Session 15
Room: B131-132
New Technology Implementation in CADD, Survey, and Mapping
Organizer: Rachel Lewis
Moderator: Kolton Wilson

New! Access Data, Plans, & Imagery from the Web
Kyle Ince, Ohio DOT, Columbus, OH
Austin Korte, Ohio DOT, Columbus, OH
Brandon Williams, Ohio DOT, Columbus, OH

New web applications are being deployed by the CADD & Mapping Office, giving ODOT and the public instant access to Right of Way Plans, Aerial Image Archive, and the Plan Vault. The Office of CADD & Mapping Services has collaborated with the Office of Technical Services and the Division of Information Technology to deploy these applications, clean up old data files, and develop new web applications.

A Hydrographic Topo Without Getting Wet
Kyle Ince, Ohio DOT, Columbus, OH

When you hear the term drone you might instinctively look to the sky, but with the HyDrone we will look to Ohio’s bodies of water. This presentation will provide insight into ODOT’s data agnostic approach to hydrographic surveying. By looking at real world examples, we will discuss advantages and limitations of the technology and how ODOT utilizes the HyDrone as another tool in the surveyor’s toolbox.

Panel Discussion on ORD Implementation Status
Eric Thomas, Eric Thomas Consulting, Columbus, OH
John Drsek, Ohio DOT, Columbus, OH

This panel discussion is an opportunity for the community to ask questions of the staff who are spearheading the ORD Implementation efforts. The Department’s lead CADD Programmers will be available to discuss the status of the software implementation and answer questions.

Session 16
Room: B143-145
Utility Coordination
Organizer: Chris Engle
Moderator: Chris Engle

Utility Coordination: The New Paradigm
Kenny Franklin, CMT Engineering, Indianapolis, IN
Wendy Snyder, Ohio DOT, Columbus, OH
Cody Beucler, Parsons Brinkerhoff, Columbus, OH

This session will provide the framework necessary to integrate utility coordination efforts within the entire project development process including Environmental, ROW, Design, and Construction. The traditional approach to utility coordination is generally reactive and often too late in the process. This New Paradigm for project delivery incorporates a model of building trusted partnerships that reduces ODOT risk, lowers overall costs, and improves project schedules. It focuses on early and strategic touch points with utility partners and the project team.
Session 17
Room: A113-115
General Construction
Organizer: Gary Angles
Moderator: Gary Angles

Accelerated Superstructure Replacement for the Hoboken Viaduct
Thomas Zink, Gannett Fleming Engineers and Architects, P.C., Mount Laurel, NJ

This project was initiated by the New Jersey Department of Transportation to rehabilitate the aging Hoboken Viaduct in Jersey City, NJ. Although this 220-span, 3,200-foot-long viaduct was initially designed as a staged deck replacement, a Smart Solutions Study led to an ABC scheme that changed the scope to a full superstructure and partial substructure replacement project while saving $35 million in initial construction costs and reducing construction duration by 12 months.

Opportunity Corridor - Making Connections, Transforming Communities
Julie Meyer, Ohio DOT, Garfield Heights, OH
Matthew Wahl, HNTB Corporation, Cleveland, OH

This presentation will provide an overview and history of the corridor; illustrate unique project features; discuss extensive diversity and inclusion efforts; and provide construction highlights. The presentation will also provide an overview of the redevelopment efforts presently underway by the City of Cleveland.

Session 18
Room: B233-235
Navigating the Ever-changing Regulatory World We Live
Organizer: Adrienne Earley
Moderator: John Kusnier

Recent Regulatory Revisions with Ramifications for Your Roadway and Aquatic Resource Restoration Projects
Greg Snowden, Davey Resource Group, Inc., Kent, OH

Examine the recent state and federal Clean Water Act regulatory changes and their implications on transportation and other development projects.

Stream-lining and Innovating the Waterway Permits Process: ODOT's New Regional General Permit
Adrienne Earley, Ohio DOT, Columbus, OH

ODOT, in conjunction with the US Army Corps of Engineers and Ohio EPA, has stream-lined project delivery, resulting in a significant cost-savings to the Department. This presentation will discuss ODOT's new Regional General Permit and associated Memorandum of Agreement with the resource agencies.

Mitigating For Wetland and Stream Impacts: How Did We Get Here and Where Are We Going?
Vince Messerly, Stream and Wetlands Foundation, Lancaster, OH

An overview of the history of compensatory mitigation in Ohio, update on the current status and mitigation trends, as well as regulatory policy projections will be discussed.
Session 19
Room: B130
Understanding, Retaining, and Passing Knowledge onto the Next Generation
Organizer: Ruth Klee
Moderator: Sara Downs

Working with Other Generations
Mike Fitch, Ohio DOT, Columbus, OH
Our current transportation workforce represents four distinct generations: Traditionalists, Baby Boomers, Gen X, and Millennials (who will represent 75% of the US workforce by 2025). Discussion will include tips for bridging gaps among generations, including improving intergenerational communication and effective listening skills.

Retaining the Next Generation of Transportation Engineers
Meghan Altier, Ohio DOT, Delaware, OH
Anthony Turowski, Ohio DOT, Delaware, OH
Learn what ODOT District 6 is doing to retain employees in a fast-growing urban area with a high competition for workforce. Initiatives include a coaching and mentoring program for new engineers and interns; a career development program for employees to plan for short- and long-term career goals; job shadowing; and an apprenticeship program.

Knowledge Management and Retention
Brian Brown, Ohio DOT, Columbus, OH
Renee Szymanski, Ohio DOT, Columbus, OH
Drew Gilmore, Ohio DOT, Columbus, OH
A significant number of Ohio's transportation workforce will be retiring in the near future. The challenge of retaining many years' worth of knowledge from experienced employees before they leave the industry is a daunting task. In order to avoid the inefficient and expensive process of re-learning our industry's skills, different methods and tools of passing knowledge onto the next generation will be discussed, with opportunities for Q & A.
Innovations in Materials and Data Assessment

Organizer: Jeffrey Syar
Moderator: Kevin White

**Innovative Access Solutions - The Evolution of the Casting**

*James Cassel, EJ, Clarkston, MI*
*Luke Darby, EJ, Lebanon, OH*

Presentation to be conducted by both Luke Darby and James Cassel, Technical Sales Representatives from EJ (formerly East Jordan IronWorks). Coinciding with the theme for OTEC 2019, the well-paced and informative presentation will focus on innovative materials, products, and applications for today’s infrastructure access market. This non-sold focused presentation outlines how new castings are designed, tested, and built to meet the needs of the ever-evolving industry. Innovative materials, like ductile iron, are allowing designers, manufacturers, and owners substantial flexibility while constructing a project. Industry-wide optimization of access solutions with a focus on safety, ergonomics, and longevity is reviewed in depth. All of these industry advancements are then put into motion with new to market innovative products. These products are discussed in a generic manner with a focus on design and application benefits. Presentation is concluded with advice on where to access all of this information and how to integrate these smart products into Ohio’s infrastructure. Through this collaboration with industry partners, Ohio can move forward transforming the future of transportation. You don’t know what is out there unless you learn what is out there!

**Evaluation of Synthetic Fiber Reinforced Concrete Pipe Performance Using Three-Edge Bearing Test**

*Fouad Alrikabi, Ohio University, Athens, OH*

Synthetic fibers have been recently used in a concrete mix in an attempt to produce a new concrete pipe system, cheaper, lighter, and more flexible than conventional steel reinforced concrete pipes. However, no structural design codes have been introduced for synthetic fiber reinforced concrete pipes evaluation. There is little in the literature regarding synthetic fiber applications in the concrete pipes. This study focused on the evaluation of the synthetic fiber reinforced concrete pipes in terms of ASTM requirements for strength, stiffness, and ductility. The performance of the synthetic fiber reinforced concrete pipes was evaluated using three-edge bearing test in accordance with ASTM protocols and using three pipe diameters: 600, 1200, and 1500 mm. Fiber dosages ranged from 4.75 to 18 kg/m³, and different areas of one steel cage layer were used to reinforce the concrete pipes. The results showed that using synthetic fiber increased the cracking load (produces 0.3 mm crack width), ultimate load, stiffness, and ductility of tested pipes. Also, using synthetic fiber lowered the production cost as the reduction in the steel cage area ranged from 51 to 100%.

**Machine Learning and Data Analytics for Highway Culvert Management**

*Bill Yu, Case Western Reserve University, Cleveland, OH*

The highway industry manages a large number of culvert, which are used for drainage and other hydraulic purposes. Due to historical reasons, a systematic asset management strategy is currently not in place for highway culvert. Efforts to address this issue only emerge in recent years. This paper describes the data analytics for culvert management based on the culvert asset data collected by the Ohio Department of Transportation. Data analyses allow to determine the life time deterioration behaviors of different types of culverts, which allows to predict the amount of resources required for culvert maintenance in future asset management plan. The data is also analyzed to determine the deterioration mechanism of different types of culverts to identify the key contributing factors (i.e., service load, environment, structure and material characteristics) on their deterioration rates. The analyses allow to identify the relative importance and weights of these different contributing factors on culvert deterioration. From these, the analyses are extended to predict the performance of existing and new culverts under forecasted future climate and traffic conditions. The capability to predict the performance of new culvert allows to select the proper types of culvert for the optimal life cycle performance.
Tuesday, October 29, 2019  1:30 - 3:00 p.m.  CPDs =  1.5

Session 21
Room: A220-222
How to Get Bus Rapid Transit Moving

Organizer:  Scott Phinney
Moderator:  Chuck Dyer

Best Practices for BRT Project Development and Neighborhood
Matt Selhorst, HDR Engineering, Inc., Columbus, OH
Doug Arseneault, COTA, Columbus, OH

The Central Ohio Transit Authority's (COTA) first Bus Rapid Transit (BRT) line, known as CMAX, has begun service to connect customers to major destinations along Cleveland Avenue between downtown Columbus and Westerville. CMAX is a 15.6-mile service improvement consisting of a combination of BRT / Enhanced Bus service system with 32 stations (64 platforms) in mixed traffic. The presentation will include an animated video and lessons learned with the implementation of CMAX. Attendees will learn about the inclusion of the neighborhoods in the branding and design/artwork of the shelter, best practices in stakeholder engagement/public involvement to facilitate project development and acceptance, and the importance of value engineering during the project development process.

Bus Rapid Transit: The Long Winding Road to Transportation
Bill Crowley, AECOM, Akron, OH
Emily Baarson, Akron Metro RTA, Akron, OH

This presentation will provide an overview of typical BRT funding options with an example from Omaha. It was a successful TIGER Grant application that sparked the vision of Omaha's Rapid Bus Transit (ORBT) into reality. ORBT is meant to not only enhance transit, but create a "philosophical change" in the community. The presentation will examine the process of obtaining grants and fulfilling commitments in a changing federal landscape. In Omaha, the evaluation process during design indicated that engineered technologies could improve public opinions and facilitate local funding.

Bus Rapid Transit: IndyGo Red Line
Austin Gibble, IndyGo, Indianapolis, IN

The Indianapolis Public Transportation Corporation (or IndyGo) is the primary public transit provider for the City of Indianapolis and Marion County. The agency serves a large area, nearly 400 square miles, and has historically followed the "coverage" model. Starting in the 2010, after recognizing the need to take action on the region’s transportation deficits, Indy Connect was formed. This was initially a working group between the Indianapolis Metropolitan Planning Organization (IMPO), IndyGo, the Central Indiana Regional Transportation Authority, and various stakeholders. The resulting vision, plan, and studies formed the Marion County Transit Plan in 2016, within which was the Red Line BRT. This session will discuss the planning process and challenges within the Red Line BRT project, its design, what operational characteristics required changes, and what opportunities and challenges remain ahead for local policy, future BRT lines, and local transit system.
Session 22

Room: B240-242

Aggregate Testing 101

Organizer: Patrick Jacomet
Moderator: Patrick Jacomet

**Aggregate Testing 101 - Aggregate Tests Procedures and What the Results Mean**

Mickey Cronin, Ohio DOT, Columbus, OH
Karl Fletcher, Bowser-Morner, Inc., Dayton, OH
Larry Shively, The Shelly Company, Thornville, OH

Aggregates are the basic ingredients in all construction projects. Aggregate testing for particle distribution, shape, durability and other qualities is an important step in determining suitability for any project. This session will introduce many of the tests required by ODOT, how the tests are performed and what the results mean. Freeze Thaw Resistance testing procedures for concrete aggregates will also be covered.

Session 23

Room: A216

Planning for an Uncertain Transportation Future

Organizer: Andrew Shepler
Moderator: Mike Murray

**Access Ohio 2045**

Scott Phinney, Ohio DOT, Columbus, OH

Access Ohio 2045, Ohio’s Statewide Long-Range Transportation Plan, guides strategic capital improvement programming for the investment of public funds in transportation facilities for a 20-year planning horizon. The goal of this effort is to aid ODOT and other Ohio based transportation agencies in selecting and prioritizing a reliable, efficient, and safe multimodal transportation system to facilitate the movement of people and goods. Currently, the plan is over halfway to completion and draft strategies are expected to be finished by October 2019. This presentation will share those draft strategies before the final plan is published in early 2020.

**Thoroughfare Planning in a Time of Uncertainty**

Justin Goodwin, City of Columbus, Columbus, OH
Eliza Pendexter, City of Columbus, Columbus, OH
Timothy Nittle, City of Columbus, Columbus, OH

This session will explore a new approach to long-range thoroughfare planning that seeks to rebalance our accommodation of multiple modes while acknowledging that we cannot fully predict what the demands on our transportation network will look like in the coming years. Transportation planners from the City of Columbus will provide an update on the status of the Connect Columbus Multimodal Thoroughfare Plan, including the designation of corridor typologies, modal priorities, typical roadway sections, right-of-way designations, and overall design guidance. The session will also provide context for developing long-range transportation plans that provide flexibility over time, informed by emerging data sources to understand how travel behavior is changing.
Session 24
Room: A120-122
Evaluating Safety Improvements
Organizer: Justin Maderia
Moderator: Derek Troyer

Agency Partnering to Address Severe Safety Problems in an Urban
Steve Thieken, Burgess & Niple, Inc., Columbus, OH
Mary Hoy, Ohio DOT, Sidney, OH
Joe Weinel, City of Dayton, Dayton, OH

The section of Main Street (SR 48) in Dayton from Great Miami Boulevard to Shiloh Springs Road experienced more than 900 reported crashes in this 4-mile corridor with seven fatalities from 2015-2017. The data also records 36 pedestrian crashes, which included six of the fatalities. ODOT, the City of Dayton, and MVRPC have stepped up and formed a partnership to address safety problems in this multi-jurisdictional corridor. The first step of the effort includes a safety screening study of the corridor to identify current crash patterns and causes better. The study team, working with local stakeholders and the public, is exploring a variety of potential countermeasures that could mitigate the current traffic crash problems. The team is considering countermeasures, including lighting, intersection improvements, road diet, pedestrian crossing enhancements, and a small section of road realignment. The study is focusing on low to medium cost improvements that do not require significant reconstruction of Main Street.

Transforming Safety to Aesthetics! An Oregon, Ohio Case Study
Barb Jones, DGL Consulting Engineers, LLC, Maumee, OH
Timothy Bockbrader, The Edge Group, Toledo, OH

The City of Oregon's Navarre Avenue/SR 2 Safety Improvements are making a major impact. Previously, the area had 369 crashes over a 3.5-year period. Since November of 2017, the design improvements have resulted in a crash reduction of 40%! Delays have been reduced by 5-18% with better results than predicted. These dramatic improvements have increased safety while providing a Gateway to the City with unique aesthetic treatments. The primary project improvements included reconfiguration of Navarre Avenue to accommodate a raised median within the existing pavement limits. Left turns and u-turns were accommodated at key locations. To mitigate the addition of the median, a service road was added behind the businesses that had the most crashes on Navarre. This area has seen the greatest improvement. The safety improvements were funded through the ODOT Safety program. While the main purpose of the project was to improve safety, there was also an opportunity to enrich the area's appearance and create an inviting gateway to the city.

Evaluation of Safety Effectiveness of Median Cable Barriers on Freeways
Deogratias Eustace, University of Dayton, Dayton, OH

The Ohio Department of Transportation (ODOT) began installing median cable barriers in 2003 along highway medians for all roadways that were narrower than 59 ft. The central goal of this work was to prevent cross-median crashes (CMCs) that raised a concern due to their frequencies and severe injuries they caused when they occurred. Cross-median crashes occur when a vehicle leaves its travel way, enters or crosses the dividing median, and collides with vehicles moving in the opposite direction. This study received data from 41 locations totaling about 201 miles of installed median cable barriers in the years 2009-2014. These locations experienced 2,498 median related crashes before and after installation. The study found that median cable barriers were effective in stopping vehicles from breaching the barrier; 95.4 percent of all cable median barrier crashes had no penetration of the cable barrier, i.e., the vehicles where stopped or bounced by the cables. Safety effectiveness of Ohio's statewide cable barriers was found to be 73.9 percent for total crashes, 80.4 percent for fatal and injury (FI) crashes combined and 80.1 percent for fatal, incapacitating, and non-incapacitating injury (KAB) crashes combined.
Innovative Bridge Projects

Organizer:  Michael Brokaw
Moderator:  Matthew Lawler

Ready for Launch - Planning for Constructability on the Summit Route 8 Bridge

Laura Beese, Ohio DOT, Akron, OH
Emily Preston, ms consultants, Columbus, OH
Gary Gardner, ms consultants, Columbus, OH

When faced with numerous obstacles including a 200 foot deep valley, five railroads, a river, utilities, and an unregulated landfill, the design team on the SUM-8-1.75 bridge had to perform a thorough study of the constructability of the proposed 1600 foot long dual bridges. The presentation will cover the investigation of conventional and innovative construction techniques and describe the process of how the final solution was selected and implemented. The constructability study involved investigation of access routes, crane size and locations, demolition methods, and alternative construction techniques. Considerations included cost, impacts to railroads, right-of-way, and environmental resources. As a result of the study the design team recommended incremental girder launching. The presentation will describe the design steps needed to implement this solution including development of the design criteria, modifications to the structure design, and requirements for monitoring during construction. The new structures, consisting of dual 6-span steel girder bridges with 340 foot maximum span and 160 foot tall piers will begin construction in Fall of 2020 and will take four years to complete.

I-480 Valley View Bridge - Structural Steel Erection Analysis

Mark Maday, Jacobs, Milwaukee, WI
Randy Thomas, Jacobs, Milwaukee, WI

The I-480 Valley View Bridge project is in the Cleveland metro area in ODOT District 12. The project entails construction of a new median bridge situated between an existing pair of bridges carrying eastbound and westbound I-480 over the Cuyahoga River Valley. The Walsh Design-Build Team (DBT) proposed design and construction of a new steel girder bridge similar to the existing structures. Given the new bridge is sandwiched between the two existing I-480 bridges and nearly 200 feet above the valley below, erection of the proposed center bridge structural steel was identified as a key challenge with significant cost impact.
Session 26
Room: A123-125
Automated Vehicles Operations
Organizer: Cynthia Jones
Moderator: Jeffrey Kupko

Smart Circuit Lessons Learned
Jeffrey Kupko, Michael Baker, Intl, Columbus, OH
Smart Circuit is the first publicly deployed autonomous vehicle in Ohio. We will share lessons learned on this experience.

What Communities Need to Know
Chris Hermann, MKSK - Planning, Urban Design, Columbus, OH
Christopher Toth, WSP, Columbus, OH
Transportation professionals, urban designers, and planners will need to collaborate to plan for changes to our built environment and convey the messaging to community officials and the public in a relatable way.

Technology Takes the Wheel
Edgar Avila, AAA Club Alliance Inc., Maumee, OH
Michael Toole, University of Toledo, Toledo, OH
David Gedeon, TMACOG, Toledo, OH
Engaging the Community in Autonomous Vehicles, Transportation Infrastructure and Economic Impacts through a series of free educational offerings related to autonomous vehicle technology.

Session 27
Room: A226
What's Trending in Transportation Technology
Organizer: Nikhil Khedekar
Moderator: Ferzan Ahmed

The Future of Urban Air Mobility
Anita Sengupta, University of Southern California, Los Angeles, CA
A developing mode of transportation is on-demand air service. Current technologies are ushering in an era of air travel that creates efficiencies by changing the economics of regional and electric flight. Initial service will likely be cargo transport, with passenger travel to follow once regulators and the public get comfortable with the idea.

Blockchain and Advanced Mobility Solutions
Randy Cole, Ownum, Cleveland, OH
Blockchain is a technology that can improve transportation and mobility. We are exploring ways to identify, support, and commercialize the most promising applications of this technology

City of Dublin Blockchain Projects
Cyndy Barney, City of Dublin, Dublin, OH
Dublin Ohio is exploring blockchain for three functions for their residents: digital identity, electronic polling system, and a token of value.
Tuesday, October 29, 2019  
1:30 - 3:00 p.m.  
CPDs = 1.5

Session 28  
Room: A223-225  
Transportation System Management and Operations (TSMO)

Organizer: Treea Sekela  
Moderator: Treea Sekela

TSMO at ODOT  
*Patrick Son, NOCOE, Washington, DC*  
*Todd Szymowski, Gannett Fleming, Inc., Madison, WI*  
*Peter Rafferty, Gannett Fleming, Inc., Madison, WI*  
*Bryan Newell, Gannett Fleming Engineers and Architects, P.C., Columbus, OH*  
*Adam Kieffer, The Ohio Department of Transportation, Columbus, OH*

This session will be a comprehensive overview of TSMO (Transportation Systems Management & Operations) at ODOT, including what goes into building a TSMO program. Our team will present a national perspective covering “why TSMO?” as well as what ODOT is doing to establish a TSMO program and how they are changing the way ODOT conducts business now and in the future. Topics to be covered include: ODOT’s TSMO plan and goals, the new NextGen ATMS, TSMO data warehouse, Planning for TSMO, TOAST, TOAST studies, pilot projects, TSMO B/C tool, integrating TSMO into existing projects, updated incident management manual, impacts to MPOs & Locals and how they can be involved, and funding of TSMO projects and the TSMO program. What does the future hold and how can consultants be involved? We will close with a look at the results of the above efforts over the last 2-3 years and the positive impacts TSMO strategies have had on the State system and the benefits the motoring public has realized.

Advanced traffic management concepts/systems to improve mobility  
*Roberto Perez, Parsons Corporation, Norcross, GA*

The Georgia Department of Transportation (GDOT) Reversible Express Lanes Intelligent Transportation Systems (ITS) and Traffic Incident Management (TIM) project provided technology and expert consulting to enable successful operation of Georgia’s first reversible tolled express lanes in the metropolitan Atlanta area; a traffic solution to an ever-growing transportation challenge. The technology was a re-use and enhancement of GDOT’s leading Advanced Transportation Management System (ATMS) solution that has been in operation since 1996. The TIM consulting services, provided by industry experts, trained thousands of roadway and emergency responders that resulted in safe, efficient, and effective roadway operations. Since July 2017, as a result of expert TIM training and the market-leading ITS solution, GDOT and the Georgia State Road and Tollway Authority (SRTA) have conducted 1,454 roadway reversals to date.