Session 27
Room: A120-122
Electronic Plan Delivery
Organizer: Rachel Lewis
Moderator: Fanita Cheek

**Requiring CADD files with Project Submittal**
Mark McCloud, Ohio DOT, Columbus, OH
John Drsek, Ohio DOT, Columbus, OH

With the push to 3D models and the use of automated machine guidance paper plans are no longer the best way to transfer information to the contractor. This session will go over upcoming required digital CADD files when submitting projects. It will also go over the new electronic deliverables document and how to create these files.

**Automating the General Summary**
John Drsek, Ohio DOT, Columbus, OH

See all that the General Summary excel file has to offer. Learn how the Item Master add-in interacts with the subsummaries. Save hours on your projects while decreasing user error by letting the excel file extract sub-summary data and generate a general summary for you. Also learn about future enhancements.

**From Paper to Pixels (Columbus’ Transition to Electronic Plan Review)**
Nathan Cline, City of Columbus, Columbus, OH
Andrew Krumel, City of Columbus, Columbus, OH

In 2015 Columbus made a transition to full electronic plan review. Prior to electronic review the City was printing full size and half size plans. Speakers will discuss in detail the process before, during, and after roll-out, as well as the future of electronic plan review in the City.

Session 28
Room: A110-112
Structure Rehabilitation Options to Advance Mobility and Connectivity
Organizer: Ken Ishmael
Moderator: Ken Ishmael

**I-80 Twin Bridge Replacement-Hubbard, Ohio**
Tajudeen Bakare, CT Consultants, Inc., Columbus, OH
Michael Centorame, Ohio DOT, Akron, OH
Jerry Bailey, A. P. O’Horo Company, Youngstown, OH

The project team will share their experiences and lessons learned during the administration, design and construction of the project. A variety of aspects required consideration on this complex project including new structures, stub abutments, full height abutments, reduced spans, MOTAA, temporary shoring, high volume traffic (47,400 ADT with 38% trucks), railroad involvement, public involvement, wetlands mitigation, change management, and R/W acquisitions.

**Lytle Tunnel Rehabilitation and Modernization**
Chris Preto, Mott MacDonald, Cleveland, OH
Joseph Smithson, Ohio DOT, Lebanon, OH

Lytle Tunnel in Downtown Cincinnati is the longest vehicle tunnel in Ohio. Opened in 1970, the six-lane, three tube tunnel was in need of modernization to meet current National Fire Protection Association Codes. A complete rehabilitation was required to improve safety, responsiveness, operation, and provide connectivity to ITS and a new Supervisory Control and Data Acquisition system. The design firm and operating agency will present planning, design, construction and future maintenance and operational aspects of the rehabilitation project.
Session 29
Room: B230-232
Environmental Commitment Monitoring

Organizer: Mary Sharrett
Moderator: Mary Sharrett

Environmental Commitment Monitoring Using Remotely Deployed Cameras on Active Construction Sites
Amanda Foley, Ohio DOT, Columbus, OH

ODOT presents preliminary results from research using new technology (remotely deployed cameras) to monitor environmental commitments during construction. Capable of remotely controlled pan, tilt, zoom, and recording, self-contained solar-powered camera systems may prove a valuable, cost-effective, and efficient method for monitoring regulatory compliance. ODOT describes their use of these camera systems on two pilot projects: a bridge replacement and an interchange improvement. We discuss the pros and cons of using a remote camera system, technology gaps, and what other options are available or needed to improve the use of these systems for the future. This topic is of interest to a range of transportation professionals, from planners, designers and construction staff as it seeks to improve regulatory compliance, reduce time and costs for a necessary task, and provide around-the-clock monitoring, which can reduce expensive and damaging non-compliance by catching issues early and often.

Using Unmanned Aerial Systems (Drones) in the Monitoring of Environmental Commitments
Jeremy Degler, CTL Engineering, Columbus, OH

As drone technology advances, it continuously provides a new avenue to present engineering and monitoring services with the added benefits of cost-efficiency, safety, and ease of documentation. In the realm of environmental commitments for transportation projects, many of these requirements span large areas (e.g., erosion & sediment controls along a linear transportation project) and need to be regularly monitored for their effectiveness. Utilizing a single drone operator to reconnoiter these environmental commitments can often save a client a substantial amount of capital by limiting the man-hours required to manually inspect these features. Furthermore, drones can be utilized to inspect many areas that could otherwise prove unsafe or require additional safety measures for personnel, thereby potentially increasing the cost, project management, and personnel time. Lastly, the deliverables available with drone technology and specialized software can seamlessly integrate into an existing monitoring program and reporting options.

Best Practices for Environmental Commitment Monitoring - Balancing Budgets and BMPs
Christy Pirkle, EMH&T, Columbus, OH

ODOT’s successful tracking and execution of Environmental Commitments (ECs) are high priorities for the Department and its mission. Compliance monitoring as it relates to ECs has become increasingly important given the adoption of NEPA Assignment on behalf of FHWA. ODOT must take a practical and proactive approach to EC tracking by keeping documentation and spending proportional to the project scope, and by focusing on prevention rather than damage control. EMH&T uses project specific examples to discuss the strategic implementation of EC tracking for both small and large scale projects - providing effective solutions that minimize compliance costs. Best Management Practices examples, avoiding non-compliance expenses and delays, and cost reduction strategies will be discussed.
Session 30
Room: A223-225
Evolution of Engineering Ethics
Organizer: Robert Lawler
Moderator: Joseph Anthony

**Evolution of Engineering Ethics**
Tom Pannett, Ohio DOT, Columbus, OH
Allen L. Rutz, Vorys, Sater, Seymour and Pease LLP, Columbus, OH

For decades public and private sector transportation officials have been subject to state and federal ethics laws. This session will review the history of ethics laws, discuss transportation-specific regulations that require ethical consideration, present case-studies on ethics violations, and provide guidance to transportation officials as to how they can keep on the right track when ethical dilemmas arise. The session will also update attendees on the new Ohio Revised Code Section 4733.151 requiring that P.E.s and P.S.s receive two hours of ethics training every two years.

Session 31
Room: B130
Geotechnical Monitoring, Engineering, and Post-Analysis
Organizer: Bethanie Meek
Moderator: Bethanie Meek

**Remote Monitoring of Threat of Sinkhole - US 18 in Cerro Gordo County, Iowa**
Kevin O’Connor, GeoTDR, Inc., Westerville, OH
Matthew Trainum, Iowa DOT, Ames, IA

Discussion of remote monitoring of a threat of sinkhole formation under a portion of US 18 in Cerro Gordo County, Iowa

**Case Study - Analysis of Highway Embankments of Soft Soils**
Timothy Stark, University of Illinois, Urbana, IL

This case study will briefly describe a failure of an interstate connecting-ramp embankment during construction and focus on analysis recommendations to avoid future incidents.

**Introduction to Cellular Concrete and Advanced Engineered Foam Technologies**
Nico Sutmoller, Aerix Industries, Timberville, VA

This presentation will provide an introduction into Cellular Concrete and advanced engineered foam technology.
Session 32
Room: B244-245
Pipe Technology
Organizer: Matt Cozzoli
Moderator: Bob Rosen

Emerging Technologies: Fiber Reinforced Concrete Pipe
Donald Lepley, Foterra Building Products, Macedonia, OH
This presentation will introduce the audience to the reasons for utilizing fibers in concrete pipe, the research, testing, specifications, and installation compared to traditionally reinforced pipe.

Construction and Design of Fiber Reinforced Polypropylene Pipe in Storm and Sanitary Sewer Applications
Joe Babcanec, Advanced Drainage Systems, Inc., Powell, OH
Presentation will focus on the proper design and construction of fiber reinforced polypropylene pipe in storm and sanitary applications.

Polymer Coated Corrugated Steel Drainage Products
Michael McGough, NCSPA, Arlington, VA
Over 40 years ago the corrugated steel pipe industry developed a polymer precoat protective film that significantly extends the service life of galvanized CSP and provides over a century long solution in as harsh as level 3 abrasive environments.
Session 33
Room: A220-222
Context Sensitive Solutions - Cleveland Style
Organizer: Scott Phinney
Moderator: Scott Phinney

Enhancing Pearl Road By Utilizing Context Sensitive Solutions To Reduce Travel Lanes, Maintain Parking And Add Multi-Modal Options
Chris Preto, Mott MacDonald, Cleveland, OH
Ron Mason, City of Cleveland, Cleveland, OH

The City of Cleveland programmed the rehabilitation of 3.0 miles of Pearl Road (US 42) from Brookpark Road (SR 17) to Interstate 71. The project included on-road bicycle facilities, several signal upgrades, and water main improvements. The project was to implement the recommendations of a NOACA TLCI study, which included 3 feet of pavement widening in a 0.45-mile streetscape section in the Old Brooklyn Commercial District. However, following a change of leadership, the Old Brooklyn Community Development Corporation, which sponsored the original TLCI, was now emphatically opposed to its own TLCI. Through a collaborative process that included stakeholder outreach and public meetings, a practical cost-effective solution was devised to avoid pavement widening and minimize relocations while maintaining traffic capacity and parking, improving mobility by adding bicycle facilities, and upgrading the streetscape.

Cleveland's Public Square - Opened or Closed? How Analysis Informed Decision-Making for this Controversial Issue
Nancy Lyon-Stadler, WSP, Cleveland, OH
Michael Schipper, Greater Cleveland Regional Transit Authority, Cleveland, OH

Public Square, in the heart of Cleveland, was closed March 2015 to June 2016 for renovation of this iconic public space. When construction was complete and Public Square was re-opened, Superior Avenue that bisects Public Square remained closed to traffic. This action ran counter to the original plan that would have allowed bus only travel through Public Square that would have provided access to the planned transit transfer area in the center of the square. This generated significant and vocal public reaction, with some in favor and some opposed to the complete closure of Public Square. RTA working in partnership with Cleveland Traffic Engineering, Cleveland Police and WSP|Parsons Brinckerhoff, conducted extensive traffic and transit analysis for a 34 intersection network that incorporated the intersections surrounding Public Square. This presentation will discuss the issue and public controversy surrounding Public Square's closure, the traffic analysis process and results, and how the analysis helped to inform decision-making.

Session 34
Room: A123-125
Pavement Technology
Organizer: Aric Morse
Moderator: Adam Au

Asphalt Technology Guidance Program
David Mensching, FHWA, Columbus, OH

This program provides avenues for implementation of new asphalt pavement technologies, material test procedures and design methods for incorporation into commercial practice.

Performance Engineered Concrete Mixtures
Michael Praul, FHWA, Columbus, OH

Performance Engineered Concrete Mixtures specifies the critical properties to provide concrete mixes that meet your needs with reliability.
Session 35

Room: A216

Planners and Engineers Forum

Organizer:  David Shipps
Moderator:  Aaron Domini

**Cats and Dogs Working Together**

Chris Hermann, MKSK - Planning, Urban Design, Columbus, OH  
Brad Strader, MKSK Studios, Detroit, MI  
Cynthia Peck, DLZ Ohio, Inc, Cleveland, OH

This session will explore how planners and engineers can best work together at various project scales to respect the perspective of each, speak the same language, and collaborate on solutions.

**OTEC Talks: An Exploration of Transportation and Engineering Innovations**

Jason Sudy, OHM Advisors, Columbus, OH  
Frances Jo Hamilton, Heritage Ohio, Columbus, OH  
Jeff Harris, Knox County Area Development Foundation, Mt. Vernon, OH

Inspired by the popular Ted Talks, OTEC Talk presenters will focus on how planning, technology and innovation are shaping the world of transportation.
Session 36
Room: A210-212
Alternative Safety Solutions for Highway/Railroad Grade Crossings

Organizer: Julianne Finnegan
Moderator: Julianne Finnegan

Highway/Railroad Grade Crossing Safety and Funding Opportunities
Cathy Stout, ORDC, Columbus, OH

The Ohio Rail Development Commission (ORDC) improves public safety by funding grade crossing safety improvements, including improvements to adjacent signalized intersections, as well as grade separations. Ms. Stout will share how local agencies can take advantage of funding opportunities to improve safety in and around railroad crossings.

McCord Road Underpass and Roundabout
Phil Senn, Ohio DOT, Bowling Green, OH

The at-grade crossing of McCord Road and Norfolk Southern Railroad (NSRR) has been studied to find a way to reduce RR/highway conflicts since the ’90s. NSRR averages 98 trains per day and has enough ROW to expand to four tracks in the future. McCord Road carries a 24,000 ADT, with projections of 28,000 by 2033. Mr. Senn will discuss how the alternative safety solution proposal needed to find a way to improve safety at the crossing for motorists, trains and pedestrians, as well as alleviate the congestion caused by the 98 daily trains, and still provide NSRR the option for future expansion.

Traffic Signal Preemption and Priority Technologies for Rail and Transit Applications
Aaron Littman, HDR Engineering, Inc., Cincinnati, OH
Eric Plapper, HDR Engineering, Inc., Columbus, OH

Mr. Littman will present an overview of railroad preemption standards and technologies along with case studies from recent projects, including a queue cutter signal in Powell and signal preemption in Ashley and Fremont. Mr. Plapper will provide an overview of connected and autonomous vehicle (CV/AV) technology and a more detailed look at rail and transit CV applications, as well as a look forward at the trajectory of the CV/AV industry.
Bridge Piling Failure on SR-14 in Streetsboro, Ohio
Thomas Powell, Ohio DOT, Akron, OH
Eric Steinberg, Ohio University, Athens, OH
In October 2016, the pier piling of the SR-14 bridge over Lake Rockwell entered a failure mode and the structure was closed. This presentation will discuss the emergency structure replacement, as well as the research done into the causes of the pile failures.

Replacement of Deficient Historic Bridge Becomes Opportunity for Innovation – TUS-36 Bridge over Tuscarawas River
Matthew O'Donnell, Gannett Fleming Engineers and Architects, P.C., Columbus, OH
Michael Gray, Ohio DOT, New Philadelphia, OH
Built in 1949 by the American Bridge Co. as one of ODOT's last through-truss structures in which its characteristics placed it on the Historic Bridge Registry. Therefore, efforts to address its deficiencies began with an extensive study of rehabilitation vs. replacement options. Once rehabilitation was found unfeasible, the replacement project became part of ODOT's strategic initiative to implement new technologies. The presentation will explore the successful solutions that resolved the numerous project constraints and challenges, and allowed construction to be completed in a demanding timeframe.

Rehabilitation of Cap & Column Pier Caps and T-type Piers – A Case Study
K. V. Balasubramanyam (Bala), Mead & Hunt, Inc., Dublin, OH
Matt Blythe, Ohio DOT, Sidney, OH
Discovering cost-effective rehabilitation solutions can be a great challenge at times. This was the case for the MOT-35-1516N Bridge that required replacing the superstructure while utilizing existing substructures and checking the capacity of piers for the new superstructure reactions. With the current reduction of transportation funding, many DOT's are faced with tough decisions on rehabilitating or fully replacing the deteriorating bridges. Finding cost-effective and innovative ways to stretch the funding while providing a quality design that meets current standards is imperative in order to keep the traffic moving safely on both new and existing structures. This presentation will discuss how our team was able to rehabilitate the pier caps, pier stems and foundations for the MOT-35-1516N Bridge.
Session 38
Room: A113-115
Regional Connected and Automated Vehicle Collaborative

Organizer: Cynthia Jones
Moderator: Randy Cole

Smart Belt Coalition
Andrew Bremer, Ohio DOT, Columbus, OH
Collin Castle, Michigan DOT, Lansing, MI
Timothy Scanlon, Pennsylvania Turnpike Commission, Middletown, PA
Stan Caldwell, Carnegie Mellon University, Pittsburgh, PA

The Smart Belt Coalition is a first-of-its-kind collaboration which includes transportation and academic partners, bringing together leaders on these technologies to support research, testing, policy, funding pursuits and deployment, as well as share data and provide unique opportunities for private-sector testers. Several members of the coalition will share information on their work and collaboration. While coalition membership may expand in the future, participating agencies and universities include: • Michigan: Michigan Department of Transportation, University of Michigan, American Center for Mobility; and Kettering University; • Ohio: Ohio Department of Transportation, Ohio Turnpike and Infrastructure Commission, The Ohio State University and Transportation Research Center; • Pennsylvania: PennDOT, PTC, Pennsylvania State University and Carnegie Mellon University.

Emerging National Collaborative Frameworks
Matthew Smith, Michael Baker International, Brighton, MI

Exploration of other collaborations within the United States.
Session 39
Room: A226
Design Smarter not Wider
Organizer: Katie Zehnder
Moderator: Katie Zehnder

Roadway Geometry and [New] Urbanism
Bob Kuebler, American Structurepoint, Columbus, OH

This presentation explores how transportation professionals and urban designers are managing the various competing priorities with regard to roadway and parking geometry in urban locations. Designers must choose features such as lane widths, design speeds, parking orientation, intersection geometry, lighting, traffic calming, and intersection and pedestrian controls to satisfy numerous considerations. These considerations include safety, mobility, traffic capacity, retail success, enforcement, walkability, and the evolving preferences of the public. Existing design standards, regulations, laws, and zoning codes can complicate implementation of various features. This presentation will also look at case studies around Ohio that deal with urban corridors in various downtown and suburban locations. Lastly, Evans Farm Town Center in Delaware County will be used as a case study that deals with many of these issues in a new-build scenario.

An Intersection Design that Increases Capacity Without Adding New Lanes
Lee Gao, LJB, Inc., Dayton, OH

This presentation introduces a new and unconventional intersection design. This design increases the capacity of an intersection by utilizing the through lanes to discharge turning traffic and by eliminating or significantly reducing the startup delay.

Alternative Solution to Enhance the Capacity and Safety of a Major Transportation Corridor
Bradley Bendle, Environmental Design Group, Akron, OH
Paul Pickett, City of Green, Green, OH
Jeromy Grenard, American Structurepoint, Indianapolis, IN

The City of Green, Ohio embarked on a journey seeking solutions to a growing challenge on a main roadway corridor in the City. When the City was in its infancy over two decades ago, traffic congestion and access management challenges weren't pressing issues - but rapid growth changed the landscape. Learn how the planned application of four roundabouts at four adjoining intersections in one City block - coined "The Box" dramatically changed the shape of the Massillon Road corridor and the lessons learned through analysis that could help in the development of your next multiple intersection project by:
- Improving flow of through traffic
- Improving flow of destination traffic to the commercial district
- Reducing the probability of crashes and vehicular conflicts
- Smaller geometric footprints leading to reduced land acquisition
- Lower capital costs for improvements

Massillon Road currently carries approximately 32,000 vehicles, utilizing 2015 statistics. Historically, traffic volumes increase each year, and the City of Green recognized that congestion would continue to increase as development in the City grew. The City of Green commissioned the engineering team of Environmental Design Group and American Structurepoint to evaluate the four intersections and compare/contrast implementation of roundabouts versus conventional intersections at two intersections on Massillon Road, coupled with the analysis of roundabouts at the two intersections on Corporate Woods Parkway. The evaluation developed RAB lane geometry and lane configurations to provide an acceptable capacity and Level of Service for the current traffic volume and future traffic projected to year 2035. The evaluation developed lane configurations for signalized intersections that provided similar capacity and Level of Service. These two footprints were compared on several factors including right of way impacts and project costs.