

Historic Arch Bridge over Lake Tillery, NC, Gets a Makeover See page 28

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The original arch bridge in 2016, carrying a single lane of traffic

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hope everyone had a great holiday season and could gather with friends and family to celebrate. My wish is that you got some much-needed downtime and are ready to hit the new year running.

This past fall, the ASHE National Board met in Raleigh, NC, with representation from the Carolina Triangle Section. Kathryn Fink of the Pittsburgh Section conducted a productive workshop to kick off the Strategic Plan renewal that we set as a goal for the 2022-2023 year. She has assembled a strong committee that is working toward the Strategic Plan, which is no small undertaking. This discussion will continue in January, dovetailing into our Region Roles and Empowerment discussion to be conducted at the January Board meeting in Tampa, FL.

I traveled to Columbus, OH, to attend the Great Lakes Region Board meeting. I also presented an ASHE update to the Central Ohio Section during lunch at the Ohio Transportation Engineering Conference. I'd like to commend the leadership of both the Great Lakes Region and the Central Ohio Section; they have some young energy, as well as consistent systems in place, ensuring the success of the Region and Section alike.

The ASHE Circle City Section has been rechartered thanks to the efforts of the New Section Committee co-chaired by Samir Mody of ASHE Southern New Jersey Section, New York Metro Section and Dallas-Fort Worth Section, along with Brian O'Connor, Georgia Section. Kathy Johnson of the Lake Erie Section and Great Lakes Region supplied additional support. The Chartering's October celebration had a great turnout of local ASHE members along with National, Committee and Region leadership.

I visited the Phoenix Sonoran Section to catch up over dinner with the local Board and gave an ASHE update at the American Society of Highway Engineers/American Society of Civil Engineers Joint Summit. I encourage ASHE Sections to visit the Phoenix Sonoran Section's website for programming and meeting ideas. This Section holds engaging events on a regular basis and is a good example of adding value to its membership.

The National Conference committee has been meeting regularly. I am excited to see the outcome of their meticulous planning, chaired by Nikki Parris along with Conference Co-chairs Scott Jordan and Karyn Matthews, Georgia Section. I hope you will mark your calendars for June 7-11 this year to be in Atlanta, GA, to help the Georgia Section celebrate its 25th anniversary.

Finally, I want to acknowledge some current transportation-related events in Florida. Just after the fall *scanner* edition was distributed, Florida was impacted by record-breaking Hurricane Ian, which caused damage to the roadways and bridges that keep communities connected in southwest Florida. Barely six weeks later, Hurricane Nicole struck the opposite coast. I think events such as these highlight the importance of the transportation industry as a whole: the safe movement of people and goods. So, in this case, there were people evacuating ahead of the storm and line crews and fuel trucks traversing the opposite direction to be ready for when the storm cleared. In addition, getting supplies and food to residents and workers

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Busy Tampa Roadway Set for Upgrades in Safety and Efficiency

by TJ Lallathin, Jr., PE, DBIA, Design Project Manager, DRMP, Inc., **ASHE Tampa Bay Section**



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or drivers traveling through the I-275 at I-4 Interchange in downtown Tampa, FL, frequent congestion has been an issue for many years. This major corridor serves nearly 200,000 drivers each day and is a vital route in connecting users to downtown Tampa and its nearby Ybor City neighborhood. It also serves as a critical part of Tampa Bay Next, the program established for modernizing that area's transportation infrastructure. This has made timely completion critical for improving regional connectivity, congestion relief, traffic flow, interstate mobility and travel time reliability for all modes of transportation.

The Florida Department of Transportation (FDOT) selected Lane Construction Corporation (Lane) and DRMP, Inc. (DRMP), as the Design-Build team to provide improvements to the interchange. These include enhancing driver safety with higher-volume ramps, improved roadway geometry and dedicated local exit ramps, as well as adding updated signage. In total, the project will include the design and construction of six new bridges, eight bridge widenings/modifications, four existing bridge coatings and two existing bridge railing retrofits. It will also entail widening the existing roadway from two to three lanes in specific segments, improving existing drainage facilities and providing complex temporary traffic control plans throughout each phase of the project to minimize disruption for all users.

The project will introduce a new dual-lane flyover bridge to accommodate the I-275 southbound traffic onto I-4 eastbound. It will dedicate the existing flyover as a movement into Ybor City without needing a complex bridge widening. This will have numerous benefits for FDOT and the community, including eliminating over 100 detours by performing offline construction, minimizing noise and visual impacts within the community and reducing overall traffic system delay. It will also increase operational speeds, reduce long-term maintenance over the 75-year design life and improve safety for travelers. Additionally, this concept provided FDOT with the opportunity to add a new I-4 eastbound auxiliary lane to the Selmon Expressway exit just east of the downtown interchange.

Community involvement is also part of the project. Working alongside FDOT, several enhancements will be made to improve local roads, increase pedestrian safety and accommodate multimodal users. New stormwater management facilities, new noise barrier walls, tree and vegetation preservation, replacement of greenspaces and aesthetic treatments will add more appeal to the historic community it intersects. The project will also feature new technology at crosswalk locations to promote pedestrian safety and improve the alignment and connectivity of the shared-use path. This, in turn, will enhance the existing trail network and support the community's goal to attract and support multimodal users.

Construction is scheduled to begin this year. When completed, roadway safety and efficiency will be improved for all users, making travel times more dependable throughout the corridor. This route will also continue to serve as one of the main hurricane evacuation routes for the greater Tampa Bay region.



ASHE Pittsburgh Section Honors Past Presidents Celebrates 2022 Project of the Year

ASHE Pittsburgh Section held its banquet and awards ceremony in October at the city's Renaissance Hotel, honoring Past Presidents that included most recent Past President John Nicholson.

The Pittsburgh I-579 Urban Open Space Cap (Cap project) received the Section's Outstanding Project of the Year Award Over \$20 Million. The new park connects the Hill District neighborhood and the PPG Arena (home of the Pittsburgh Penguins) to downtown Pittsburgh. The project was completed thanks to the City of Pittsburgh, the Sports and Exhibition Authority of Allegheny County and the Pennsylvania Department of Transportation. The prime designer was HDR, along with American Geotechnical & Environmental Services, Inc. The general contractor was Fay Construction, with geotechnical main subcontractors McCrossin Foundations and Amelie Construction & Supply. Representatives from the teams were on hand to receive the award.



The gathering had a Miami Vice theme and featured entertainment by Jeff Jimerson and Airborne. Jimerson also sings the National Anthem at Pittsburgh Penguins home games in the PPG Arena. His appearance at the ASHE event provided a link between the award-winning Cap project and the Section's evening of celebration.



ASHE Pittsburgh Section presented its Outstanding Project of the Year Award Over \$20 Million to the city's I-579 Urban Open Space Cap project. Representatives from the project team received the award at the Section's October banquet and awards ceremony.

In Alemoriam



Our ASHE community lost one of its best December 3, 2022, when Shirley Stuttler, assistant to ASHE National Presidents for nearly 20 years, died at The Caring Place, Franklin, PA. Shirley never forgot

a birthday or wedding anniversary of those she knew, and many will remember her and John's annual Christmas card being the first to arrive in their mailboxes. Her cards were addressed and stamped, and all her presents wrapped long before the Thanksgiving holiday.

That same type of organization was experienced by ASHE National Directors and officers, especially Presidents, as she emailed or called to give reminders of what needed to be done or what was already late, according to her neatly written schedule. We always kidded her about this skill, but secretly were glad she had our backs.

Shirley was an incredible woman; she survived cancer four times, always with a smile and determination that this disease was not going to win. She made light of her illnesses, and always gave encouragement to others facing similar health situations, saying, "If I can do it, you can too."

She was a member of the ASHE Franklin Section, serving as its President (1999-2000), and several years as Secretary. In 2011, she received ASHE National's President Award, and at the 2022 National Conference she received special recognition for her years as assistant to the President.

Working at the Pennsylvania Department of Transportation, District 1, as a clerk stenographer, Shirley retired after 35 years of service.

John, Shirley's husband for 34 years, said she "loved life and lived it to the fullest." He noted she enjoyed going to their cottage in the summer, taking cruises, going to ASHE Conferences, exploring new places and auctions and playing bingo.

"Spending time with our family," John said, "was one of her favorite things to do, and the family loved to come together and feast on her wonderful cooking."

Surviving along with her husband, John, are her son, two step-sons, five grandchildren and a brother.

ASHE gave a donation to a local cancer organization in Franklin, PA, The Kirtland Cancer Foundation, and sent flowers to honor Shirley.

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Thomas "Tim" J. Haslett, 81, an ASHE National Past President, died October 2, 2022. He served as National President in 1995-1996. A resident of Pin Oak Circle, Cranberry Township, PA, Tim was a member of the ASHE Franklin Section, and a National Board Director before being elected President. Tim worked for the Pennsylvania Department of Transportation for 36 years before retiring in 1998. After retirement he worked part-time as a senior staff engineer for a forensic consultant firm in Pittsburgh. He attended Penn State and received his PE and PLS licenses in 1974. Tim is survived by his wife, Angela, three children, three step-

children, eight grandchildren and a brother. ASHE remembered Tim with a donation to St. Patrick's Church Building Fund, Franklin, PA.

NEW DIRECTIONS (continued from page 3)

was critical, and there are too many other examples to name. Whatever role you may have in the transportation industry, it matters, which is a reminder that I need occasionally when the project management grind can become overwhelming.

Events such as these hurricanes emphasize the accomplishments that can be made when we come together as an industry to collaborate. If you haven't had a chance to review the news from Florida, bridges and roadways were reopened in record-breaking time (you can Google A1A emergency repairs or Sanibel Causeway emergency repairs). This is a testament to the collaborative nature of what we do in the transportation industry. The partnerships fostered by organizations, such as ASHE, in good times help to further improved communication and relationships when times are not so good.

As always, I encourage members to seek out opportunities to take part in our organization. If a position, such as holding an office, seems like too much of an undertaking, there are always opportunities on committees to gain exposure at the local, Region and National levels. You never know what valuable relationships or experiences you might be able to have. ASHE provides many opportunities with varying levels of time commitment, so please reach out to your local Section or Region, if interested.

Whether you're headed to a VOLS game at Neyland, visiting Dollywood and the Smoky Mountains, or singing with the windows down as you enter Music City...



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Bowman Acquires McMahon

Fort Washington, PA—Bowman Consulting Group Ltd. (Bowman) acquired McMahon Associates in May 2022. Founded in 1976 and headquartered in Fort Washington, PA, McMahon delivers

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transportation planning and engineering services to private and public sector clients. It focuses on projects oriented to roads, bridges, traffic, parking, traffic signals, ITS elements, community transportation and public transit.

Joseph DeSantis, member of ASHE Delaware Valley Section, President and CEO of McMahon, commented: "For over 45 years, McMahon has specialized in delivering forward-looking transportation, planning, engineering and technology solutions to our clients. Our success is the result of the commitment and dedication of our employees, many of whom have been with the firm for most of their professional careers. Bowman is a well-established and culturally compatible firm with services that are complementary to ours. By joining up with Bowman, we gain access to new resources and technologies that allow for an even greater investment in the delivery of innovative transportation solutions to our clients while continuing to offer the same personal attention and trusted relationships our clients have come to expect from us."





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BRIDGE & STRUCTURE DESIGN HIGHWAY & STREET DESIGN TRANSPORTATION PLANNING SURVEY & MAPPING TRAFFIC & CONSTRUCTION ENGINEERING Strengthening the Backbone of Boone County:

KY 237 Widening and Reconstruction

Mechanically stabilized earth wall construction from single-point urban interchange bridge deck

by Dave Stills, PE, Senior Transportation Engineer, Gresham Smith, and Jeremy Kubac, PE, Senior Transportation Engineer, Gresham Smith, **ASHE Derby** City Section he population in Boone County, KY, more than doubled over the last three decades, and the steady growth has continued. Located at the convergence of three major interstate systems and home to the Cincinnati/Northern Kentucky International Airport, it's easy to understand why. However, the influx of residents led to more vehicular and nonvehicular traffic, and KY 237, a major roadway serving as Boone County's spine that connected neighborhoods and businesses, needed improvements.

The Kentucky Transportation Cabinet (KYTC) called on Gresham Smith to transform a five-and-two-tenths of-a-mile stretch of the curvy, two-lane roadway into an efficient corridor that reduced congestion, reconnected neighborhoods and accommodated alternative modes of transportation. Using a multilane roundabout, a Single-Point Urban Interchange (SPUI) and a multiuse path, the design team delivered a modern roadway that met the needs of the growing community. The project was built in three phases, the last of which was completed in summer 2022.

Taking the Process to the People

Gresham Smith collaborated with KYTC and maintained strong lines of communication with residents and businesses along the KY 237 corridor. Each public meeting had more than 300 attendees, and one-on-one conversations with property owners helped establish priorities for the roadway project. The project team engaged diverse stakeholders throughout the process because of the changing nature of the area. This included farmers and members of schools and churches as well as homeowners and renters.

A Win-Win Solution

Construction began on the south end of the corridor, bordered by Gunpowder Creek on one side and a church on the other. The design solution called for widening the existing roadway to five lanes and adding multiuse paths on both sides, which meant either the creek or the church would be affected. However, after much coordination, Gresham Smith recommended a retaining wall along the multiuse path, limiting the impact to the church's property. This section of KY 237 was the final project in Kentucky to be funded by the American Recovery and Reinvestment Act.

A Single Point Solution

The second phase of the project addressed the intersection of KY 237 and KY 18 at the north end of the corridor. Traffic data initially indicated KY 237 needed three left-turn lanes onto KY 18 to accommodate turning vehicles. The project team ultimately recommended the SPUI instead.This brought all turning traffic to one elevated signalized intersection, allowing non-turning traffic

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Single-point urban interchange at KY 237 and KY 18





Newly constructed multilane roundabout with multiuse path



Strengthening the Backbone of Boone County: KY 237 Widening and Reconstruction (continued from page 13)

to flow freely below. It also limited the number of light cycles that drivers had to sit through, freed up surrounding land and accommodated future traffic projections.

One Roundabout, Multiple Benefits

The final phase of the project, which connected the previously constructed sections, included a new three-span bridge over Gunpowder Creek and a multilane roundabout at the intersection of KY 237 and Camp Ernst Road. The project team initially considered adding dual left-turn lanes at the existing "T" intersection, but later decided that a multilane roundabout would improve traffic flow and safety. It would also shorten the construction limits along Camp Ernst Road without the need for extended turn lanes and tapers. By eliminating many of the conflict points associated with conventional signalized intersections, roundabouts have been found to reduce the number of injury crashes.

Value Added

The KY 237 corridor required creative design solutions. The area had rolling terrain that alternated between farmland, large single-family residential developments and commercial nodes. The changing constraints of the corridor required a flexible design approach to create a pedestrian-friendly nexus between the pockets of development. It also needed to provide a roadmap for future development. Added value came from completing pedestrian connections to adjacent neighborhoods with closed loop sidewalk networks. Before zoning requirements, developers had little incentive to connect their sidewalks to a two-lane rural highway.

Addressing Drainage

As the corridor crossed Gunpowder Creek, South Fork Gunpowder Creek and many of the South Fork's tributaries, the project required significant investment in drainage. This included construction of a three-sided structure, a box culvert, a three-span bridge and a single-span bridge widening, as well as several large-diameter crossing pipes. Because of the rolling terrain, the project corridor crossed multiple watersheds. The project team looked at opportunities to enhance stormwater management where possible. Through coordination with Sanitation District #1 and KYTC, several sites were chosen for the team to design detention basins, taking advantage of remnant parcels where possible. The ponds were sized to reduce postconstruction peak discharge to pre-construction levels or better.

Connecting the Dots

The Gresham Smith project team strongly supported community connectivity. The project provided a safer route to the local middle school, added multimodal access to Boone Woods Park and increased accessibility for nearby businesses. Since the reopening of the first two sections of the project, the corridor saw a significant decrease in crashes, about 39 percent. The new SPUI, multiuse path and roundabout strengthened the backbone of Boone County and will support the growing community for years to come.

Carol Callan-Ramler, KYTC's District 6 Project Manager, said about the project: "KY 237 is a much-needed innovative corridor improvement for a principal arterial situated just two miles from the Cincinnati/Northern Kentucky International Airport, which also has freight facilities for Amazon and DHL. This project team delivered a five-lane widening over a five-mile corridor with a SPUI, roundabout and shared-use paths that immediately impacted residents, including two schools and four nearby churches."



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Old Friends, New Faces and Homemade Pecan Pie

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News From Across ASHE-Miles

ASHE Dallas-Fort Worth President Michael Knowles, CPSM, (left), presented Kevin Feldt, AICP, with a wooden star made by Knowles in his workshop. Knowles said, "He made his pies out of love with his own hands; I thought his gift should be the same."

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In November 2022, **ASHE Dallas-Fort Worth** held its monthly meeting in Irving, TX. Attendees came not only to hear Elizabeth Mow, PE, Assistant Executive Director of Infrastructure, North Texas Tollway Authority, speak about current and upcoming projects. They also came for homemade pie.

The Section's new Sponsorship Chair, Kevin Feldt, AICP, makes pies throughout the holiday season. In addition to his apple and pumpkin pies, his most famous creation is pecan pie. Texas loves pecan pie so much that it became the official state dessert in 2013!

First introduced to the Section as a guest speaker in November 2019, Feldt became a regular at its meetings and later joined the ASHE Dallas-Fort Worth Board. After serving on the Events team, he volunteered to serve as the Section's Sponsorship Chair. Section's President Michael Knowles, CPSM, said of Feldt: "Having been on both sides of the microphone, Kevin brings a perspective to the table that was previously missing...."

One other item at the meeting called attention to November 2000, the last month without a death on Texas roads. To help the Texas Department of Transportation (TxDOT) spread the word about its campaign to reduce road fatalities, Section members took photos with one of TxDOT's #EndThe Streak signs to post on their social media platforms.

> Left to right: The Section's Past President Hossein Hosseiny, Vice President Brian Lopas, guest speaker Elizabeth Mow, PE, Assistant Executive Director of Infrastructure, North Texas Tollway Authority, President Michael Knowles, CPSM. Mow held a sign from the Texas Department of Transportation's campaign to reduce the number of highway fatalities,

Embossed signature "Y" adjacent to Youngstown State University's Stambaugh Stadium underscored school spirit.

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ASHE Cuyahoga Valley Section 2022 Project of the Year Award Over \$5 Million

Adding Pedestrian-Friendly Spaces to a Changing Downtown by Brian Hughes, PE, Senior

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

ifth Avenue was the primary gateway to the downtown Youngstown, OH, business district, Youngstown State University (YSU) and essential destinations to the north, such as Mercy Health Center. Yet, compared to years past, downtown Youngstown had a fraction of the vehicle volume between Federal Street and the Madison Avenue Expressway that included up to six lanes. This determined that Fifth Avenue was an ideal candidate for a Road Diet. Because of YSU's student housing expansion and the area's focus on enhancing pedestrian safety, the Fifth Avenue Safety Upgrade and Rehabilitation Project was set to make improvements in that area of the city.

Eastgate Metropolitan Planning Organization, the City of Youngstown and its primary partners YSU, Mercy Health and Western Reserve Transit Authority sought grant monies to fund the Fifth Avenue improvements. As a precursor to this funding pursuit, ms consultants completed a campus-wide pedestrian safety and mobility study.

Subsequently, partnering with AECOM, the ms/AECOM team

developed an Infrastructure Prioritization Plan and assisted with two Transportation Investment Generating Economic Recovery grant applications. Those were unsuccessful. Not to be deterred, in 2018, Eastgate submitted again on a federal Better Utilizing Investments to Leverage Development grant application. It continued the wide-scale Complete Streets improvements and added an autonomous shuttle component to the planned infrastructure upgrades. The application, centered on improving transportation connections to and from downtown, was dubbed SMART2, connecting "Strategic & Sustainable, Medical & Manufacturing, Academic & Arts, Residential & Recreational, and Technology & Training."

The United States Department of Transportation selected the SMART2 application for a \$10.85 million grant award. That award, combined with various federal, state, local and private funding sources, culminated in a \$27.65 million total funding package. The Fifth Avenue project became the first phase of the SMART2 enhancements and set the design context parameters for the remainder of the SMART2 work, which will make similar improvements to six other network streets.

For the SMART2 improvements, ms consultants, inc., provided roadway design services, including survey, utility coordination, waterline replacement (under an advance project), new sidewalks, curbing and decorative

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Enhancements in the area included median and tree lawn landscaping.

Adding Pedestrian-Friendly Spaces to a Changing Downtown

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medians. These services also encompassed curb ramps and crosswalks, a new drainage system, decorative safety lighting, new signing and pavement markings. AECOM provided environmental documentation, streetscape and landscape design, including bioretention cells and tree cells as green infrastructure project features.

Executing a Road Diet

The team used a Road Diet approach that reduced Fifth Avenue from five/six lanes to one through/ sharrow lane in each direction and turn lanes at the intersections. The unneeded lanes were repurposed for a Complete Streets experience with pedestrian safety and aesthetic enhancements, including a 10-foot, shared-use path and bus pull-off lanes. All work was completed within the existing right of way.

These upgrades provided motorists with an efficient roadway section that balanced the number of travel lanes with traffic volume. The Complete Streets design accommodated public-transit users and made Fifth Avenue more accessible for pedestrians and bicyclists.

The project's upgrades resulted in lower vehicular travel speeds and increased safety for all transportation modes. Additionally, the reduced street coupled with bump outs created shorter crosswalk distances to add pedestrian safety. The crosswalks stood out with contrasting inlays that further increased safety via strong visual cues of pedestrian presence, notably YSU students going to and from campus and stadium-day crowds.

The Project's Impact

The project, at the forefront of autonomous technology, will support the use of driverless shuttles in the future. It also increased the area's fiber-optic communications, enabling future expansion of smart mobility technology. The project included environmental benefits by reducing negative environmental impacts, incorporating green infrastructure bioretention cells and light-emitting diode low-energy lighting, as well as decreasing storm runoff. The project

Shared-use path, stamped concrete median, bus pulloffs and lane usage added safety for pedestrians.

incorporated several aesthetic elements through the design to improve visual appeal. The bus stops received inlaid brick surfaces, benches, bike racks and decorative planters. The crosswalks, medians and intersections were enhanced with contrasting, stamped concrete bricks with embedded "Y"s inside, representing Youngstown and YSU pride.

Managing Multiple Project Complexities

The requirement to limit all work within the existing right of way created complexities with the project. Furthermore, being an old, urban corridor, the roadway had a complex underground utility network that required constant attention throughout the design. A collaboration between ms consultants and several local entities helped ensure success of the project.

Benefits for the Community

Phase I of the SMART2 project was completed in November 2021. The Fifth Avenue Safety Upgrade and Rehabilitation Project created a corridor connecting a major university, the central business district, a public transportation system and Mill Creek Park. Additionally, the project promoted a safer, more livable community and provided additional opportunities for the region's continued economic growth. The autonomous shuttle, planned for the near future along the Fifth Avenue and Rayen Avenue corridors, will connect Mercy Health Center and downtown Youngstown. It will be only the second location in Ohio to offer the autonomous shuttle travel mode.





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Emergency Repairs on the Brent Spence Bridge

Burnt-out truck after fire

by Jason Stith, Technical Manager– Bridge, Michael Baker International; Aaron Stover, Regional Practice Lead –Bridge, Michael Baker International; Stacee Hans, Executive Staff Advisor, Kentucky Transportation Cabinet, District 6, **ASHE Bluegrass Section**

Overview of the upper deck of the Brent Spence Bridge ASHE National 2022 Project of the Year Award Under \$20 Million he Brent Spence Bridge was the centerpiece of a nationally recognized corridor for freight and interstate travel, covering eight miles from the Western Hills Viaduct in Ohio to Dixie Highway in Kentucky. The double-decker, cantilever truss bridge carried I-71 and I-75 across the Ohio River between Cincinnati, OH, and Covington, KY, with more than 160,000 vehicles traveling over the structure on a daily basis.

In the early morning of November 11, 2020, traffic on the Brent Spence Bridge came to a halt. A truck accident occurred between panel points (PP) 17 feet and 18 feet on the northbound lower deck, which was the start of the 453-foot suspended span on the Kentucky side. Fire erupted, with temperatures reaching approximately 1,500 degrees F., damaging the bridge's upper deck floor system steel, drainage, deck, barriers and electrical components. The fire also harmed the lower deck's overlay, barriers and electrical components.

The Kentucky Transportation Cabinet (KYTC) and the Ohio Department of Transportation (ODOT) mobilized to shut down the bridge, while the U.S. Coast Guard ceased river traffic. Mark Policinski, CEO of the Ohio Kentucky Indiana Regional Council of Governments, commented at the time of the initial closure: "If you can imagine the worst thing happening to our transportation system in this region, it just happened."

Assembling the Team

Kentucky Governor Andy Beshear laid out the objective: "We want to get this job done and we want to get it done quickly, but it has to be done safely." This emergency interruption to traffic for hundreds of thousands of travelers each day posed a significant challenge. Michael Baker International (Michael Baker) worked alongside KYTC, ODOT and the Federal Highway Administration (FHWA) to perform an emergency inspection to determine the extent of damage on the bridge. Michael Baker also worked as lead designer for the repairs.



New reinforcement bars on the replacement deck section

As the project team assembled, the partners worked to deliver the repairs and return the bridge to operation as safely and as efficiently as possible. Immediately following the incident, a "war room" was set up to coordinate preconstruction work encompassing five major work areas: maintenance of traffic (MOT), inspection, design, public awareness and construction procurement. These progressed in parallel and were communicated to top levels of Kentucky government to ensure that resources were available, removing obstacles to progressing project delivery.

(continued on page 26)



Construction work on Brent Spence Bridge emergency repairs

Emergency Repairs on the Brent Spence Bridge

(continued from page 25)

Approaching the Repair Design

Michael Baker simultaneously had key personnel inspecting and working on the design and contract repair documents. This allowed designers to receive real-time information from inspectors using rope access techniques, lifts and unmanned aerial systems to inspect the structure. Once the area of the heat-affected zone was known (PP 16 feet to PP 20 feet), the design team determined the type of members and components that would require repair or replacement, and an expedited timeline was initiated.

In order to accelerate the award of a construction contract, project team members from KYTC, FHWA, Michael Baker and other project partners looked for creative efficiencies in the design process. Michael Baker decided that the most efficient way to repair the bridge would be to replace damaged components in-kind whenever possible. This decision allowed the team to use existing design plan sheets/shop drawings for much of the design. Where possible, plan sheets were used to cloud and redline the intent of the repair and add instructional notes. Interim repair plans and scopes of work were provided to prospective contractors prior to the letting. All contract repair documents were developed within five days as the final step in the bidding process. Kokosing Construction Company was selected as the project's general contractor.

The repairs to the Brent Spence Bridge included:

- Replacing upper concrete deck, wearing surface and concrete barriers between PP 16 feet to PP 20 feet
- Replacing upper steel stringers and lateral bracing between PP 17 feet to PP 19 feet
- Replacing miscellaneous steel at upper finger joint
- Removing, cleaning and resetting upper finger joint and drainage scuppers
- Replacing upper deck electrical wiring, junction boxes and conduit
- Replacing lower deck wearing surface between PP 16 feet to PP 21 feet
- Replacing lower deck concrete barriers between PP 17 feet to PP 19 feet
- Replacing fixtures, electrical wiring, junction boxes and conduit between lower and upper decks

Moving to Construction

Governor Beshear set a target completion date of December 23, 2020. KYTC established three construction inspection teams to cover 24-hour inspection operations, each led by a construction engineer, allowing for clear decisions to be made in the field. KYTC also established a "back-up" inspection crew, ready to step into action should any of the crews have to quarantine due to COVID-19 exposure. Daily meetings between the KYTC Construction Project Manager, Construction Team Leads, Project Coordinator and Contractor Project Manager were established to ensure constant communication and coordination.

On November 25, the demolition of the upper deck began. The same day, the first shipment

of steel stringer beams for the upper deck was delivered to the site. Within days, the deck and affected stringers were removed and replaced. Following the erection of an upper deck shielding platform, deck



Concrete core drilling

pans were installed on the upper deck followed by reinforcing steel and deck/ barrier replacement. The lower deck overlay was removed and replaced. Other maintenance repairs to the bridge and approach roadways were performed while the bridge was closed, and access was safely obtained.

Celebrating the Opening

The bridge reopened December 22, 2020, just 41 days after the incident. The project finished under budget, ahead of schedule and with support from the community. Governor Beshear commented: "The Brent Spence Bridge is a crucial link in our interstate system...The reopening of the Brent Spence Bridge is a welcome gift to everyone this season."



The Brent Spence Bridge Fire & Rehabilitation Project won the ASHE 2022 National Project of the Year Award Under \$20 Million Category at the 2022 ASHE National Conference in Columbus, OH. The emergency repair project was co-sponsored by the ASHE Bluegrass and ASHE Derby City Sections in Kentucky and submitted for the national award by the ASHE Great Lakes Region. From left to right: Stacee Hans, KYTC Brent Spence Project Manager; Aaron Stover, Michael Baker Engineering; Cody Kerr, Kokosing; Kevin Damron, ASHE Bluegrass Section President; Kirsten Bowen, ASHE Great Lakes Region President.



North Carolina Department of Transportation's (NCDOT) Swift Island Bridge was originally constructed northeast of Charlotte in 1927. By fall 2015, the historic open spandrel arch bridge was within the limits of a larger road widening project, and NCDOT had to decide what to do with the bridge. Alternatives were considered, such as replacing the bridge altogether or turning the arch bridge into a bike and pedestrian facility while constructing a third bridge for additional vehicular traffic.

NCDOT contracted with AECOM to perform a feasibility study to determine if the bridge could be widened for vehicular traffic by performing a superstructure replacement while preserving the arches and piers. The 20-foot-wide deck of the arch bridge was carrying a single westbound lane of traffic in 2015, even though it was originally intended for two-lane, two-way traffic. The study evaluated whether the arches and piers could be preserved while replacing the superstructure with a 36-foot-wide roadway surface. This would allow two westbound lanes on the bridge with shoulders.

The feasibility study included four primary components. The first included a complete inspection of the structure, including above and underwater portions. While there was significant deterioration of the bridge superstructure near the expansion joints, the inspection found the arches and piers to be in good condition. Even the grain imprint of the old timber formwork could be seen in some of the concrete. The second component was a material evaluation and service life analysis, completed by Siva Corrosion Services, Inc. It was important to NCDOT that the arch bridge project would last for a full 75 years, the same as if a new bridge were constructed.

The material evaluation found the concrete to be in good condition, and the service life of the arches and piers was anticipated to achieve

the desired timeline of 75 years. The third component included a two-dimensional load rating of the arches and piers under the original bridge configuration, and then another load rating under a proposed configuration. This analysis demonstrated that not only could a proposed configuration work, but the load response of the arches could be improved by eliminating expansion joints and stiffening the superstructure.

The final component included an evaluation of the historic architecture of the bridge. The team created renderings of the proposed structure for comparison with the original, determining that there would be

no adverse effects to the historic structure in accordance with the National Historic Preservation Act.

(continued on page 30)



Stanly and Montgomery Counties, NC

Historic Arch Bridge over Lake Tillery Gets a Makeover

by John Sloan, PE, AECOM, ASHE Carolina Triangle Section



The original arch piers and spandrel bents

Rehabilitated bridge arch piers and spandrel bents

American Society of Highway Engineers 29

When the superstructure replacement was considered to cost at least \$4 million less than an any other alternative, NCDOT moved forward with final design of the concept.

At the beginning of final design, a laser survey confirmed the geometry of the existing arch ribs and spandrel column pedestals. AECOM completed a four-dimensional finite element model of the bridge, including the nonlinear effects of the construction sequence. The team utilized this model with the surveys for geometric control as the superstructure was removed and then replaced. The geometric changes, due to the removal and addition of loading, were accounted for throughout the construction process.

Historic Arch Bridge over Lake Tillery Gets a Makeover

(continued from page 28)

Since the dead load of the proposed superstructure was higher than the original, a detailed construction sequence was



specified in order to prevent overstress in the arches during construction. This construction sequence ensured the new superstructure loads would be placed on the arches concentrically along the axis of the member. The arches are lightly reinforced compression members, so the concentric dead load improved their ability to resist live load moments due to vehicular traffic. The arch ribs remained uncracked throughout the construction sequence and under live load, so the design team modeled the full inertia of the members without reduction stiffness.

In the final structure configuration, load was relieved from the arch ribs by establishing continuity of the box girders from pier to pier before pouring the concrete deck. This was achieved by providing continuity reinforcement and closure pours at the box girders over the spandrel bents. In addition, the proposed



superstructure inertia was significantly higher than the original, while soft bearings were used to further aid in relieving demands from the arches. This created a higher level of redundancy in the proposed structure compared with the original articulation.

Material preservation was an important aspect of final design. Discrete anodes were used in concrete patches to mitigate the effects of chlorides in the concrete located below the expansion joints in the original superstructure. A cementitious jacket for the piers at the waterline repaired wear and scaling that had occurred over 90 years of service due to surface waves. Application of a breathable sealer to the entire structure helped preserve the original concrete and create a uniform appearance over new, original and repaired concrete. Fifteen expansion joints from the original bridge were eliminated, aiding in preservation of the structure.

As a part of the project, the parallel bridge constructed in 1979 was also rehabilitated. This included replacement of the bearings, painting steel beam ends, overlaying the deck concrete and mitigating effects of alkalisilica reactivity in the pier concrete. Traffic was maintained on this structure throughout the rehabilitation and superstructure replacement of the arch bridge.

NCDOT hired PCL Construction as the contractor for both bridges, and AECOM served as the Department's engineer during the construction phase of the project. The team completed the rehabilitation, opening the arch bridge to traffic in August 2022. The project provided significant savings for NCDOT compared with other alternatives. In addition to creating an efficient structural design with an anticipated service life of 75 years, it improved connectivity in the region and maintained the historical and architectural character of the original bridge. 🛡



ASHE Franklin Section Announces Project of the Year Award



ASHE Franklin Section held its October meeting and awards ceremony at Hunters Station Golf Club and Lodge, Tionesta, PA. The Outstanding Project of the Year Award Over \$3 Million went to the Cambridge Springs Bridge project in Crawford County. It was completed by the Pennsylvania Department of Transportation, with prime designer Mackin Engineering. American Geotechnical & Environmental Services, Inc. (AGES), was in charge of the geotechnical aspects. Representatives from both companies attended the ceremony.

The Cambridge Springs Bridge project in Crawford County, PA, received the Outstanding Project of the Year Award Over \$3 Million at ASHE Franklin Section's October meeting. American Geotechnical & Environmental Services, Inc. (AGES) managed the geotechnical parts of the project. AGES representatives at the event included Darlene Stringos-Walker, Senior Environmental Specialist, and Sebastian Lobo-Guerrero, PhD, PE, D.GE., Geotechnical Project Manager/ Laboratory Manager. Their Tionesta bear friend appears equally delighted with the award.



ASHE Circle City Section Returns!

ASHE grew by 40 members October 12 when the Circle City Section in Indianapolis, IN, held its rechartering event at the Marriott Indianapolis. After remarks from National New Section Committee Co-Chair Samir Mody and Great Lakes Region Secretary Jim Shea, members signed the Charter and received their ASHE pins



Members of ASHE Circle City Section in Indianapolis, IN, gathered in October to celebrate the Section's rechartering and installation of officers. National New Section Committee Co-Chair Samir Mody and Great Lakes Region Secretary Jim Shea were also on hand to express their congratulations for the rechartering.

and new member certificates. Officers installed by the Section included Dustin Quincy, President; Michelle Gottschalk, Vice President; Jeff Laswell, Treasurer; Scott Sandstrom, Secretary; Kellen Heavin, Region Director; and Alan Mize and Andy Hahn, Directors. Congratulations to all!

ASHE Honors Mody with Lifetime Achievement Award

A highlight of the ASHE National Conference in May 2022 was when Sam Mody, PE, received ASHE's 2022 Lifetime Achievement Award. We are happy to present these words of appreciation from Sam.

I was humbled and extremely honored to be presented with the prestigious 2022 Lifetime Achievement award by President Tim Matthews at the American Society of Highway Engineers (ASHE) National Conference held in Columbus, OH, last summer. I want to take this opportunity to thank President Joe Macios and his leadership team from the Southern New Jersey Section for nominating me for this award, allowing me to join a special list of past recipients for whom I have the utmost respect for their stature in the highway industry and contributions to ASHE. When my name was called to accept the award and I began walking up to the stage, I was overwhelmed with emotion when I saw two life-sized headshot photos of me displayed on the screens and 425+ attendees giving me a tremendous standing ovation. Thank you to everyone who participated in making this a memorable evening!

My introduction to ASHE began in December 1985 when I was a young civil engineer employed for more than two years

Lifetime Achievement Award

Samir Mody, PE President Keller Engineers of New Jersey, LLC

This award is for ASHE Members only and was established to recognize an ASHE member who has supported the organization throughout their career. The 2022 Lifetime Achievement



The 2022 Lifetime Achievement is awarded to Samir Mody (Southern New Jersey Section, Northeast Region).

Sam has been a member of ASHE since 1986, beginning his ASHE tenure as a charter member of the *Southern New Jersey Section*. He is also a member of the *New York Metro Section* and the *Dallas-Fort Worth Section*. Sam has served on the Southern New Jersey Section Board from 1991 to 2011, ultimately serving as Section President. Sam has also represented that Section on the Northeast Regional Board for 20 years.

Sam has served the ASHE National Board for many years, holding positions of Committee Chair, Director, Officer, and became ASHE's 56th National President in 2014. Sam was also the recipient of the ASHE Member of the Year Award in 2010.

Sam has been active with committee assignments at the National level since 1992, serving on the By-Laws Committee, Nominating Committee, Strategic Planning Committee, Partnerships Committee, Governance Committee, and is currently co-chair on the New Sections Committee, where he has been instrumental in the chartering of the ten most recent ASHE Sections.

Sam holds both a Master's and Bachelor's degree from Drexel University and is a registered Professional Engineer in Pennsylvania, New Jersey, and Delaware. Sam also has professional membership with ACEC, Southern New Jersey Development Council, New Jersey Alliance for Action, and is on the Board of Directors for the March of Dimes. Sam is married to wife Gail and have two children, daughter Brianna and son Bryan.

Concratulations on this well-deserved honor, Sam!

with the New Jersey Department of Transportation. I attended an "informal" meeting hosted by the soon to be chartered Southern New Jersey Section and was hooked for life. It was the idealities of that young civil engineer



that set the stage for the next 37+ years where I served this special organization at the Section, Region and National levels in various leadership capacities. ASHE is truly the foundation of who I have become as a professional engineer, and I am blessed to foster many rewarding relationships in my life while



having many special mentors along my incredible journey of serving this organization. These include but are not limited to Bob Yeager, Terry Conner, Rod Pello, Sandy Ivory, Dave Jones, Charlie Flowe and Tom Morisi, whom I also want to acknowledge.

Finally, I have no words that can adequately express my heartfelt thanks to my wife and my family for all of their support and encouragement

in allowing me the time to dedicate to ASHE, especially during my time as National President.

Sam Mody



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South Carolina	101
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Central Florida	112
Georgia	463
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Northeast Florida	203
South Florida	2
Tampa Bay	42
Tennessee Valley	111
Subtotal	1,287

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Subtotal	1.028
Triko Valley	151
Northwest Ohio	43
Lake Erie	218
Derby City	84
Cuyahoga Valley	106
Circle City	40
Central Ohio	206
Central Dacotah	83
Bluegrass	97
SECTIONS	

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SECTIONS		
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