to move forward with the McCord Road underpass of the railroad.

Complexities

As the prime design consultant, MSG worked with the county and the Ohio Department of Transportation (ODOT) District 2, along with numerous stakeholders, to tackle major design requirements. In order to avoid the relocation of a 66-inch trunk sanitary sewer main underneath McCord Road, the roadway and

underpass structure were relocated east of the previous roadway alignment. As part of the project, a segment of the sanitary sewer main was also lined and reinforced to avoid disruption and damage to the main during construction. MSG limited impacts to right-of-way with the design of retaining walls along McCord Road, although the entrance to an adjoining side street, Village Meadow Drive, had to be relocated away from the crossing. The project design included a large pumping station with twin 125-HP pumps to transport storm water from the underpass roadway into a 7,000-gallon concrete wet well. From the wet well, storm water moves into a nearby detention pond for treatment.

Extensive geotechnical investigations were needed, and a detailed Subsurface Investigation Report, with recommendations regarding the design and construction of the bridge foundation, was developed for the project. The area was plagued by poor soil conditions, which needed to be mitigated to support the bridge load. MSG geotechnical engineers conducted slope stability analyses for the underpass and railway embankment, and

The McCord Road Grade Separation



provided recommendations for the driven pile foundations, retaining, and abutment wall design and pump station wet well design.

Maintenance of traffic during construction was crucial because of the location of the project near the Springfield Local Schools' campus with over 2,600 high school, middle school and elementary school students. The project site also adjoined an active commercial business district with nearly a million square feet of retail space, and McCord Road provides emergency passage to a fire station located north of the project limits. To ensure traffic flow during construction, maintenance of traffic plans detoured motorists to Holland Park Drive, which was extended across the tracks to provide a temporary at-grade railroad crossing with gates. Since railroad traffic also had to be maintained during construction, a 15-foot embankment was designed and constructed for a temporary railroad runaround south of the existing tracks.

Social and Economic Benefits

The roundabout designed for the North Mall Drive/Hall Street and McCord Road intersection was the first multi-lane



McCord Road grade crossing during planning process before construction

roundabout in the county. To help educate motorists, many of whom were inexperienced drivers, due to the school's close proximity to the project site, the local library held classes on how to negotiate a roundabout. The Springfield Schools and the Office of the Lucas County Engineer offered an information/training session to local residents as well.

The railroad bridge was designed with double tracks and enough width to allow for two additional tracks, if needed. (The U.S. Department of Transportation predicts that rail traffic on this section of the Norfolk Southern Railroad, between East Coast seaports and Chicago, will more than double over the next 10 years.) The 88-foot single-span bridge is a steel plate girder superstructure with a ballasted composite reinforced concrete deck on full-height reinforced concrete wall abutments with security fencing. Lighting for the underpass was extended to illuminate the roundabout and the adjoining approaches.

(continued on page 23)

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Creating a Safer Passage for All: The McCord Road Grade Separation

(continued from page 21)

The project team selected a roundabout at this location instead of a signal because it reduced the number of vehicle conflict points and the number of lanes underneath the bridge and at the intersection approaches by eliminating left turn lanes. It also reduced the bridge span length required for the railroad underpass. School buses can easily navigate the roundabout, which has an inscribed diameter of 180 feet, with 18-foot-wide circulating lanes. The design also accommodates semi-trailer trucks with allowances for encroachment into adjacent lanes or with the use of the truck apron. Landscaping, splitter islands, and colored and stamped concrete aprons add to the aesthetics of the roundabout. Crosswalks with signals help pedestrians navigate three of the four approaches.

Value to the Community

The primary benefit of the McCord Road Grade Separation project is safety. Before construction began, a local student was killed, and another student seriously injured while walking to school one morning in 2009 when they were accidentally struck by an oncoming train while crossing the tracks. The new underpass ensures the safe passage of pedestrians and bicyclists, with sidewalks and retaining walls on both sides of the underpass. Since this section of the railroad is designated as a hazardous materials route, separating the grade also reduces

the risk of contamination in an area bounded by the school complex south of the tracks and a large residential complex for senior citizens north of the tracks.

Motorists have benefited, since roundabouts like the one constructed on McCord, have been shown to reduce fatal and serious accidents. Since opening in 2016, the McCord Road Grade Separation has also helped local commuters save time and conserve fuel costs by eliminating the need to wait for trains that blocked the crossing for an average of five hours each day. A benefit/cost analysis prepared by the Lucas County Engineering Office indicates the project will save motorists \$17 million per year.

Engineering with Diligence and Resolve

The McCord Road Grade Separation project solved a complex engineering challenge with planning and long-term resolve. Faced with a multi-faceted challenge, MSG worked with key stakeholders to study the problem, identify alternative solutions and provide a design for a highly visible project. Each aspect of the design was vetted and communicated with stakeholders and the local media. The resulting McCord Road Grade Separation now serves as a gateway to the village of Holland and provides safe passage for local schoolchildren and more than eight million vehicles a year. 🇺🇸



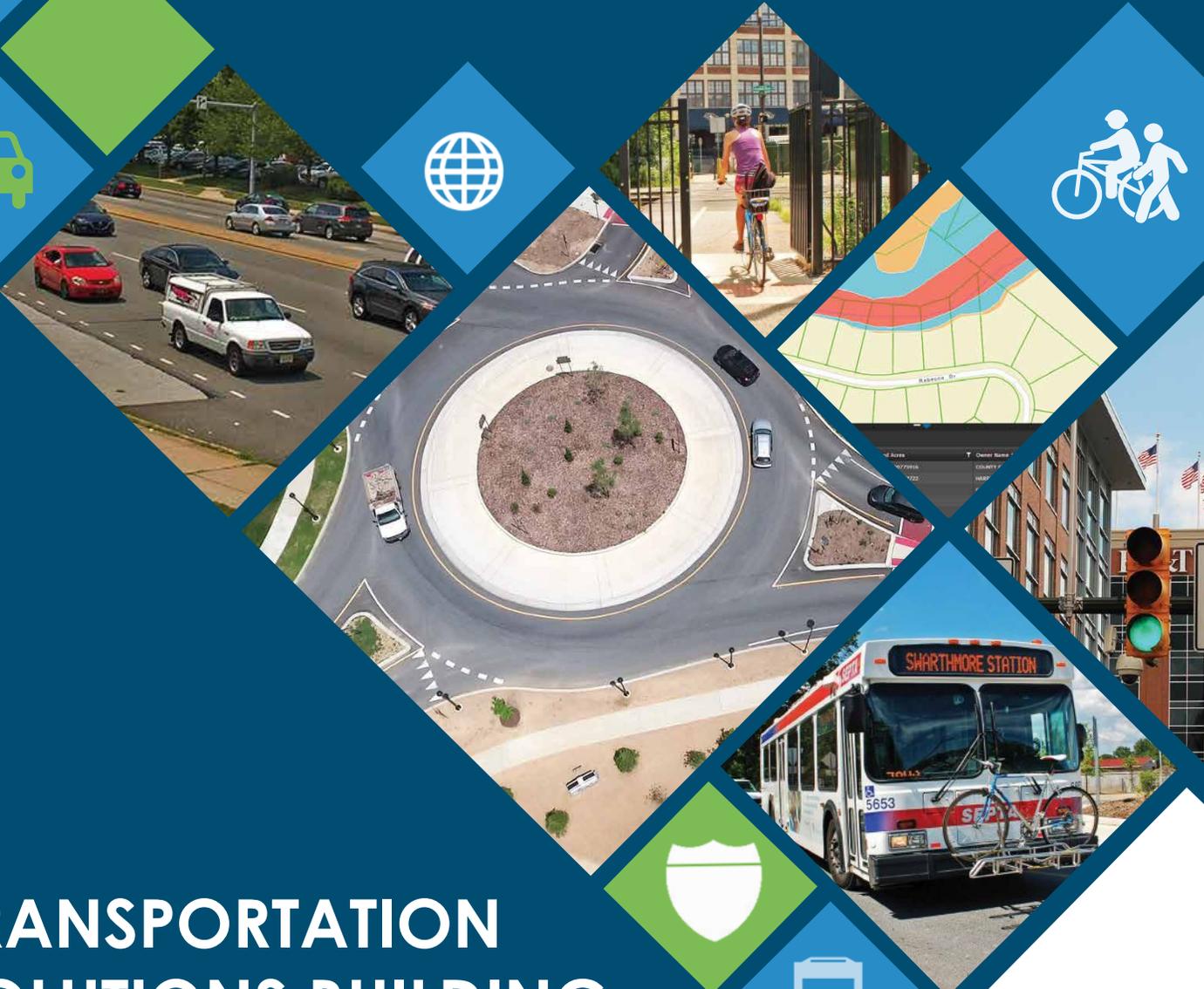
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News From Across ASHE-Miles

ASHE Delaware Valley Section Creates Fun for Take Our Children to Work Day

On Friday, May 4, the Pottstown office of Traffic Planning Design, Inc., (TPD) hosted 16 children for their annual Take Our Children to Work Day festivities. The day's educational activities included a review of bridge design and inspection, as well as hands-on application, building K'Nex bridges and playing a bridge simulation game. The kids learned about TPD's efforts to improve surrounding communities, shared how they, as young people, could improve their communities, and assisted the company in a donation activity. They also took part in a relay race with TPD's Adopt-a-Highway gear that brought out some competitive spirits!



ASHE Honors Lafleur as Young Member of the Year

Amanda K. Lafleur, EIT, was named Young Member of the Year by ASHE at their National Conference in Cleveland, OH, in May. Lafleur, a senior water resources design engineer at KCI since 2015, was honored for her recruitment efforts in bringing more young professionals into the ASHE Chesapeake Section, fostering networking events, and encouraging engineering students from Morgan State and Johns Hopkins University to participate in the Section's activities. Lafleur received a Bachelor's degree in Civil and Environmental Engineering from the University of Maryland, College Park, and is also an active member of the American Society of Civil Engineers Maryland Section, the University of Maryland Engineering Alumni Association and the Maryland Stream Restoration Association.





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Section T20 I-70 Widening and Route 19 Interchange

Project Pennsylvania Department of Transportation Engineering District 12-0

by David M. Kozel, PE, Gannett Fleming, Inc., **ASHE Southwest Penn Section**

To increase safety and mobility on I-70 in Washington County and southwestern Pennsylvania, Section T20 improvements involved the reconstructing and widening of nearly one-and-one-half miles of I-70 between I-79 North Junction and SR 136 (Beau Street). It also reconfigured the interchange between I-70 and Route 19. The existing substandard cloverleaf interchange at Route 19 Murtland Avenue was replaced with a Diverging Diamond Interchange (DDI), the first in Pennsylvania. In addition to the DDI, the project:

- Widened I-70 by adding a third lane in each direction
- Widened I-70 to four lanes in each direction between the Route 19 and Route 136 interchanges
- Added a second lane to the I-79 northbound ramp and created a “major fork” condition with a decision lane on westbound I-70 approaching I-79

Constructed in the early 1960s, the original cloverleaf interchange was functionally obsolete and surrounded by commercial development. The cloverleaf was substandard, exhibiting little to no acceleration and deceleration and short weave lanes on I-70. With current average daily traffic of 70,000 on I-70, including heavy truck traffic, and 28,000 on Route 19, the interchange could not be upgraded without incurring significant commercial property impacts. To improve safety, the DDI was designed and constructed as a collaborative effort between the Federal Highway Administration, Pennsylvania Department of Transportation, the design team and the contractor. Key DDI features included:

1. Traffic on Route 19 crosses over to the opposite side of the roadway within the interchange.
2. Left turn movements from Route 19 to the I-70 entrance ramps are free-flow from the left side of the roadway—eliminating the need for dual left turn lanes.
3. Left turns from the I-70 exit ramps turn directly onto Route 19 and do not cross opposing traffic.

Among its benefits, the DDI:

- Reduced conflict points from 26 to 14, compared to a standard diamond interchange
- Avoided costly replacement of the I-70 dual bridges over Route 19
- Minimized right-of-way impacts as the majority of the DDI was constructed within the existing interchange footprint
- Maintained traffic flow and access to businesses during construction
- Required only two-phase traffic signals at the ramp intersections with Route 19



DDI intersection



There were minimal design guidelines available when the DDI was selected. Example DDIs typically occurred on flat grades and tangent alignments. The Route 19 DDI was designed in a reverse horizontal curve condition residing on an upgrade ranging from

three percent to five percent with a vertical crest curve just north of I-70.

To address this challenge, the team designed Route 19 on a plane providing two percent superelevation along the centerline.

The design also provided two percent minimum slope

in any direction to avoid stormwater ponding on the travel lanes, especially in the northern DDI intersection that resides within the vertical crest curve.

Since the project needed to maintain two lanes of traffic on I-70 and Route 19 during peak periods (6 a.m. to 8 p.m. daily), an extensive traffic control plan was implemented throughout three years of construction.

Staging was further complicated by the need to maintain access at the interchanges, requiring temporary ramps and cross-overs. The plan required 12-foot lane widths on I-70 except over bridges.

- Stage 1 (2015–2017): Construction of Route 19 and DDI contained six sub-stages. This allowed ramp construction to occur while maintaining accessibility.
- Stage 2 (2015): Construction of eastbound I-70 contained five sub-stages. The eastbound I-70 traffic was split, with one lane crossing over to the westbound side for the entire project length. During the eastbound bridge redecking over Route 19, a second cross-over was implemented to place all four I-70 travel lanes on the westbound bridge.
- Stage 3 (2016): Construction of westbound I-70 contained three sub-stages. All traffic, including westbound, was shifted to the completed eastbound side of I-70. This allowed the contractor to work on the entire westbound side, including the bridge grade raise and redecking over Route 19.

Three temporary interchange configurations, with temporary ramps and signals, were implemented to maintain access between I-70 and Route 19.

1. A temporary trumpet interchange utilized the existing western ramps to construct the eastern side of Route 19, including the eastern ramps.
2. A temporary cloverleaf interchange was used to construct the middle of Route 19.
3. A long-term temporary diamond interchange completed Route 19 and remaining ramps.

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Section T20 I-70 Widening and Route 19 Interchange

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In September 2016, the DDI temporary traffic pattern was implemented. This enabled completion of the DDI including shoulder areas, curbed median islands and ramp islands. This required permanent signalization to be operational, and placement of temporary signing and pavement markings.

Because of the DDI, the existing I-70 dual three-span bridges over Route 19 remained in place and were redecked with a new barrier to extend serviceable life. The westbound bridge was also raised to increase the vertical clearance from 14 feet, two inches, to 16 feet, six inches.

Focused on safety, the project also minimized right-of-way impacts. The combination of implementing the DDI, utilizing concrete barrier along the outside shoulders of I-70 and widening into the I-70 median resulted in only strip takes on eight parcels with no displacements.

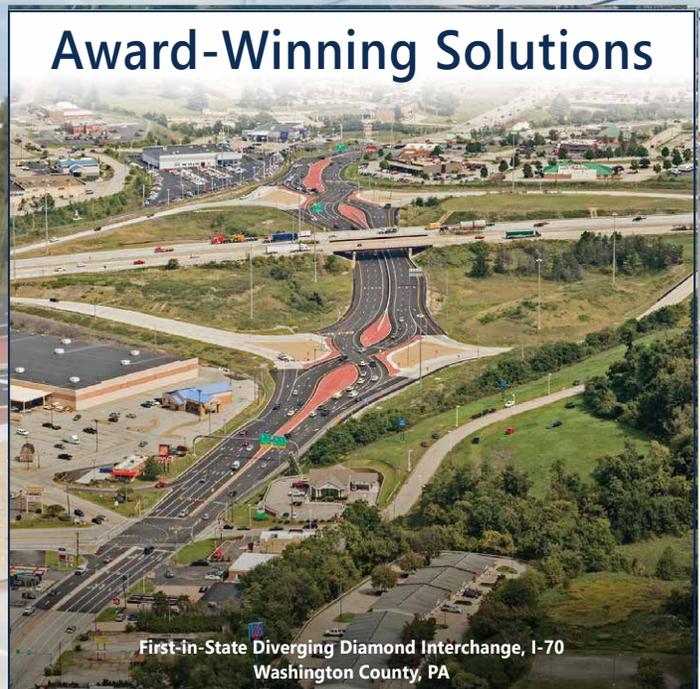
To improve public perception, an informational video and brochure were developed during design. The video explained how the DDI works through animations

and windshield views. Both can be viewed on PennDOT's I-70 website at <http://www.i-70projects.com/I-70andI-79NorthJunction.html>.

This project begins the process of widening the three-and one-half miles of I-70 between the I-79 North and South Junctions and moves PennDOT one step closer to completing a 40-mile modernization of aging I-70. The implementation of the DDI with ramps meeting current design standards, and the additional lanes along I-70, improved capacity and safety along the corridor. Prior to construction, the existing interchange area experienced at least 20 reported crashes per year. 🇺🇸

"As we maintain and upgrade our infrastructure across the state, we continually look for opportunities to put improved practices to work. This project brings together sorely needed improvements to safety and traffic movements alike."

—PennDOT Secretary Leslie S. Richards.



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Full Speed Ahead for Urban Bike Network

by Jeremy Kubac, PE, Immediate Past President, and Katie Rowe, PE, Board of Directors, ASHE Derby City Section

In 2013, Louisville, KY Metro Public Works entered into a task-order contract with Gresham, Smith and Partners to develop alternative transportation options. The start of the Urban Bike Network (UBN) was based on a core design team composed of professionals from Gresham Smith who were also cyclists, a group of stakeholders representing local bicycle advocates, Transit Authority of River City Louisville Metro Government and Rolf Eisinger, project manager, from Louisville Metro Public Works.

Much of the initial push behind the UBN was preparation for the roll-out of LouVelo (Louisville's downtown bike-share program) in 2017. Many of the initial projects were intended to connect the central business district to surrounding neighborhoods and points of interest. Providing safe and accessible bicycle infrastructure to connect to local destinations is a key to the success of bike-share programs. Additionally, known bicycle commuter routes were targeted so all cyclists would have safe access to employment and local destinations. Particularly, communities with lower car ownership were identified for improvements to bicycle infrastructure for safe access to employment and access to transit.

Before any design work—much less construction—could begin, the project team had to develop a process to evaluate and prioritize projects, a hierarchical workflow for the approval of such projects based on complexity and design standards for implementation. A weekly design meeting was held to



Barret Avenue and Castlewood Avenue multi-use path rendering for public meeting

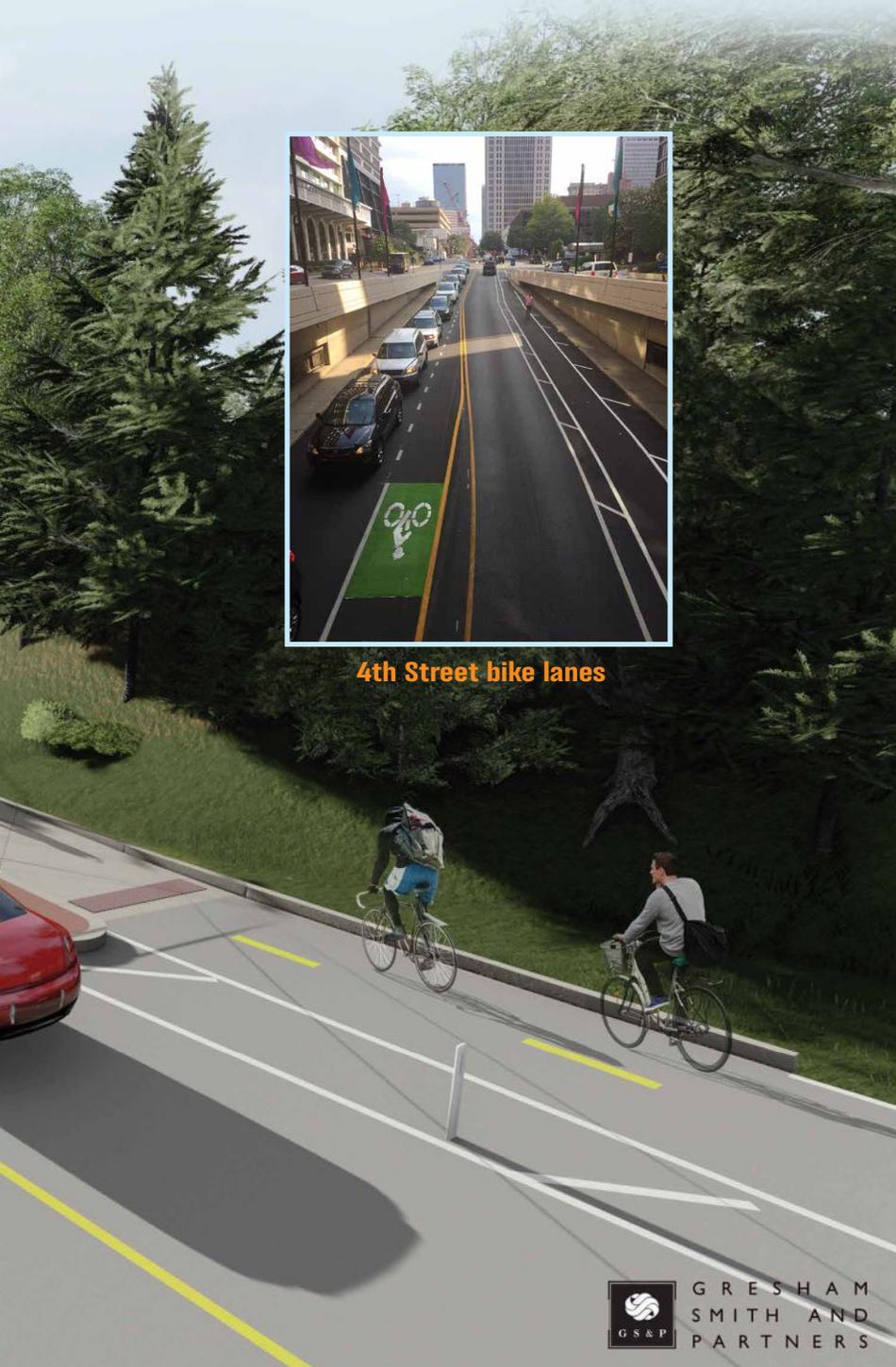
update the core design team with progress on current projects under development and brainstorm future project ideas and expansion. A monthly stakeholder meeting addressed community and advocate recommendations and added those projects to the evaluation and prioritization process. This allowed for a broader audience to feel ownership of the decisions being made, creating advocates for the work that the UBN team had to accomplish as well.

Until late 2016, there were no uniform design standards for bicycle facilities in Louisville. Drawing from guidance developed by the National Association of City Transportation officials and the American Association of State Highway and Transportation officials, the project team developed a toolbox of treatments that

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4th Street bike lanes



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Full Speed Ahead for Urban Bike Network

(continued from page 33)

could be applied throughout the UBN. The new standards promoted the clear and consistent use of green paint in bike lanes, specified the anticipated motorist reaction to the paint and recommended consistent design and markings for transitional zones where bikes and cars would mix especially areas that had a higher risk of adverse interactions.

Similarly, a standard process map was developed for project approvals to clearly delineate how projects were reviewed, which ultimately streamlined the process for implementation. Low-impact projects that did not affect vehicular capacity of a road facility could be approved internally, such as excess lane widths that could be reduced to allow the addition of bike lanes. More impactful projects affecting the number of driving lanes were shown to the public for review and comment before being finalized. These more impactful projects were selected and evaluated for traffic capacity based on the previously developed Louisville Metro Public Works Roadway Reconfiguration Policy, which provided the template on analysis and approvals for these corridors.

Many of the initial UBN projects focused on lane re-allocation that could be accomplished through restriping, taking advantage of resurfacing projects when possible. The UBN has moved toward those projects requiring infrastructure improvements to accommodate not only bicyclists, but also pedestrians. The latest project, now under construction, features a multi-use path connecting pedestrians to existing sidewalks and improving transit access, as well as connecting cyclists between two existing neighbor-way systems and a new two-way cycle-track.

Beyond the designated projects, the UBN design team has also assisted other project teams with multi-modal projects in Louisville, to ensure consistent application of the UBN design standards. This application benefits both cyclists and motorists, as it promotes predictable operation in transition zones and increases safety and visibility of all vehicles. 🇺🇸



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 Number: _____ CSC: _____
 Address: _____
 City/State/Zip _____
 Expiration: _____

Ad Size and Rate:

Check ad size (left) and number of issues your ad will appear: 1-3 Times 4 Times **DISCOUNTED RATE**

Ad Size	1-3 Times	4 Times	Size Specifications
___ Full Page	\$650	\$2,400 (\$600/Issue)	7-½ x 10" or full bleed 8-¾ x 11-¾", trim at 8-½ x 11"
___ Half Page	\$550	\$2,000 (\$500/Issue)	7-½ x 4-¾" horizontal or 3-½ x 10" vertical
___ Quarter Page	\$450	\$1,600 (\$400/Issue)	7-½ x 2-¾" horizontal or 3-½ x 4-¾" vertical
___ Business Card	\$350	\$1,200 (\$300/Issue)	3-½ x 2-3/8" horizontal
___ Classified	Email text to editor for quote, Tammy Farrell, tntsince87@comcast.net		

Place Our Ad as Marked:

Issue	Distribution	Materials Due (ads and articles/photos)
___ Spring '18	May	January 15
___ Summer '18	August	June 15
___ Fall '18	October	August 15
___ Winter '19	January	October 15
___ One Year (4 issues)		

REVISED SCHEDULE

Specifications:

Ad files: high resolution (300dpi) .pdf, .eps, .tif, or .jpeg. All ads print in color.

Articles: Word or text document with location/ASHE Section and author named; photos as high resolution (300dpi) .pdf, .eps, .tif, or .jpeg. **Please include captions with photos.**

eMail ad files to:

tntsince87@comcast.net
www.mytntgraphics.com

Payment (by check or credit card):

- ___ Payment enclosed for four issues (at discounted rate), **made payable to TNT Graphics.**
- ___ Payment enclosed for first issue; please bill me for each additional issue.

Send agreement with payment to: TNT Graphics, PO Box 344, Pine Grove Mills, PA 16868



ASHE

c/o TNT Graphics
207 E. Pine Grove Road
Pine Grove Mills, PA 16868-0344

Change Service Requested

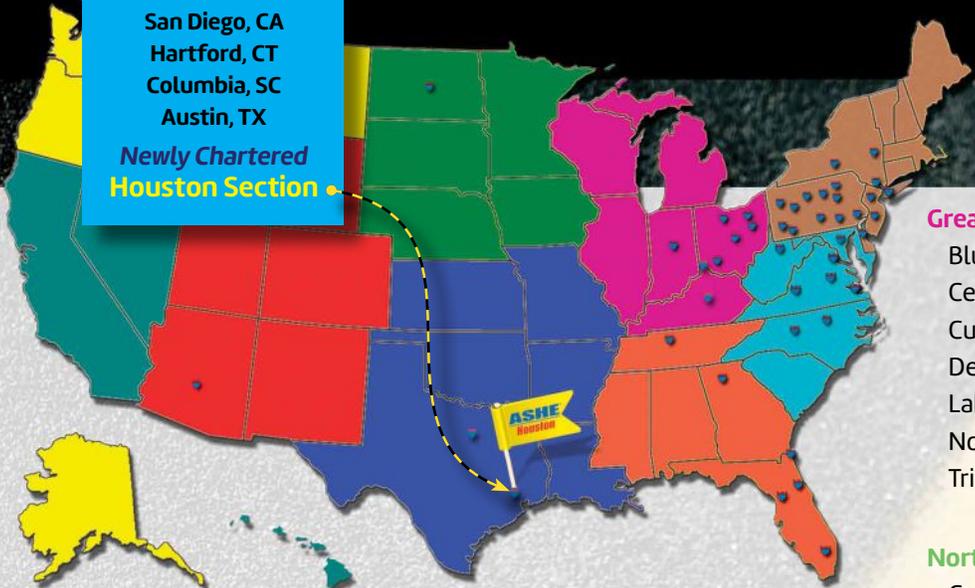
PRSR STD
U.S. POSTAGE
PAID
Greensburg PA
PERMIT No. 88

ASHE Membership

Emerging Section locations include:

San Diego, CA
Hartford, CT
Columbia, SC
Austin, TX

Newly Chartered Houston Section



Northeast Region

Albany	107
Altoona	213
Central New York	49
Clearfield	187
Delaware Valley	357
East Penn	116
First State	151
Franklin	133
Harrisburg	343
Long Island	53
Mid-Allegheny	136
New York Metro	168
North Central New Jersey	139
Northeast Penn	129
Pittsburgh	564
Southern New Jersey	91
Southwest Penn	277
Williamsport	132

Subtotal 3,345

Mid-Atlantic Region

Blue Ridge	78
Carolina Piedmont	62
Carolina Triangle	259
Chesapeake	287
Greater Hampton Roads	105
N. Central West Virginia	37
Old Dominion	93
Potomac	229

Subtotal 1,150

Southeast Region

Central Florida	48
Georgia	475
South Florida	11
Middle Tennessee	283
Northeast Florida	193
Tampa Bay	90

Subtotal 1,100

Great Lakes Region

Bluegrass	65
Central Ohio	181
Cuyahoga Valley	117
Derby City	87
Lake Erie	163
Northwest Ohio	44
Triko Valley	178

Subtotal 835

North Central Region

Central Dacotah	56
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Subtotal 56

Rocky Mountain Region

Phoenix Sonoran	177
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Subtotal 177

South Central Region

Dallas-Fort Worth	80
Houston	36

Subtotal 116

At-Large Memberships

Domestic At-Large	13
International At-Large	2

Subtotal 15

National Total

6,794

Professional Status	58%
Government	12%
Consultant	76%
Contractor	5%
Other	7%

Want to join and don't see a Section near you? Become an At-Large Member or visit our website to see how to start a new Section. www.ashe.pro