



Columbus, OH
The new Olentangy
Trail-Arena District
Connector Pedestrian
Bridge

See page 36

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Public Relations Contact

Amanda R.C. Schumacher

scanner

Tammy Farrell, Designer-Editor
TNT GRAPHiCS
tammy@mytntgraphics.com

MISSION

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

NATIONAL HEADQUARTERS

610 Radcon Street
Johnstown, Pa 15904
(814) 696-7430
ashenationalsecretary@ashe.pro
www.ashe.pro

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Stan A. Harris, PE
ASHE National President 2023-2024



NEW DIRECTIONS

With days getting longer and temperatures rising, it is time to go outdoors and enjoy your favorite leisure activities. For those of you in colder climates, you can finally get your construction projects underway.

Wherever I travel around the country, I see road and highway improvements in progress, and that would not be possible without the talent and dedication of ASHE members. It is an exciting time to be involved in the transportation industry, with many challenges and new tools to help this organization serve the traveling public better. I hope all your projects remain on schedule, stay under budget and maintain a spotless safety record.

The ASHE National Board of Directors have been hard at work on your behalf. In January we gathered in Austin, TX, home of ASHE Central Texas Section. A Section event on Thursday night provided the opportunity to make new acquaintances. The Friday afternoon workshop, led by Rob Prophet of the Membership Committee, focused on increasing membership. Someone once said that organizations, businesses and communities are either growing or shrinking; nothing ever stays the same.

One of the objectives of ASHE's Strategic Plan is to increase membership by at least five percent annually. To meet that goal, every Section must excel in retaining its current membership and attracting new members. Several initiatives from the workshop will be pursued in the coming months. Everyone has a role to play in growing ASHE. Please think about who would benefit from membership and invite them to your next meeting. We enjoyed dinner on Friday evening with members of ASHE Central Texas Section's Board.

On Saturday, we heard reports from the officers, Region representatives and committee chairs. We continue to work on technology issues, so look for more about that in months to come. We look forward to a new Section chartering soon, and others are showing potential. The Operations and Oversight Committee is working with the Regions to help them use the additional funding they received this year. The Nominating Committee has been gathering nominations for award winners and next year's officers.

The ASHE Carolina Triangle Section will host the ASHE National Conference June 5-9 in Raleigh, NC, and I encourage you to attend. I want to recognize Nikki Parris, who is stepping down as Chair of the National Conference Committee after 10 years. Thank you, Nikki, for the work you and your committee have done.

I have visited several ASHE National Sections over the past few months, including Bluegrass Section, Houston Section, Central Texas Section and Triko Valley Section. I also had a virtual meeting with the Central Dakotah Section. It is always an honor to represent ASHE at Section events, and I hope to visit more Sections before my term ends. It is hard to believe, but this is my last article as President. The year has flown by, and I will continue to do my best to represent you well for the next few months. It has been an honor and privilege to serve as President of ASHE. I look forward to meeting more ASHE members in the weeks and months to come. Enjoy the spring and stay safe! 🇺🇸



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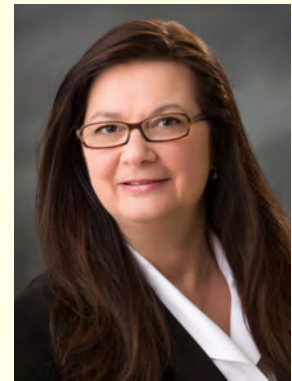


From scanner's Chair

It takes imagination and drive to stay ahead of the curve, and we are doing just that! We are introducing something new for *scanner*. The committee members have been busy creating an awards program to give visibility to the articles in each issue and spotlight their value. At the ASHE National Conference, we will give the 2023-24 SAY (*scanner* Article of the Year) Award during the luncheon. The *scanner* Committee and Editor will review and score the articles



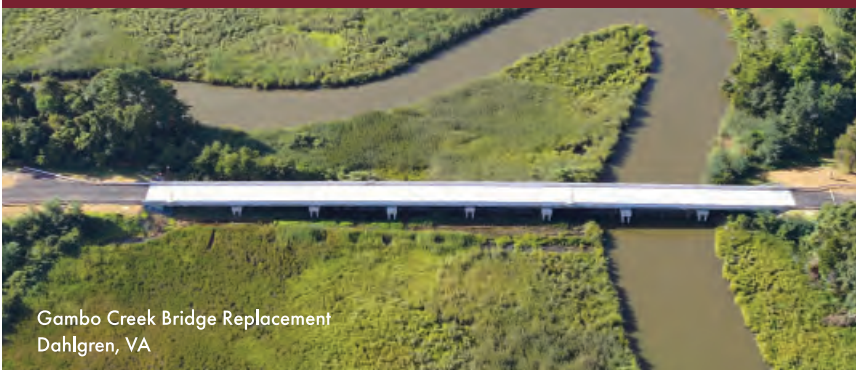
from the summer, fall, winter and spring issues. In addition, you will have the chance to take part in voting for the "People's Choice" Award. Look for us at the Conference and be sure to cast your vote.



Speaking of awards, we would like to hear from you on your Section's Project of the Year. This is excellent information to include in the *scanner's* MileMarkers' news. Send in a summary with photos of the project and names of participants receiving the awards. If you would like to follow up with an in-depth article about the project, we will be pleased to include it as well.

Rhonda Cardone
scanner Chairwoman
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The nation's newest interstate project, known as the I-69 Finish Line, should reach completion later this year. The \$2 billion undertaking by the Indiana Department of Transportation (INDOT) is a result of decades of discussions and planning efforts. Five separate construction contracts spanning three counties are underway to complete the last section of the 142-mile network. The new roadway will create a safer, more direct connection between the southwest part of the Hoosier State and Indianapolis.

In spring 2019, construction began to transform 26 miles of existing SR 37 to I-69 in in Martinsville. Work started with improvements to city streets and local access roads, including the Grand Valley Boulevard overpass, to provide much-needed connectivity. During a one-year closure in 2021, crews built new lanes of I-69 and interchanges at SR 39, Ohio Street, SR 252 and SR 44, eliminating a full year from the project schedule.

Since the first section of the project opened in Martinsville in December 2021, INDOT has opened five additional interchanges

along I-69 at Henderson Ford Road, SR 144, Smith Valley Road, County Line Road and Southport Road. INDOT also removed 14 traffic signals, built or rehabilitated more than 65 bridges and installed signage for 17 miles of roadway as the new interstate route.

In 2023, as many as 7,000 people worked on the project during peak summer months. They poured more than 160,000 square yards of continuously reinforced concrete and laid over 177,000 tons of permanent asphalt. Crews also replaced the eastbound lanes of the I-465 bridge over the White River. The westbound structure is scheduled for replacement this year.

After a global pandemic, labor shortages and supply chain challenges, final construction efforts will focus on completing the last segment of I-69 north of Southport Road in Marion County. This will add additional lanes along eight miles of I-465 between I-70 and I-65 on the southwest side of Indianapolis. It will also build the new system interchange, where workers moved more than one million cubic yards of dirt in preparation for construction.



Previously an at-grade intersection, the Grand Valley Boulevard overpass opened to traffic in June 2020.

I-69 Finish Line Project Nearing Completion

When completed later this year, the I-69 Finish Line project will improve safety through elimination of at-grade intersections and traffic signals, construction of overpasses and underpasses and consolidation of interstate access points. It is estimated that regional crashes will decrease by 1,300 incidents each year.

The new interstate will also increase mobility and quality of life, connecting travelers with the Ohio River, Crane Naval Base, Indiana University and events in Indianapolis. New I-69 could generate \$4.1 billion in positive economic impact over 20 years. In addition, drivers can now save 11 minutes in travel time between Martinsville and Indianapolis.

Construction contractors on the project include Milestone Contractors LP, Crider & Crider, Inc., Rieth-Riley Construction Company, Inc. and Walsh-Milestone Joint Venture.

The I-69 Finish Line project, led by INDOT, received the Indiana American Council of Engineering Companies Project of the Year award in 2019 for preliminary design and public involvement. It also received an American Association of State Highway and

Transportation Officials Quality of Life Award for the Grand Valley Boulevard Bridge project in Martinsville. In 2022, Roads & Bridges magazine ranked the Martinsville segment as the number one road project in the nation. 🇺🇸

I-69 Finish Line by the numbers:

- More than 26 miles of new interstate highway
- More than 35 lane miles of local access roads
- 39 new and 35 replaced or rehabilitated bridges along the corridor
- Consolidation of 92 existing access points to 10 new interchange access points
- 14 overpasses and underpasses
- Removal of 14 traffic signals
- Eight miles of added capacity on I-465
- More than three million square yards of new pavement, equivalent to 469 football fields
- Approximately three million pickup truckloads of dirt and stone were excavated, enough to fill Gainbridge Fieldhouse in downtown Indianapolis more than 20 times.



The I-69 project includes replacement of five bridges over I-465 on the southwest side of Indianapolis. The Carson Avenue Bridge reopened in late 2022.



**ASHE Mid-Allegheny Section
2022 Outstanding Highway
Engineering Award
Under \$2.5 Million**

Looking upstream at
the stone toe wall and
completed SR 2063
bridge

New Brady's Run Bridge Keeps Community Ties Strong

by Robert Scheib, PE, and Jennifer Kacin, PE, CBSI, AECOM, **ASHE Mid-Allegheny Section**

Built in 1971, the Brady's Run Bridge on SR 2063 functioned as a vital community connector to a business and nearby residences in Leechburg, PA. The one-lane bridge had received a poor rating in the 2016 bridge inspection report.

In 2019, Pennsylvania Department of Transportation (PennDOT), District 10-0 in Indiana County, chose AECOM to design an updated replacement for the bridge. The team explored two full replacement options in the preliminary design. PennDOT chose the option for a 74-foot span with galvanized steel plate girders on integral abutments as the most cost-effective solution. The Leechburg Hungarian Club and single-family

homes adjacent to the existing bridge added complexity during construction. Maintaining access to these locations throughout construction was key to the project's success.

During the design process, the decision to place the new integral abutments behind the existing abutments would allow use of the original substructure for scour protection. The existing substructure units were on a 45-degree skew. Replacing them in kind would require a refined analysis and additional construction easement for excavation limits. There was also potential for noise disturbances in the neighborhood due to rock excavation. Lengthening the existing span to 74 feet eliminated these challenges.

The existing Brady's Run Bridge site had multiple utilities impacted during design of the new structure. Overhead utilities were temporarily moved, and the water line was relocated away from the structure. After discussions with the district and gas company, the proposed construction would attach the gas line to the structure between Girders Two and Three. This resulted in modifying the end diaphragms, intermediate diaphragms and approach slabs. It also entailed coordination with the gas company for the proposed gas line support frames.

A nonstandard design element incorporated in the project was the tapered shape of Wingwall A. Patrons of the adjacent Hungarian Club accessed the business via a private bridge over Brady's Run at the southeast corner of the proposed structure. Wingwall A, located at this corner, had to be a tapered wingwall instead of the standard rectangular one. The excavation and grading required to construct the rectangular wingwall would have encroached on the Hungarian Club's property. By using the tapered wingwall, the contractor could construct it and match the grading to the existing downstream Hungarian Club bridge. Access to this business continued throughout the duration of the project.

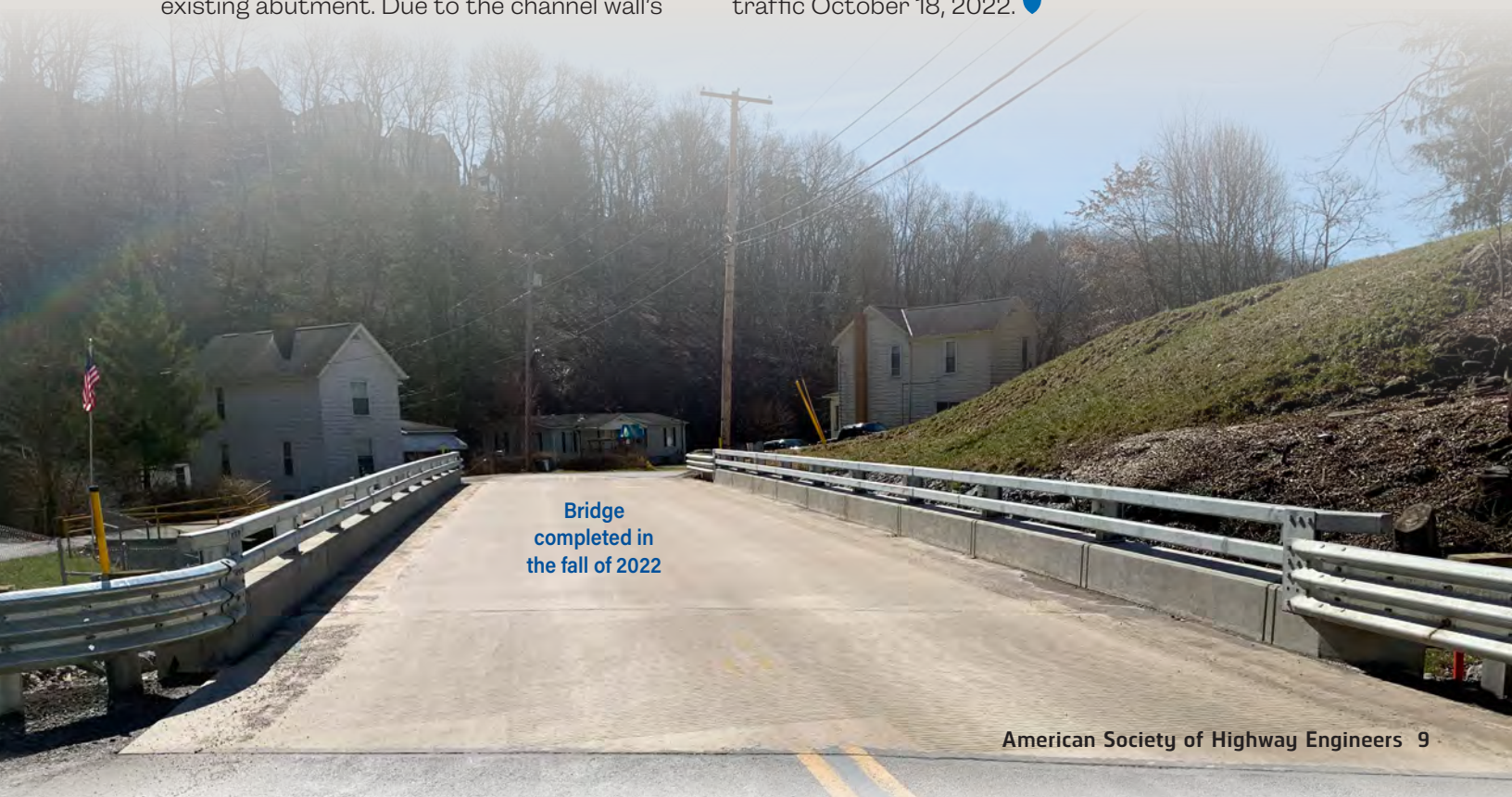
Another unusual design element was the stone toe wall used downstream from the existing abutment. Due to the channel wall's

existing condition there, the project included removal of the deteriorated section. The crest and footer stone consisted of masonry stones approximately 30 inches in diameter. The stone toe wall was set below the bottom of the streambed to an elevation that matched the capped existing abutment and extended to the channel wall that was to remain.



A crane near two residences assisted with beam placement for the new bridge.

The new single-span bridge has two 10-foot traffic lanes with two-foot, three-and-one-quarter-inch shoulders, using PA Type 10M Bridge Barriers. The new structure over Brady's Run carries 256 vehicles per day. Mekis Construction met the required timeline for the bridge's construction, reopening it to traffic October 18, 2022. 🇺🇸



Bridge completed in the fall of 2022



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Rowan University
Chapter—Chocolate
Bridge Competition

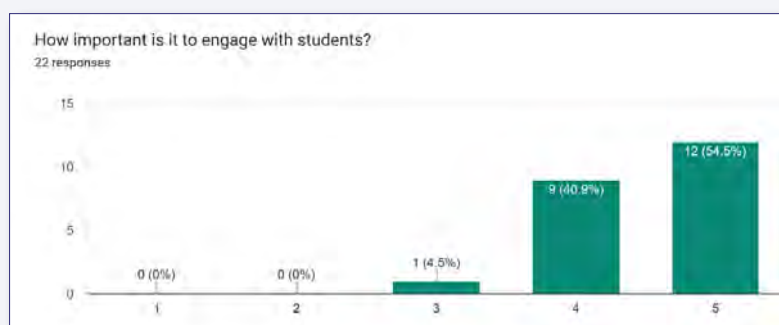
Rutgers
University
Chapter
Meeting



Recognizing the importance of active engagement in civil engineering, ASHE Southern New Jersey Section fosters collaboration between professionals and college students. With a focus on knowledge transfer and skill development, this Section and North Central New Jersey Section established an Education Committee to enhance student involvement.

The Education Committee polled ASHE members, contacts and Student Chapters in New Jersey to determine how to collectively target more student involvement. Distributed in November 2023, the poll asked: How can we engage students more?

The survey yielded insights that can serve all ASHE Sections. Each could evaluate how it enhances student engagement by using this information and distributing its own poll. Student engagement can advance the industry and attract more membership to ASHE. Here are the results from the Education Committee's survey:



1. Free Monthly Meetings

Respondents suggested providing complimentary access to monthly meetings. One of the first strategies implemented by ASHE Southern New Jersey Section was to invite college students to its meetings for free; this includes technical and social events. By providing such access, students can witness the professional dynamics of the organization, learn about industry trends and network with professionals. This initiative allows students to gain insights into aspects of highway engineering. *(continued on page 12)*

Enhancing Student Engagement with ASHE

by Heather Sabetta and Sara Irick,
ASHE Southern New Jersey Section

Enhancing Student Engagement with ASHE

(continued from page 11)

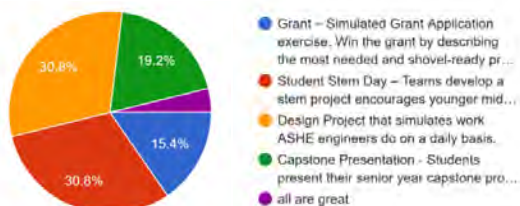
2. Establishing Student Chapters at Colleges

Respondents suggested establishing Student Chapters at colleges. Serving as inspiration were such models as American Society of Civil Engineers and Society of Women Engineers. ASHE Southern New Jersey Section and ASHE North Central New Jersey Section have already encouraged the establishment of ASHE Student Chapters at colleges in the state. These serve as hubs for students interested in highway engineering and foster a sense of community, providing additional resources for academic and professional development. There are now four Student Chapters in New Jersey.

3. Exploring the Idea of a Student Competition

One idea mentioned both in the survey and the Education Committee's brainstorming was the possibility of organizing a college student competition, allowing participation from all Student Chapters. As a result, the Education Committee has set up a subcommittee for the planning of a student competition.

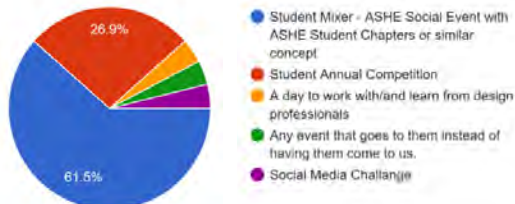
From the below competition ideas, which one do you like best? (26 responses)



If we did a competition, how much time would you expect students to dedicate? (26 responses)



What type of event would get the most participation? (26 responses)



4. Expanded Activities for Student Chapters

Respondents suggested more activities for members of Student Chapters, such as field trips, seminars and mini-conferences, as well as more on-campus events. ASHE Southern New Jersey Section organizes annual field trips, allowing professionals to witness construction projects in person while also encouraging student involvement. These experiences play a role in solidifying the career aspirations of students in the field of highway engineering.

Currently, each ASHE Student Chapter has monthly meetings with presentations by a professional in the field. ASHE Southern New Jersey Section has not yet hosted member meetings at these colleges but is exploring those opportunities. Such events would provide a platform for professionals to engage directly with students in their academic environment. They would encourage more informal interactions and potentially increase student attendance. An open forum discussion could give students the chance to ask questions and gain a deeper understanding of

potential career paths. It could also provide a more realistic perspective on the challenges and opportunities in the highway engineering profession. Professionals participating in these events gain experience in public speaking while benefiting their company's recruiting efforts, developing mentorship opportunities and reflecting positively on their organization.

ASHE Southern New Jersey Section and ASHE North Central New Jersey Section are also exploring opportunities to hold student mixers and resume workshops. Other discussions include holding a student conference or family-friendly STEM (Science, Technology, Engineering, Math) night to bring together professionals and students of all ages.

The approach to increasing Student Chapter participation in ASHE Southern New Jersey Section and ASHE North Central New Jersey Section reflects a commitment to nurturing the next generation of highway engineers. Acknowledging the need

for continuous improvement, the Sections continue to explore ways to further student engagement.

By implementing diverse initiatives based on survey feedback, these Sections strive to create a collaborative and enriching environment for students. The ongoing efforts to enhance student engagement, coupled with a focus on future initiatives, demonstrate a dedication to building a bridge between academia and industry. How does your Section engage students? Please share your strategies and successes. 🇺🇸

MileMarkers

News From Across ASHE-Miles



ASHE Houston Section Honors Past President

Ahmed Valdez, PE, received the Past Presidents' Award at ASHE Houston Section's Awards and Scholarship Gala in January. Valdez started the ASHE Houston Section in 2018, serving as its president from February 2018 to May 2019. He is enthusiastic about growing the Section and connecting people in the industry. He has aided in the establishment of ASHE Central Texas Section, and the revamping of ASHE Dallas-Fort Worth Section, respectively. He serves as co-chair with Markus Neubauer in the formation of ASHE San Antonio Section, which will begin meeting in April. Valdez is president and founder of AKV Consulting Engineers.



Members of the AKV Consulting Engineers team at ASHE Houston Section's Awards and Scholarship Gala included, from left: Shehbaz Tejani, PE, CFM; Bruce Arenales, PE; Ahmed Valdez, PE, AKV founder and president; Belinda Loh, Marketing Lead; Farshad Khademi, Engineering Intern.



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Humanitarian Engineering:

San Jose del Guano's Pedestrian Bridge

by Daniel
Jordan, PE,
ASHE
Middle
Tennessee
Section



The Peugeot Center volunteer team, Predisan employees and community members celebrated the bridge's opening in 2023.



Daniel Jordan (*left*) took an afternoon break with workers from Predisan to drink coffee and eat macheteadas, a traditional Honduran snack. ►

Lipscomb University, my alma mater, offers opportunities to educate its students and influence global communities through humanitarian engineering initiatives. These receive support from the Peugeot Center for Engineering Service in Developing Communities. As a professional bridge engineer, I co-led a team of 18 students and professionals in May 2023 to construct a suspended pedestrian bridge in rural Honduras. Leading such a trip represented a convergence of technical expertise and a commitment to engineering as a catalyst for change and community development.

San Jose del Guano, an agricultural community with around 1,000 residents, faced impassable routes during the rainy season to services like healthcare and education. Predisan, a nonprofit healthcare organization in Honduras, sought assistance from the Peugeot Center. Plans for the project began in fall 2021, and another Peugeot Center volunteer team conducted a site survey in spring 2022.

Collaboration with local stakeholders, including community leaders and residents, helped the Peugeot Center's volunteer team and Predisan understand the community's needs. Following consideration of site conditions and material availability, the team opted for a 145-foot suspended cable bridge. The Bridges to Prosperity Bridge Builder Manual served as a guide for both design and construction of the structure due to the manual's emphasis on considering local labor and materials.

The team met with Predisan to source exact materials and ensure completion of the foundation work before our arrival. We procured a retired cable from a shipping port on

the northern coast of Honduras for the bridge's support cables. The purpose of the 10-day trip was to work with the community in tensioning the cables, completing the foundation ramps and finishing the superstructure. Team meetings in spring 2023 planned each construction activity and implemented safety procedures necessary for project completion. Approximately 15 bags of hand tools, power tools, materials and safety equipment accompanied the team. Recognizing the importance of cultural sensitivity, pre-trip sessions also focused on local traditions and customs to navigate the nuances of working in a foreign cultural context.

After encountering travel delays, the project team received a welcome from the community before work began. The decision to stay in the community's church proved advantageous for cultivating relationships and extending workdays. The group first assessed the bridge foundations and adjusted the cable sag due to a larger as-built span length. Material discrepancies, such as incorrect lag screw sizes, necessitated reordering from Tegucigalpa, Honduras' capital city. These supplies took an additional five days to arrive on site, prompting adjustments to the construction plan.

Over the course of 10 days, the team worked with Predisan and the local community to tension the cables and fill foundation ramps with rock and sand. They also assembled rebar suspenders with crossbeams, constructed decking and attached safety fencing. Involving Lipscomb University's engineering students not only contributed to project objectives but also fostered skill transfer and shared ownership within the community. The team collaborated with residents to impart an understanding of maintenance procedures, while providing materials and tools to ensure the bridge's longevity.

Leading a humanitarian engineering trip to Honduras for the construction of a pedestrian bridge showed the potential of engineering beyond conventional projects. The team's experience was not just about deploying technical skills but also leveraging them for tangible, positive change in the lives of those in need. The constructed bridge represented more than a physical structure; it served as a conduit for connectivity, empowerment and the building of resilient communities. 🇧🇮



New Electric Vehicle Innovation Design

by ASHE Northeast Florida Section

The Electric Vehicle Innovation Design Center (EVIDC), in Jacksonville, FL, advances electric vehicle (EV) technology and fosters sustainability to create a more connected future. Miller EV Solutions partnered with CBRE (Coldwell Banker Richard Ellis) to create the center as an interactive public facility for EV technology and training. They introduced the EVIDC in November 2023 at an event that displayed its potential for the future of electric vehicle charging.

The approach to creating the EVIDC involved a collaborative effort with additional partners, including original equipment manufacturers and software providers, along with Schneider Electric, Graybar and WB Engineers+Consultants. It also included such community partners as North Florida Transportation Planning Organization, North Florida Clean Fuels Coalition, Jacksonville Transportation Authority and utility company JEA. These partnerships provided essential equipment, expertise and customer feedback.

The EVIDC reflects a commitment to embrace the challenges and opportunities presented by the electric vehicle solutions industry. More than a physical space, the facility symbolizes innovation that could transform the approach to sustainability. It can also reduce Jacksonville's own carbon emissions by 8,390 tons annually.

The EVIDC's Mission

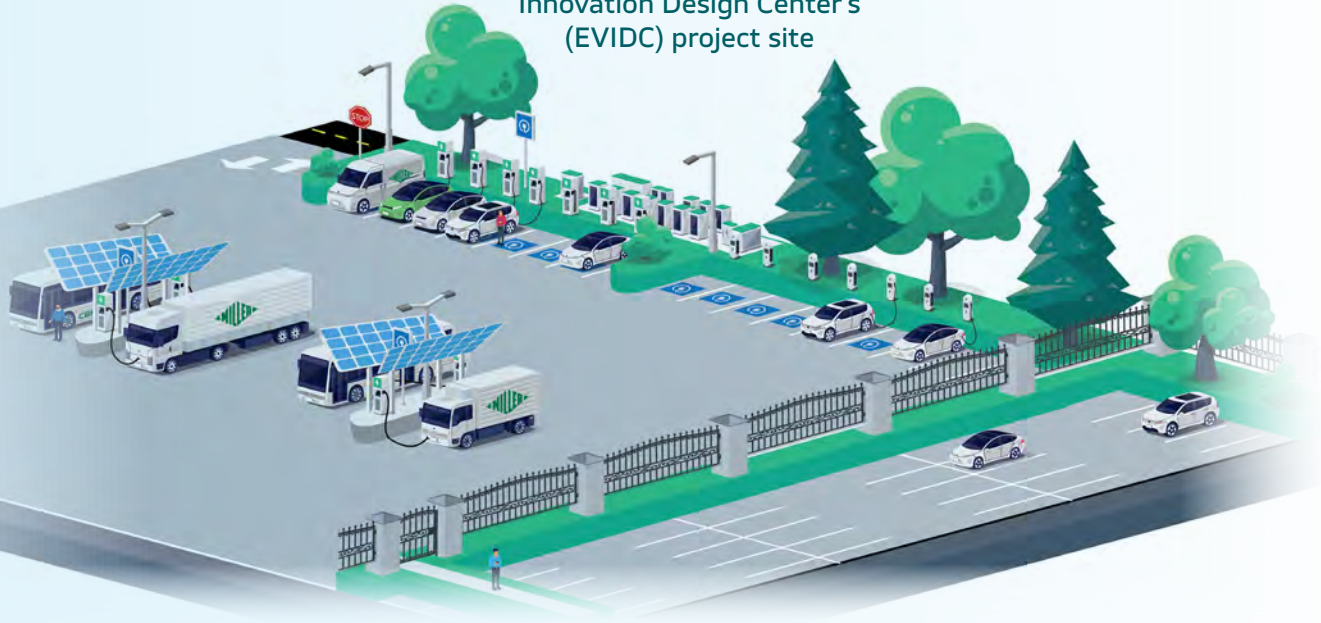
The heart of the EVIDC's mission is to facilitate hands-on learning, testing and data collection in EV charging technology. The facility offers an opportunity for visitors to immerse themselves in the world of EV and microgrid solutions, exploring an array of technologies. The EVIDC houses a comprehensive range of equipment, from Level Two (AC) chargers to ultra-fast (DC) Level Three Chargers. It also includes pull-through, heavy-duty charging provided by various manufacturers. Phase II of the facility, coming later this summer, will display the latest in sustainable technologies,

Completed Phase One
charging stations
at the EVID



Center Explores Sustainable Solutions

Rendering of the Electric Vehicle
Innovation Design Center's
(EVIDC) project site



including inductive charging, solar canopies and battery storage.

The center will provide use-case data to assist clients and stakeholders in making informed decisions that will foster more sustainable transportation. With a commitment to reduce carbon emissions by 13,197 tons annually, the EVIDC could make Jacksonville a pioneer in electrification and environmental responsibility. After completion of Phase II, the entire site will be under the management of a first-in-Florida microgrid solution developed by Schneider Electric.

The EVIDC is committed to transparency, offering visitors the opportunity to “try before they buy,” making informed decisions on the EV charging solutions that suit their objectives. The facility goes a step further by providing not only real-time, data-driven evidence of consumer use but also a hands-on training and learning environment for facility managers and electricians.

As a publicly available, client-driven center, the EVIDC aims to foster

confidence and knowledge among clients and accelerate carbon reduction efforts.

The Project's Goals

The EVIDC project's goals include encouraging development of actionable plans for ensuring the continuity of EV charging infrastructure. It also aims to establish a standardized methodology for assessing charging station performance and reliability. By providing a real-world environment for collaboration, testing and training, the EVIDC advances charging infrastructure. In close cooperation with CBRE, the site will provide a testing ground for a wide range of charging hardware, managed on multiple EV charger management software platforms as part of CBRE's remote operating center. CBRE will also use the EVIDC extensively as a training facility for its service technicians and project engineers.

For more information about the EVIDC project, please visit:

<https://MillerEV.com> 🇺🇸





2024 ASHE NATIONAL CONFERENCE

RALEIGH, NORTH CAROLINA

Moving Innovation Forward

The Carolina Triangle Section of the American Society of Highway Engineers (ASHE) welcomes you to the City of Oaks! We are honored to host the 2024 ASHE National Conference. Our agenda is filled with informative technical sessions, social events, and networking opportunities.

Visit our website for additional information:

<https://2024conference.ashe.pro/>



**June 5-9
2024**





Registration is now open!

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WHERE

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WHERE: HOTEL

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May 8, 2024: Deadline for hotel block

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SCHEDULE

JUNE 5, 2024

Registration Opens

JUNE 6, 2024

Golf & Sporting Clays
Guest Tour
Welcome Reception

JUNE 7, 2024

Sessions & Meetings
Tours & Exhibits
Friday Night Event at Market Hall

JUNE 8, 2024

Sessions & Meetings
Tours
Banquet & Casino Night

JUNE 9, 2024

Guests Depart

EDUCATION AND INSPIRATION



We are excited to announce **Dereck Whittenburg** as our 2024 Keynote Speaker. Dereck is one of North Carolina State University's most celebrated alumni and a member of the '82-'83 NCAA National Basketball Championship team.

In addition to our dynamic keynote speaker, ASHE National Conference offers three educational tracks with various focuses:

- 1 **Highway and Bridge Design**
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ANNUAL GOLF TOURNAMENT

Lonnie Poole Golf Course - Designed by Arnold Palmer
Transportation, breakfast and lunch included
Thursday, June 6th (7:00 am to 5:00 pm)



CLAY SHOOTING TOURNAMENT

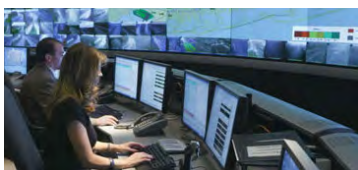
Drake Landing
Transportation, breakfast and lunch Included
Thursday, June 6th (9:00 am to 1:00 pm)

TECHNICAL TOURS



REGIONAL RAIL TOUR (RALEIGH – DURHAM)

Technical Tour ends at a local brewery
Transportation and lunch included
Friday, June 7th (10:30 am to 3:00 pm)



ITS TRANSPORTATION MANAGEMENT CENTER

Technical Tour ends at a local brewery
Transportation and lunch included
Saturday, June 8th (9:30 am to 1:00 pm)

GUEST TOURS



SARAH P. DUKE GARDENS & DUKE UNIVERSITY CHAPEL

Transportation and lunch Included
Thursday June 6th (9:45 am to 2:00 pm)



NORTH CAROLINA ZOO IN ASHEBORO

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Transportation and lunch included
Friday, June 7th (7:45 am to 4:00 pm)



TASTE RALEIGH – SPEAKEASY WALKING TOUR

Learn about the hidden speakeasies scattered throughout Raleigh!
Craft cocktails and transportation included
Friday, June 7th (12:00 pm to 4:00 pm)



NC MUSEUM OF NATURAL SCIENCES & NC MUSEUM OF HISTORY WALKING TOUR

Transportation included for those unable to walk to the museum
Saturday June 8th (10:00 am to 2:00 pm)



RALEIGH BREWERY TOUR

Visit Crank Arm Brewing, Trophy Brewing & Taproom, and Brewery Bhavana
Transportation included
Saturday June 8th (12:00 pm to 4:00 pm)



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https://2024conference.ashe.pro/sponsors-exhibitors/#Conference_Sponsors

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The Race Is On!

Middle Tennessee is one of the fastest growing regions in the nation. Can infrastructure keep up?

Lee Schumann

Transportation Design Practice Leader

If you've driven through the southeast, having been away for the past decade, it's easy to see that the landscape has changed considerably. You may also find that while there are many new places to go and things to do, it takes longer to get there. It seems evident this wasn't a flash in the pan occurrence, but the beginning of a boom for growing areas like Middle Tennessee.

What challenges will our region face?

The delta between the growth trajectories creates a challenge for many people in this region. Creating livable and walkable space with multimodal opportunities, while navigating suburban growth and long commute times, can be overwhelming and takes a partnership between both the public and private sectors. As housing opportunities expand at a rapid pace, a working relationship between TDOT and local municipalities is essential to achieve a successful transportation infrastructure plan. We are fortunate to live and work in Tennessee, where leadership has recognized these challenges, secured additional funding, and has enacted sweeping innovative solutions to secure our sustainable future.

What role do you see RaganSmith playing in Middle Tennessee's future?

RaganSmith has called Nashville home for 90 years. Over that time, we have grown to have offices in Murfreesboro and Chattanooga working with TDOT and multiple municipalities across the state of Tennessee. With a full range of services - survey, environmental, transportation planning, engineering, landscape architecture, design, and CEI - we understand how proper infrastructure design will affect how a region/city functions, flows, and feels.

We recognize what it takes to get projects constructed successfully. We are passionate about what we do and look forward to providing purpose-focused solutions to address this population boom.



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News From Across ASHE-Miles



Tile cleaning of the Queens Midtown Tunnel

ASHE New York Metro Section Names 2023-24 Small Project of the Year

Tunnel Ceiling Cleaning and Tunnel Preservation at the Queens, NY, Midtown Tunnel received **ASHE New York Metro Section's Small Project of the Year Award Under \$20 Million**. Announced during the Section's February meeting, the winning project was awarded through a Minority Business Enterprise (MBE) program and a small business mentoring program. Metropolitan Transportation Authority Construction & Development owned the project, and Enovate, an MBE company, served as the construction management firm. Two small-business contracting firms also received recognition: New York International Builders and Oudaz General Contracting. ASHE New York Metro Section highlighted the Minority, Women,

Disadvantaged Business Enterprise Program and veteran-owned firms that support the organization through sponsorship of the Section during the event. Catherine Sheridan, PE, President, Triborough Bridge and Tunnel Authority (MTA Bridges and Tunnels), was keynote speaker.

ASHE NY Metro Small Project of the Year 2023-24 award-winning firms with Cathy Sheridan



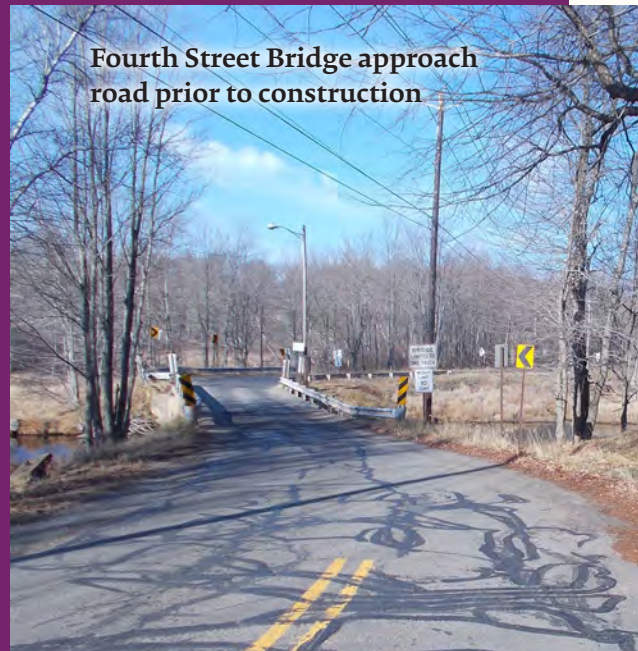
Photo courtesy of Cliff Weissman

before

Fourth Street Bridge
before construction



Fourth Street Bridge approach
road prior to construction



Bridge Replacement Project Connects Criteria, Context and Community

by Nicki Jacobs, PE, PTOE, RSP1, and Robert Bochicchio, PE, DBIA, ASHE North East Penn Section

after

Fourth Street Bridge after
completion of project



Fourth Street approach road
after project completion



For 71 years, the steel I-beam bridge with an asphalt overlaid timber deck carried Fourth Street over the Lehigh River. The structure bordered Lackawanna and Wayne Counties in the Pocono Mountains of northeastern Pennsylvania. Local testimony indicated the original truss bridge at this site had washed out, and the superstructure provided a temporary fix until it could be replaced. The functionally obsolete bridge had 1,000 vehicles per day, restricted to those weighing less than 10 tons.

In addition, the 16-foot bridge could only accommodate one lane of traffic at a time and lacked the width to support vehicular, pedestrian and bicycle traffic. The existing deficiencies warranted bridge replacement. However, replacing it would be complicated by the contextual characteristics of the project location, community needs and ability to meet design criteria.

The Lackawanna County-owned bridge was located where the Clifton and Lehigh Township roadways of Fox Farm Road and Fourth Street met over the Lehigh River. The Pennsylvania Department of Transportation (PennDOT) Engineering District 4-0 administered and provided oversight of the project's design and construction contracts. The project would directly impact the Big Bass Lake Community, a 1,900-acre resort with more than 1,500 residents. The bridge crossing provided the only access for more than 60 properties that were landlocked by the gated lake community.

The Lehigh River, a navigable waterway, has flows influenced by

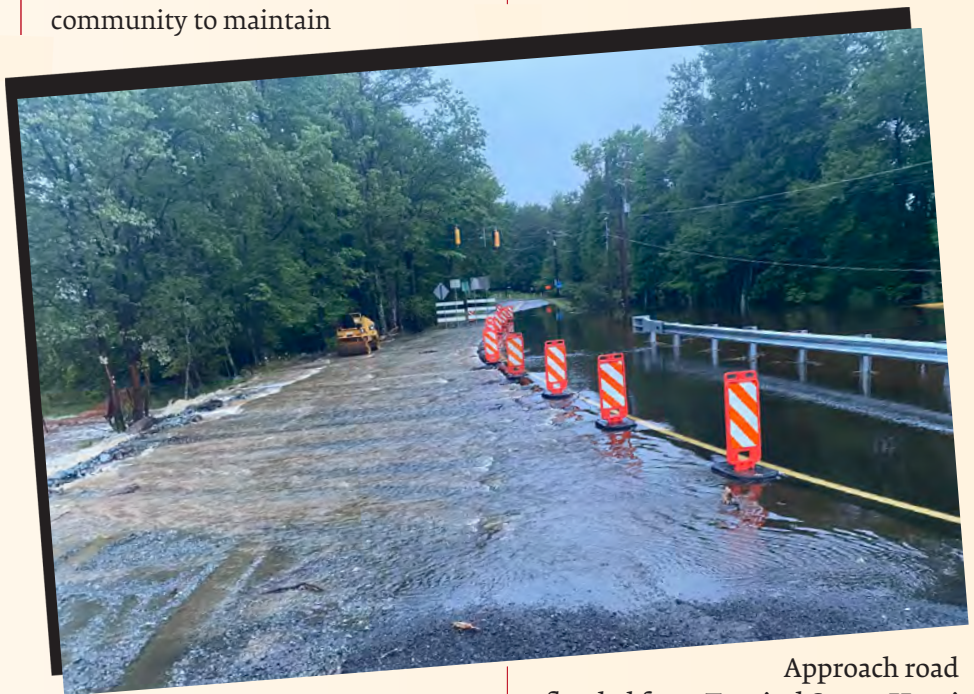
dams upstream and downstream of the existing bridge and its connections to Larsen Lake and Westend Pond (Lake Natalie). Both were accessible only via private property. Other challenges included the S-curve configuration of Fourth Street, presence of wetlands and overtopping of the northern bridge approach. There were also in-stream construction restrictions, pedestrians, boating traffic and construction noise. These factors would all require consideration for any bridge replacement option evaluated by Greenman-Pedersen, Inc. (GPI), the design consultant.

Public and stakeholder outreach efforts made it clear how important it would be for the community to maintain

main water supply locations in case of a fire. The community does not have a hydrant system.

The final design solution included a new structure on a slightly adjusted alignment upstream of the existing structure. The new 75-foot single span integral abutment, five-beam superstructure would allow for the county to rehabilitate the bridge deck more easily in the future. The structure had greater width to accommodate a 10-foot travel lane and five-foot shoulder for each direction of Fourth Street.

A single-lane temporary roadway on embankment with pipes for a bidirectional traffic pattern, controlled by



Approach road flooded from Tropical Storm Henri

a crossing over the Lehigh River during construction. A detour would require improvement to over two miles of private roadway and would impact accessibility to the surrounding properties. Local emergency responders expressed concern about maintaining access to this location. It served as one of the

temporary signals, was proposed downstream of the existing bridge. The team designed the temporary roadway to be wide enough to maintain vehicular traffic. It would accommodate a safe passageway for pedestrians and bicyclists throughout construction. As

(continued on page 28)

Bridge Replacement Project Connects Criteria, Context and Community

(continued from page 27)

there was no access from the east side of the project, the temporary roadway had to accommodate all construction equipment, including cranes, excavators and drilling equipment. Installation of a dry hydrant in coordination with the local fire company helped establish a long-term solution for water supply concerns. The channel required full closure to boating traffic during construction.

In April 2020, PennDOT chose Fabcor, Inc., the project's

lowest bidder, as contractor. Construction began, but the weather had

other plans for the contractor and project team. Shortly after the new bridge opened to traffic, Tropical Storm Henri dropped several inches of rain on the area. The temporary roadway initially worked well, but an upstream dock broke free and became trapped in the project site. This caused a blockage of the temporary pipes. The bridge closed after backwater began to overtop the live travel lanes. Coordination between project stakeholders and community officials established

an emergency detour through the private lake community until the flood water receded. The project site sustained almost no damage, and it quickly reopened following the storm event.

One week later, Tropical Storm Ida headed directly toward the region. The contractor ensured that the temporary roadway was removed, and the stream channel was restored prior to the next storm. With this roadway removed, no flooding or backwater occurred.

Construction ended in September 2021. The bridge provided a crossing that could transport two lanes of vehicles carrying all legal loads. It supported

pedestrian and bicycle traffic, improved the flow of Lehigh River and accounted for future rehabilitation needs. The Fourth Street Bridge project was a reminder of how design criteria, context and community are connected to the success of a project. 🇺🇸



June 2021, bridge deck concrete pour



June 2021,
temporary
road with the
bridge under
construction



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AsTheWheelTurns

ASHE Members on the Move!



Dewberry Promotion for Fleming

Fairfax, VA—**Sam Fleming, PE**, was promoted to vice president in Dewberry's Atlanta, GA, office. Fleming, **a member of ASHE Georgia Section**, is a water resources department manager. He has over 27 years of experience in the public and private sectors of water resources, transportation and site/civil engineering, with a focus on stormwater infrastructure planning and design. Fleming's project background includes stormwater infrastructure system assessments, dam safety, culvert improvements, emergency response, stream restoration and floodplain studies. He earned his Bachelor's and Master's degrees in Civil Engineering from the University of Alabama. He is also a member of the American Public Works Association, Association of State Dam Safety Officials, Georgia Association of Floodplain Management and Georgia Association of Water Professionals.

A N N O U N C I N G

Scanner Article of the Year AWARD

Starting with all articles appearing in **scanner** from summer through spring issues, the **scanner** committee will choose first-, second- and third-place winners for the **SAY** Award. The committee will judge each article on:

- Value to the engineering profession
- Value to the community
- Innovation
- Photo quality/content connection
- Overall uniqueness

All incorporating ASHE Strategic Plan Objectives.

The first annual **SAY** Award winners will be announced at ASHE National Conference, June 5-9, 2024.

Sections, keep those articles coming!

Say

what?



ashe.pro/latest-news/scanner-newsletter/

ASHE Central Ohio Section 2022 Project of the Year Award Over \$20 Million

Stimson Avenue, a major east-west thoroughfare, serves as a gateway to Athens, OH, home of Ohio University. Pedestrians in the surrounding residential areas and visitors to local businesses travel through this area extensively. In 2019, the City of Athens contracted WSP to provide engineering services for a streetscape project on Stimson Avenue.

In its original condition, only some of the avenue's traffic crossings had truncated domes. Pedestrian ramps were crumbling or far too steep. Crosswalks were faint or nonexistent. Cyclists wanting to use the corridor had few safe options.

The city wanted to upgrade the pedestrian facilities to meet its vision of the Bicycle and Pedestrian Plan, and to enhance the aesthetic qualities of this stretch of road. The public also provided input, as it impacted a mix of residences and businesses. As is often the case, not all those affected by the project were initially supportive, and much of the design included satisfying this group's concerns.

After considering multiple road width options within the corridor, the city and WSP chose one with wider sidewalks and on-street parking, along with bump outs to serve the best balance of needs for all road users.

Fitting all the improvements into such a narrow corridor proved challenging, with a combination of curb-tight sidewalks leading to a mix of residences and businesses, often with steps or ramps of their own. In addition, the city wanted to maintain at least one-way traffic during construction.

The existing sanitary sewer system was shallow and often in conflict with standard storm depths. The team provided ongoing services during construction, supporting the city and the contractor. Sanitary and water line runs received modification, as needed, to make connections work when conflicts arose. Service connections across the existing sanitary and water lines on the far side of the street also presented challenges. Sometimes these required

(continued on page 34)

Busy Stimson Avenue Gets a Makeover

by Jonathan Hartzell, PE, WSP, ASHE Central Ohio Section

Reconstructed Stimson Avenue
with bike-width sidewalks, new
crosswalks and curb ramps



Busy Stimson Avenue Gets a Makeover

(continued from page 32)

Bioretention cell
along Stimson
Avenue

adjustments on a case-by-case basis as the contractor unearthed the existing utilities.

Crossings required analysis to maintain separation and retain hydraulic standards. In some cases, this included the use of elliptical pipes.

Treating water quality in a dense urban environment is always a challenge, but having to keep aesthetics at the forefront of design added complexity. After consultation with an in-house landscape architect, the team settled on bioretention cells. These rectangular concrete pits in the sidewalk, filled with a certain type of soil mix, have vegetation specifically chosen for this function. The pits receive storm runoff through cuts in the street curb, which then filters through the special soil mix to remove pollutants.

These bioretention cells had to be custom designed to work in the tight urban corridor. The team used concepts from multiple authorities on the subject to develop functional cells for the corridor. In addition, the vegetation gave a landscaped quality to the area.

City Engineer Saleh Eldabaja commented, "The project has been well received, particularly the aesthetic qualities of the bioretention cells..."

Finally, Stimson Avenue received a road diet, pulling the curb face inward with parking bump outs. This reduced the available width for maintaining traffic in a part-width scenario. The team had to maintain not only automobile traffic, but also delivery truck and pedestrian traffic for businesses along the corridor.

With the project completed in late 2021, this stretch of Stimson Avenue has truncated domes at all major crossings, along with curb ramps and well-marked crosswalks. Wider sidewalks and mast-arm signals with reflective backplates provide more safety for pedestrians and drivers. A new roundabout at North 1804 Way and the Hockhocking Adena Bikeway added multimodal connectivity. The upgrades to Stimson Avenue not only enhanced the area's safety and appearance; they also increased the potential for future economic development. 🇺🇸



Gaining more access to regional trails was a top priority of residents in Columbus, OH, according to the city's Recreation and Parks Department's (CRPD) 2014 Master Plan. To connect area trail systems, new developments and entertainment venues downtown, CRPD initiated the design of a pedestrian and bicycle bridge over Olentangy River in 2017. It would link the Olentangy Trail, Arena District, Confluence Village, Lower.com Field soccer stadium and the Central Ohio Greenway. This

230-mile system of trails could connect Columbus' parks, rivers and neighborhoods. Working with CRPD, Burgess & Niple (B&N) led preliminary study and final design of the new structure, the Olentangy Trail-Arena District Connector Pedestrian Bridge. Construction began in early 2020.

Inclined Vierendeel Truss Design

The design selected for the new 233-foot-long bridge was a two-span inclined Vierendeel truss. It had large-diameter round tubular steel members with a bent arch-shaped upper chord and radially oriented verticals. In a Vierendeel truss, the structure members form trapezoidal rather than triangular openings. This eliminated the need for bracing members in the truss openings, which would give the bridge a more open, modern appearance.

The design of such a truss is more complex than a traditional truss because joints between the members must resist movements in addition to axial forces. For this structure, the individual truss lines were fully shop-welded and transported to the site as a single unit. The truss lines were bolted to the transverse floor beams on-site, and each span lifted into place fully assembled.

The design team used a multi-phase three-dimensional model that examined member and connection demands during construction and under service loading.

(continued on page 38)

The bridge's LED uplighting accentuates the truss members. LED pod lights in handrails illuminate the bridge deck surface for pedestrian safety.

Pedestrian Bridge Makes Trailblazing Connections

by John Shanks, PE, Burgess & Niple, ASHE Central Ohio Section

Columbus Crew
soccer fans use
the bridge on game
days, with a bike-
check program at the
bridge's east end.





Pedestrian Bridge Makes Trailblazing Connections

Individual truss lines of the bridge were shop-welded and transported to the project as single-span units.

(continued from page 36)

They performed linear and nonlinear buckling analysis to verify stability during erection and construction. To evaluate the connection behavior and stresses, the team used a local finite element model of the truss end panels, where the upper and lower chords meet the end post.

Navigating Nature's Challenges

Challenges with the bridge alignment, foundations and bridge hydraulics (constructing a two-span structure in the middle of a floodway) required innovative applications and techniques.

Bridge Hydraulics

The original scope of work called for a single-span pedestrian bridge, but the team advised that a two-span bridge could cost significantly less. This allowed CRPD to stretch funds to cover more aesthetic features and architectural lighting. The challenge was that an additional pier in the middle of a floodway would normally cause an increase in the 100-year flood elevation. It would also require the preparation of a Conditional Letter of Map Revision, adding to the project schedule and cost.

Through hydraulic modeling, the team determined that removing a collapsed bridge pier from an abandoned interurban railway, along with existing minor remnants of a previously removed dam, would offset the effects of a new pier in the river. This allowed for a more cost-effective two-span bridge.

Bridge Location

A preliminary engineering study helped identify a preferred alignment to optimize the bridge length and locate the bridge abutments outside the floodway. It would also minimize impacts to the existing utilities, including an abandoned pumphouse and boat ramp access to the Olentangy Water Trail. The preferred location coordinated the east landing with proposed developments and area improvements, such as a new adjoining park and the pumphouse building, slated to become a pub. This required coordination with stakeholders to establish the bridge landing point between these dynamically developing site features.

Bridge Foundations

The project included an assessment of the geotechnical conditions to determine suitable foundation types for the substructure and address potential scour issues. Utility conflicts and the abandoned water intake structure resulted in design and construction challenges. The substructure design incorporated the use of drilled shafts to improve scour resiliency and a concrete tie-back strut to a deadman drilled shaft. It also included low-density flowable mortar backfill to minimize construction vibrations and impacts to the intake structure and aging primary water mains feeding downtown Columbus.

Aesthetic Appeal and Functional Connectivity

Completed in 2022, the new Olentangy Trail-Arena District Connector Pedestrian Bridge created a connection to the City's trail systems and downtown amenities. Its straightforward design adds value to public and private developments in the Arena District and surrounding area.

The Vierendeel arched truss structure helped achieve this by eliminating the need for bracing members in the truss openings, giving the bridge a more open appearance. Large-diameter round tube members complement the architecture of the new Lower.com Field and surrounding development, while the fully shop-welded joints and white paint enhance the structure's appearance.

The new bridge has been a welcome addition to the community, providing a direct, safe connection to the City's growing regional trail system. It provides a gateway for pedestrian and bicycle traffic to enter the Confluence Village/Arena District. Every game day, hundreds of Columbus Crew soccer club fans cross the bridge to enter

Lower.com Field, resulting in a formal bike-check program staged near the bridge during home games. As Columbus continues with its economic development efforts, the Olentangy Trail-Arena District Connector can provide nonmotorized access for years to come. 🇺🇸



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Long Island	34
Mid-Allegheny	93
New York Metro	162
North Central New Jersey	122
North East Penn	138
Pittsburgh	637
Southern New Jersey	182
Southwest Penn	216
Williamsport	81

Subtotal 3,387

Mid-Atlantic Region

SECTIONS

Blue Ridge	53
Carolina Piedmont	46
Carolina Triangle	219
Chesapeake	262
Greater Hampton Roads	74
North Central West Virginia	51
Old Dominion	81
Potomac	171
South Carolina	74

Subtotal 1,031

Southeast Region

SECTIONS

Alabama	59
Central Florida	128
Georgia	686
Middle Tennessee	313
Northeast Florida	206
South Florida	17
Tampa Bay	42
Tennessee Valley	124

Subtotal 1,575

Great Lakes Region

SECTIONS

Bluegrass	137
Central Dacotah	74
Central Ohio	204
Circle City	58
Cuyahoga Valley	105
Derby City	89
Lake Erie	236
Northwest Ohio	43
Triko Valley	150

Subtotal 1,096

**Welcome
San Antonio!**

Southwest Region

SECTIONS

Central Texas	72
Dallas-Fort Worth	45
Houston	84
Phoenix Sonoran	149

Subtotal 350

National Total

7,439

Professional Status	56%
Government	12%
Consultant	75%
Contractor	5%
Other	8%

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