ARIZONA CONFERENCE ON ROADS & STREETS

ACEC Arizona

SEPTEMBER 28-30

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71ST ARIZONA CONFERENCE ON ROADS & STREETS

Everyday Superheroes: Protecting Public Health, Safety & Welfare

September 28, 2022

Dear Members, Friends, Colleagues & Everyday Superheros,

On behalf of myself, the Board of Directors of the American Council of Engineering Companies of Arizona, and the Conference Committee, we couldn't be more excited to welcome you to the 2022 Arizona Conference on Roads & Streets!

We're packing all three days with rousing keynotes, thought-provoking panels, and the chance to meet with like-minded professionals from Arizona and all over the country who share a commitment

to bettering our communities and improving people's lives in this state and around the nation through engineering. The 2022 Arizona Conference on Roads & Streets is all about coming back together, learning from each other, and creating invaluable connections. It's about being part of an exciting, essential, and enduring event at a moment in time like no other. So get ready to explore the sessions, soak up the keynotes, venture through the 130+ exhibitor trade show, roll up your sleeves and network, and don't forget to save a little energy for the fun-filled events we've curated just for you! Thank you all for being our Everyday Superheroes!

Justan A. Rice

Justan A. Rice President American Council of Engineering Companies of Arizona



ADMINISTRATION & SUPPORT

ACEC Arizona

The American Council of Engineering Companies of Arizona is responsible for the administration of the 71st Arizona Conference on Roads & Streets with the support of:

The University of Arizona Civil & Architectural Engineering & Mechanics Department

The Arizona Department of Transportation





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71ST ARIZONA CONFERENCE ON ROADS & STREETS COMMITTEE

Chair Scott Sayles

ACEC Justan Rice Amerigo Berdeski

ADOT Districts & AZ Counties Open House (Friday) *Carlos Sanchez-Soria Bruce Kay Randy Everett

City, Town, MPO & COG Open House (Friday) *Maria Angelica Deeb Paul Tremel Kelly Kaysonepheth

Tribal Nations (Friday) *Tim Wolfe Anthony Sarhan Nick Hall

Bridges & Hydraulics *Brian Davis Kevin Lardner Kooi--Lim (Lim) Hoe Shameem Dewan Chrisopher Labye

Construction & Preservation *Amanda McGennis Amy Rosar Eric Froberg Kim Guerin Loretta Roberts Pam Lacovo Randy Everett Shameem Dewan Travis McCarthy

Environmental, Right-of-way & Utilities *Trace Baker Al Field Anthony Sarhan Diana Dunn Geoff Child Wayne Colebank Will Herrera

Financing Transportation & Development *Skye Gentile Alberto Gonzalez Diana Kelly Emily Christ Andrew Moreno

Project Development, Transportation Planning & Management co* Amy Moran co* Diana Kelly Angel Cobb Christopher Wanamaker Dan Marum Heather Honsberger Jason Simmers Myesha Harris Ravi Sripada

Multimodal *Darlene Danehy Yellowhair Adrian Leon Amy Thomas Jason Simmers

Traffic, ITS & Safety *David Lenzer Darlene Danehy Yellowhair David Atler Jeff King Rod Penniman Tim Wolfe

Technology & Research *Shameem Dewan Alf Wold Bruce Kay David Atler Jason Simmers Kelly Kaysonepheth Ravi Sripada Rod Penniman Romare Truely

University *Maria Angelica Deeb - ASU Adrian Leon - UArizona Diana Dunn - NAU

* Indicates Track Lead

WEDNESDAY, SEPT. 28TH WELCOME . 4 P.M. TO 5 P.M.

Welcome & Opening Remarks – Update from ACEC Research Institute

Daphne Bryant

Executive Director, ACEC Research Institute

The ACEC Research Institute will share data on how engineering and design services is performing in terms of revenue and our industry's contribution to GDP, jobs, wages, and taxes, as well as a look forward through a five year forecast. Hear what firm leaders across the country are saying about the condition of their firm's finances, the industry and the U.S. economy, as well as their perspectives on inflation, hiring trends, sal-



HAYDON

ary increases and more. The Institute will also share some early highlights of their soon to be released study on the impact of Design-Build.

Daphne Bryant serves as the Executive Director of the ACEC Research Institute, as well as the SVP of Membership and MO Services for ACEC. Daphne joined ACEC in 2018 with a focus to grow membership, strengthen the MO relationships and re-launch the ACEC foundation into a research and thought leadership institute. She has over 30 years of nonprofit and association management experience, with a demonstrated track record of building relationships and revenues. Daphne excels at building and strengthening C-level relationships, while fostering loyalty and commitment among staff, members, clients, and strategic partners.

Coronado Ballroom

WEDNESDAY, SEPT. 28TH 5:30 P.M. TO 7 P.M.

Tradeshow Opening Reception

Presidio Ballroom Foyer

Haydon proudly stands shoulder to shoulder with our industry partners, working to improve our communities through innovation and collaboration. Together we are building a better Arizona.



PROVIDING COMPREHENSIVE SOLUTIONS TO OUR CLIENTS UTILIZING OUR UNIQUE ABILITY TO PERFORM HEAVY CIVIL, BUILDING, LANDSCAPE, AND VIRTUAL CONSTRUCTION

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THURSDAY, SEPT. 29TH . 7 A.M. TO 9 A.M.

Continental Breakfast with Tradeshow Exhibitors Presidio Ballroom

THURSDAY, SEPT. 29TH + 7 A.M. TO 5 P.M.

Tradeshow Open – Stop By and Visit

Presidio and Turquoise Ballrooms

THURSDAY, SEPT. 29TH KEYNOTE 8 A.M. TO 9 A.M.

Get Rid of the BS to Attract an Inclusive Culture

Speaker: Risha Grant

Motivated by her passion to correct societal isms like racism, sexism, classism and plain old stupidism, it is Risha's personal mission to expose the value of Diversity & Inclusion while shining a light on the economic impact it creates. From her race, gender and lifestyle choices, to growing a small business and tackling economic issues, every area of her life intersects diversity.

Founder & CEO of Risha Grant LLC, an award-winning diversity consulting and communications firm, as well as an edgy, educational and motivational speaker, author Risha Grant is an internationally renowned diversity, inclusion and bias expert. She covers these topics as NBC KJRH's community correspondent and host of the Risha Talks series.



Through her Tulsa World column, Risha Talks and as a contributor to Black Enterprise Magazine, she has motivated and educated numerous corporations, associations, and universities. In her book, That's BS! How Bias Synapse Disrupts Inclusive Cultures and the Power to Attract Diverse Markets and her corresponding "BS" Video Series, Risha has led audiences to new places of respect and understanding. These audiences have included Discover Card Financial Services, Samsung Electronics America, Cox Communications, Wells Fargo, USAA Diversified Financial Group, Boy Scouts of America, U.S. Airforce, Federal Reserve Bank of Kansas City, NBA's Oklahoma City Thunder, University of Oklahoma and Roger Williams University, to name a few.

She has been featured in Forbes, The Financial Times, Off Script, Bloomberg Media, Black Enterprise, Engage Magazine, Radioactive Radio, Take the Lead Radio, The Dream Catcher podcast, Money for Life podcast, DJC Oregon Newspaper, The Kansas City Star, WUSA-TV, KVUE-TV, KTLU-TV, WURD Radio, among other local and national media. Risha has also been awarded numerous honors such as being named a 2019 Top 100 HR Influencer by Engagedly, a 2018 Inclusive Leadership Award Winner and Entrepreneur of the Year in 2017.

Through her interactive keynotes and deep-dive training sessions, Risha teaches and empowers attendees with D&I tools to increase their bottom line and permission to get rid of their BS.

Coronado Ballroom

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THURSDAY, SEPT. 29TH SESSIONS . 9:30 A.M. TO 10:20 A.M.

Improving Your Construction Schedule for On Time Completion

Speaker: Christopher Dry, Arizona Department of Transportation (ADOT)

All construction projects require a schedule. That schedule is a key component of project management to complete construction on time. You can't control what you don't plan. This session will review some of the key components that are required with a CPM construction schedule submittal. Get off on the right foot with a good baseline schedule. We'll discuss some examples of changes and delays during a project and how best to document those in the schedule.

Joshua Tree II

How Do You Improve Your Emotional Intelligence (EQ)?

Speaker: Patty Lynn Wyatt

Big Idea: EQ is the strongest force behind leadership and personal excellence. It is your choice to create better practices and habits so daily YOU can show up well.

- 1. It's all a choice...
- 2. During a worldwide pandemic. We are bring in an extrao dinate section of our lifetime.
- 3. Let's start with what is EQ^{2}
- 4. Your EQ contactes to develop and grow
 self avereness self, and the new second areness relationship management
- 5. How do de saw up a set on
- 6. Do you know your stiess signat
- 7. Are you listening to mers? Do you have empathy? What is your organizational awareness?
- 8. How are you influencing others? We can change the vibe, the outcome of the day, the relationship, just by asking a powerful question. It's your choice.

Joshua Tree I

Automated Vehicles Are Coming: Is Your Infrastructure Ready?

Speaker: Neal Hemenover, Stantec - Generation AV

One thing is certain — everyone has a lot of questions when it comes to automated vehicles (AVs). Especially when it comes to figuring out just how AVs fit into our existing infrastructure. Are our roads ready for AVs? What changes do we need to make to enable AVs and allow them to communicate with the infrastructure around them? Dedicated short range communication or 5G or both? And where will they park? And charge? And OMG, the future is knocking at my door and I'm not ready! Deep breaths. The answers to questions like these are different for everyone, but what is the same across any environment or use case is the need to identify the answers before running out and buying an AV. While major infrastructure overhauls aren't typically required to introduce and integrate AVs, they're not plug-and-play either. There are several critical steps to assess the readiness and feasibility of an operating environment. This presentation will explore some of the most common — and most unique — aspects of planning for and integrating AVs. By the end, you'll be that person who wants to share their newfound knowledge with everyone they know. Embrace it, AV know-it-all.

White Dove

1st Avenue Separated Bicycle Lane Project

Speaker: Stephan Bach, City of Mesa

Introducing the City of Mesa's intent to build roadways with separated bike lanes throughout Mesa. Summarizing project location description and roadway/traffic conditions before construction. Discussing the proposed separated bike lane project using the four step process by NACTO:

- 1. Establishment of bike lane directional criteria
- 2. Separation Type Decision
- 3. Midblock Design Considerations
- 4. Intersection Design Considerations

Describe the overall project layout, street cross section and design details:

- Converting angled parking stalls to parallel stalls;
- Transitioning bike lanes through intersections;
- Use of green epoxy coating for bike lanes;
- Establishing delineator and bike buffer spacing criteria;
- Choosing the delineator type that best fits the project;
- Summarizing street cross sections and plan view;
- Working around site specific constraints;
- Matching design with ongoing development projects.

Talk about issues encountered during and after construction, how they were addressed, and how they could have been prevented. Temporary traffic control issues at intersections. Development projects and construction on 1st Avenue. Curbs and edge lines. Evaluation of the project: public opinion, ridership, and future separated bike plane projects

Agave Ballroom

Keeping Up with the Growing Tide of Small Structure Replacement Needs Through Bundling

Speaker: John Munoz, CDM Smith

The percent of bridges and culverts that are 50+ years old is increasing in most, if not all, states and capital maintenance expenditures increase as these structures continue to age. On the federal front, states lose flexibility with the use of FHWA allocations if greater than 10% of their National Highway System bridge deck is rated "structurally deficient," through minimum expenditure thresholds. Increases in replacements through small, straight forward structure bundling can result in greater efficiency and cost savings to reverse the growing trend of structurally deficient structures in your state. There are political and technical challenges associated with bundling that need to be addressed as a bundling program is developed. Our presentation will describe these challenges and offer practical solutions to manage them.

Oro Valley

Practical Exploration for Geotechnical Design

Speaker: Patrice Brun, ADOT

Practical Geotechnical Exploration for Design (PGED) is a performance driven practice that is a tool to reduce unnecessary costs and save time on projects without sacrificing or compromising safety or engineering standards. The PGED process involves recognizing site conditions and determining which method of geotechnical exploration is practical and necessary to fulfill design requirements.

Joshua Tree I

I-17 Broadband – The State's First Broadband Deployment

Speakers: Eric Kocher, Kimley-Horn and Associates, and Madhav Mundle, ADOT

This ADOT project provides ITS backbone and broadband infrastructure along a 141-mile stretch of I-17 connecting Phoenix to Flagstaff. This infrastructure provides ADOT the ability to expand ITS services within central and northern Arizona, as well as supporting the Governor's initiative to improve broadband services offered within the state. This project was the first of its kind for ADOT to under-take, and it presented many design challenges that ADOT had to overcome within a relatively short time to achieve schedule expectations. Challenges included environmental clearances, utilities and Right-of-Way (R/W) clearances, schedule, and terrain. This presentation will elaborate on the design challenges encountered and the associated solutions. Many of these solutions have since been adopted as ADOT broadband deployment details being used on similar projects of this type within the state, so an understanding of why these solutions were implemented should help the design and construction community deliver the broadband infrastructure needed throughout Arizona..

Palo Verde

THURSDAY, SEPT. 29TH SESSIONS 9:30 A.M. TO 11:20 A.M.

Building the Engineering Workforce – Attracting, Preparing, and Retaining Talent

Speakers: Mark Lamer; Ram Pendyala, Arizona State University; Barbara Shuck, Everest Marketing Services, LLC; and Dominic Boccelli, University of Arizona

The engineering industry is dealing with significant challenges at a time when our nation's infrastructure systems are aged and require major investments. Experienced Baby Boomers are retiring in great numbers, and industry leadership is rapidly transitioning to a smaller population of Generation X professionals who are dealing with a substantial talent gap born during "The Great Recession." Most recently, the global pandemic disrupted people, organizations, workflow, and workforce expectations. Now, commoditization of engineering, unsustainable workloads, burnout, and a strong job market have caused some to leave the profession. On the academic side, Universities now offer many new and exciting degrees in STEM fields that attract and draw talent away from historic engineering roles. Universities find that many high school graduates are unprepared for university level engineering course work and require remedial efforts in math and science. Likewise, many middle/elementary school students are left unaware of the engineering profession and the key roles engineers play in the service of public health and safety. In short, there is an insufficient flow of talent into our industry, and this requires action.

This session calls academic, public, and private engineers to assemble, to respond to the challenges, and to take part in Building the Engineering Workforce. Representatives from ASU, GCU, NAU, and U of A engineering departments will share views from an academic perspective while public agency and private consulting leaders will combine to share perspective from industry. In a roundtable format, all parties will address challenges, seek solutions, and identify activities to produce positive results that inspire future generations of engineers.

Coronado I

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THURSDAY, SEPT. 29TH SESSIONS . 10:30 A.M. TO 11:20 A.M.

The Yo-Yo Diet of Market Volatility and Its Effect on Project Delivery

Speakers: Jeff Hamilton, Sundt Construction, Inc.; Grant Larson, Haydon Companies; and Amy Rosar, Haydon Building Corp.

Desire to have a panel discussion with heavy civil contractors on the topic of the facing shortages with the current market conditions. How to help owners better identify the right delivery method to help mitigate pricing fluctuations between the time the project goes to bid and the time it is awarded and NTP is provided. Looking at the future market conditions and the challenges we face today in regard to oil pricing and availability of materials such as asphalt and concrete. This is a problem that all owners, suppliers, and contractors are currently facing.

Coronado II

Alternative Fuel Corridors and the National Electric Vehicle Infrastructure (NEVI) Program

Speakers: Thor Anderson, ADOT, and Clem Ligocki, ADOT

The Infrastructure Investment and Jobs Act (IIJA) includes a total of up to \$7.5 billion in dedicated funding to help make EV chargers accessible to all Americans for local to long-distance trips. That \$7.5 billion is comprised of a \$5 billion formula program and a \$2.5 billion discretionary grant program. The \$5 billion NEVI Formula Program will provide dedicated funding to states to strategically deploy EV charging infrastructure and establish an interconnected network to facilitate data collection, access, and reliability. Initially, funding under this program is directed to designated Alternative Fuel Corridors for electric vehicles to build out this national network, particularly along the Interstate Highway System. When the national network is fully built out, funding may be used on any public road or in other publicly accessible locations. The \$2.5 billion discretionary grant program is further divided into two distinct \$1.25 billion grant programs to support EV charger deployment:

- Corridor Charging Grant Program. This program will strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure along designated Alternative Fuel Corridors.
- Community Charging Grant Program. This program will strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure in communities. The Arizona Department of Transportation is developing a EV Infrastructure Deployment Plan in order to utilize the formula funding to build out EV charging stations within one mile of alternative fuel corridors in the state.

Palo Verde

Guide to Navigating Through the BUILD/RAISE Grants

Speakers: Michael Cano, City of Phoenix, and Leticia Vargas, City of Phoenix

Share City's approach to narrowing a good BUILD/RAISE Grant Submittal using the FY 2020 BUILD Grant, 35th Avenue: I-10 to Camelback Road. Present working through the Grant Agreement Process and meeting important project milestones for a successful delivery. In addition, lessons learned and guidance for future federal direct recipient grants.

Joshua Tree I

"Old Tool, New Trick" – Enhancing HAWK Efficiency

Speakers: Sanjay Paul and Simon Ramos, City of Phoenix

With the assistance of Dr. Sanjay Paul, HDR, the City of Phoenix staff will discuss: City of Phoenix recently launched its 75th High intensity Activated crossWalK (HAWK) in the city to continue ensuring mobility and safety to pedestrians and bicyclists as well as reducing conflict with vehicular traffic. The HAWK is a well proven effective low-cost technology that was developed by Arizona's very own southern city, City of Tucson in the 1990s. Since then, the local agencies both in Arizona as well as in other parts of the country have been using this control successfully. While traditional HAWK operation is improving pedestrian safety, the City of Phoenix and HDR team took another step forward and developed this project to further improve pedestrian safety, as well as potentially reducing pedestrian wait time while in coordination. The intent of this project, with the use of technology, is to minimize the wait time for pedestrian and vehicular traffic to enhance each other's safety and efficiency. The team installed advanced vehicle detection as well as passive pedestrian detection. The team also implemented new timings schemes. The project evaluated the effectiveness of these two enhancements in improving the HAWK's efficiency, reducing pedestrian delays as well as increasing users' compliance. The challenges and lessons learned from this project will be beneficial for the Arizona practitioners, operation and safety engineers, as well as planners.

Agave Ballroom

Progressive DB – Collaboration to Achieve Goals

Speakers: Rickys Bhalla, Washington State Department of Transportation; John Carlson, Sundt Construction, Inc.; and Eric Ostfeld, Michael Baker International

We will share agency and industry perspective on progressive design-build procurements from multiple agencies in the west. Noting that PDB has been around for a long time in the vertical space, there are important differences and considerations that should be known in order to have successful horizontal transportation projects using the progressive DB model.

Joshua Tree II

The Challenging 35-Day Complete Bridge Reconstruct

Speaker: Jeff Simkins, Valmont Structures

Thousands of deteriorating bridges are leaving cities, counties and states to face the harsh reality of growing bridge problems and ever-shrinking budgets. Press-brake-formed steel tub girders are an innovative and cost-effective solution to that problem. Press-brake-formed steel tub girders provide a shallow depth superstructure for use on existing abutments, geosynthetic reinforced soil abutments and in accelerated bridge construction. Valmont utilized press-brake technology and galvanization to develop a beam that streamlines the design and specification process and can be used alone or as part of a complete prefabricated superstructure solution. One county identified this innovative technology, coupled with Ultra High Performance Concrete (UHPC), as the solution to their accelerated bridge construction needs. This presentation will take an in-depth look at the St. Clair County Starville Road Bridge project, which attempted a complete bridge reconstruction in just 35 days. To hit the deadline, St. Clair County planned to utilize precast t-wall spread footing abutments, a prefabricated superstructure, and UHPC joint pours. Follow us as we join St. Clair County on their ambitious 35-day complete bridge reconstruction journey. We'll cover this fifty-foot span bridge project from road closure to opening, precasting and cofferdam installation to overlay, and lessons learned along the way.

White Dove

The Results of the World's Largest Concrete Pavement Experiment

Speaker: Larry Scofield, IGGA/ACPA

Twenty-nine years ago, the Arizona DOT constructed nineteen concrete pavement test sections to evaluate the impact of five design features on concrete pavement performance; thickness, flexural strength, base type, lane width, and drainage impact. The test sections, located on I-10 EB just west of Phoenix, are part of the largest national concrete pavement research ever undertaken. Within the Long-Term Pavement Performance (LTPP) program, twelve core test sections were constructed in each of 14 different states. The FHWA LTPP has monitored the performance of these test sections since their original construction. For the Arizona project alone, the transportation industry has invested \$3 to \$5 million in construction, sampling and testing, data collection, and research. Of the original fourteen SPS-2 projects, there are ten surviving SPS-2 projects range in age between 22 and 30 years. the Arizona SPS-2 is one of the surviving ten projects. Many of the SPS-2 projects have formed the basis for the calibration for AASHTO's Pavement Mechanistic Empirical Design Guide. These sites are unique in that they represent the only national, comprehensive concrete experiment that has sampled and tested the materials and monitored the pavement performance throughout the construction and service life of the roadway. Each site has received extensive materials characterization, performance monitoring and environmental and traffic data collection. True cradle to grave analysis is possible at these locations. Additionally, these sites have the highest quality traffic data available for any research effort. In addition to the FHWA LTPP project, seven states (including Arizona) formed a state pooled fund project to evaluate pavement performance of selected SPS-2 test sites. The pooled fund raised \$420,000 and has completed 11 final reports. Several of the reports are shown below:

- Evaluating the Impact of Design Features on Pavement Performance
- Comparison of Pavement ME and Actual Performance
- Evaluating the Impact of Mix Design on Performance
- Service Life Evaluation
- Impact of Changes in Climate, Traffic, Distress, and Maintenance on Deterioration Rate
- Diurnal Changes in Roughness

This presentation will provide the results of the pooled fund studies of the LTPP SPS-2 experiment. Oro Valley

Cannabis: Impairment of Vision As It Relates to Road Safety

Speaker: Denise Valenti, IMMAD, LLC

A current lecture on impaired driving that is accepted for medical education credits. Content would be added specific to road design, signal detection and relevance to impairment with marijuana use specifically.

Tucson

Cement and Polymer Additives for High Sulfate Soils Stabilization

Speaker: Yetkin Yildirim, Rice University

Stabilizers have been used for many years to improve the engineering properties of base course materials. Calcium-based stabilizers including cement, lime, and fly-ash are the most common stabilizers. The stabilization of sulfate-rich base course materials has been a challenge by these materials.

Santa Rita

THURSDAY, SEPT. 29TH SESSIONS . 11:30 A.M. TO 12:20 P.M.

Building A Super Project: ADOT's I-10 Broadway Curve Improvement Project Transforms Project Delivery

Speakers: Becky Fly, WSP USA, Tempe; Kimberly Noetzel; and Amy Ritz, ADOT

ADOT's I-10 Broadway Curve Improvement Project is the largest-ever urban freeway reconstruction project in the state. What does it take to redesign and reconstruct one of the busiest stretches of highway in Arizona during a global pandemic, without closing travel lanes during peak drive times, and while keeping the public fully informed and engaged?

Team members from ADOT and WSP, Inc., the project's General Engineering Consultant, will update you on project progress and explain how the Public Private Partnership (P3) delivery method is enhancing the user experience during construction; quickening the pace for project completion; and promoting innovative solutions to address complex challenges. Plus, find out how new and sometimes unconventional communication and outreach tools and tactics are delivering key messages to tens of thousands of people in and around the project area every day.

Coronado I

The Intersection of Environmental Justice and Climate Change

Speaker: Michelle Ogburn, Dudek

A look at how climate change, or a change in regional climate patterns, has impacted different environmental justice communities historically. Environmental Justice communities in Arizona are often minority, low-income, tribal, or indigenous populations or geographic locations. We will discuss emerging climate issues and their impact on environmental justice communities. We will show how the USEPAs EJSCREEN mapping tool enables decision makers to better understand the complicated relationship between climate change and environmental justice communities and how to visualize socioeconomic stressors.

Palo Verde

The Feedback Loop: Using Data to Maximize the Potential of The Loop as an Economic and Community Asset

Speakers: Alejandro Angel, Psomas; Joseph Cuffari, Pima County Regional Flood Control District; and Curt Lueck, CLA

Some of the data analysis and decisions from use of the data are still in process and should be completed prior to the conference.

Coronado II

SME-PS Concrete Infrastructure Preservation Program

Speaker: Paul Imbrock, PoreShield

In 2020, the Indiana Soybean Alliance sponsored an infrastructure preservation program helping Indiana counties preserve concrete assets. Utilizing SME-PS technology, patented at Purdue to preserve concrete pavement joints, this program provided material for 7 Indiana counties to preserve 77 bridge decks (totaling over 330,000 sq. ft.). This presentation provides a brief overview of the technology utilized, feedback from county engineers, and other examples of SME-PS technology.

Oro Valley

MAG Region Freeway Noise Analysis

Speakers: John Bullen, Maricopa Association of Governments, and Arminta Syed, Maricopa Association of Governments

Most of the Maricopa Association of Governments region's urban freeway system is paved with a layer of Asphalt Rubber Asphaltic Concrete Friction Course, better known as rubberized asphalt. The original goal of rubberized asphalt was to provide a smooth ride for motorists and help reduce freeway noise generated by vehicle tires. Much of the region's rubberized asphalt overlay was installed between 2003 and 2008. In fact, approximately 50 percent of the existing rubberized asphalt is older than 10 years, with some segments of Interstate 17 (I-17), State Route 51 (SR 51), Loop 101, and Loop 202 having an age of 15 to 17 years. Rubberized asphalt is typically assumed to have a 10-year service life. There is no dedicated funding source for the capital replacement of rubberized asphalt. In 2019, MAG and the Arizona Department of Transportation (ADOT) collaborated on a research effort to better understand the status of rubberized asphalt and the alternative concrete-based noise reduction pavement surface treatments available. An overview of the Freeway Pavement Noise Reduction Analysis Study and possible options moving forward was presented to MAG policy committees and discussion indicated support for further exploration of concrete-based surface treatments as an alternative to a rubberized asphalt overlay. MAG was directed to work with ADOT to identify potential project candidates to be included to pilot the diamond grind surface treatment. In June 2020, the MAG Regional Council approved the diamond grind pilot program, which included the modification of three project scopes to replace rubberized asphalt with a diamond grind surface treatment. To evaluate the results of the pilot program, ADOT agreed to assess life cycle costs, quality of ride, and public acceptance of a ground concrete surface. In February 2021, an update on the diamond grind pilot program was provided to the MAG Transportation Policy Committee (TPC). In response to a number of complaints along the Loop 101 (Price Freeway): Baseline to Loop 202 corridor, the committee requested that MAG conduct an independent noise analysis to better understand freeway noise impacts of the diamond grind surface treatment.

Joshua Tree II

Two Unique Ways of Modifying Existing Bridges

Speaker: Jim Pyne, TYLin

Unconventional method of widening a hybrid structure – Three bridges on the project presented the same challenge but only the Cave Creek Road TIOP will be discussed here. The Cave Creek Road TIOP required widening to accommodate the additional auxiliary lane in each direction. The existing Cave Creek Road TIOP was a three-span hybrid structure, with a precast prestressed AASHTO Type VI Mod girder at the midspan supported by the post-tensioned box girder sections with cantilever end spans. The existing bridge was originally designed to avoid a Cave Creek Rd closure during bridge construction. The PT box girder section was constructed on falsework with approximately 30 ft of overhang extended from pier to support the precast prestressed girder at the midspan. The precast prestressed mid span was erected after the end sections were constructed. To widen this structure, a similar concept was implemented to match the behavior of the existing bridge by matching span lengths and hinge locations. For ease of construction, the contractor elected to widen the bridge using precast prestressed girders for both the mid and end spans. This was done to eliminate the need for falsework at the end span construction and to avoid temporary detours to maintain traffic during construction. This concept presented multiple design challenges during the design phase including:

- 1. Preventing uplift of the end span girders due to mid span girder self-weight and live loads
- 2. Difficulty in predicting the camber of the end span girder
- 3. Hold down of the end span girder during construction
- 4. MOT and girder erection
- 5. Geometry of the structure due to the horizontal curve

This is a one-of-a-kind hybrid structure widening in the state of Arizona.

Joshua Tree I

What's So Funny About Transportation

Speaker: Lloyd Brown, HDR Inc., and Doug Pacey, ADOT

This session explores the ways in which transportation agencies are finding that humor can be a key element to successful public engagement efforts. From social media channels – such as TikTok or Twitter – to blogs and electronic message signs, a sense of humor is helping revolutionize how people perceive and interact with state DOTs. This session will highlight innovative outreach efforts. We will discuss why it is important to go beyond the traditional news release and public meeting to connect with people. What we'll cover:

- The science of humor and why it works to engage audiences
- Examples of when and how humor has played a key role in successful transportation engagement efforts
- Tips and suggestions to help transportation agencies improve their engagement success
- Recommendations and guidelines for "reading the room" i.e, knowing when humor is appropriate and, most importantly, when it isn't

White Dove

AASHTO Transportation Operations Manual (TOM)

Speakers: Scott Beck, WSP USA, and Brent Cain, ADOT

Brent Cain and Scott Beck will provide an overview of the Transportation Operations Manual purpose and development. Brent was Chair of the NCHRP Panel as well as AASHTOs Committee Transportation Systems Operations (CTSO) Task Force Co-Chair in guiding the TOM through reviews and future publication while Scott was one of the primary authors. The TOM covers a wide range of topics related to TSMO from concepts to application. The TOM will be a pillar for TSMO and a guiding document similar to the AASHTO Green Book or Highway Safety Manual. The presentation will highlight the oversight, development, and review process of creating such a reference document as well as provide insight to the following sections: • TSMO Concepts and Context • TSMO Program Development and Management • Project Development • Tactical Elements • Industry and Technology Trends

Agave Ballroom

Building Safe, Effcient, and Sustainable Communities through Applied Transportation Research: CATS at U of Arizona

Speaker: Yao-Jan Wu, University of Arizona

The Center for Applied Transportation Sciences (CATS) at the University of Arizona is a new transportation research center funded by the University of Arizona College of Engineering, the City of Tucson, Pima County, and the Arizona DOT. The Center leads new research in the areas of Transportation Systems Management and Operations (TSMO), transportation system performance management, and Mobility on Demand (MOD). In this session, we will discuss the importance and methods of bringing multiple agency levels together to leverage common goals to better serve the southern Arizona region. We will discuss past and ongoing projects that CATS is working on that are of most interest to the Arizona transportation professionals, including those in the areas of transportation equity measurement, safety, mobility on demand, and signalization strategies. Finally, we will discuss the major national and regional transportation issues that we must be thinking about as a region to continue to strive to make a more equitable, safe, sustainable, and efficient transportation system for the public.

Tucson

THURSDAY, SEPT. 29TH + 12:30 P.M. TO 2 P.M.

BBQ Lunch

Outside Lawn/Pool Area

Sponsored by



THURSDAY, SEPT. 29TH SESSIONS . 2:10 P.M. TO 3 P.M.

Validation is Key: ADOT's Program for Contractor Performed Quality Acceptance and Implementation on I-10 Broadway Curve

Speakers: Julie Gadsby, ADOT; Craig Regulski, TCS; and Weng On Tam, TCS

At the completion of the SR202 South Mountain Freeway (SMF), ADOT's first P3 project, the Department developed, in cooperation with the Federal Highway Administration, a Quality Assurance Program for Projects Utilizing Contractor Performed Acceptance (QAP). This QAP compiled industry best practices with lessons learned from the SMF to provide a systematic and consistent approach to achieving quality on projects where the contractor or Independent Quality Firm (IQF) performs frontline acceptance. This innovative approach allows the Department to utilize contractor sampling and testing data in the acceptance decision by performing owner verification using statistical validation and verification of contractor test results. History: In 2014, ADOT developed the first version of this quality assurance program and included the requirements in the technical provisions for the South Mountain Freeway. The program for SMF was based on the methodology used by Texas DOT and adapted for ADOT. The I-10 Broadway Curve is the second ADOT project to utilize contractor performed acceptance and the first to utilize the QAP. Both quality assurance programs were developed in compliance with 23 CFR 637 Subpart B and FHWA technical advisory T6120 which provide the requirements and parameters for implementation. Acceptance Program Overview: The QAP includes all aspects of the typical quality process but shifts the responsibility for acceptance testing and inspection to the contractor or IQF. Incorporated materials are accepted based on the contractor or IQF's Quality Acceptance (QA) test results only when they are validated or verified by ADOT's Owner Verification (OV) test results. Owner verification is performed by ADOT in a three-tiered approach based on the level of residual risk to the agency. Level 1 is designated for higher residual risk elements which are considered primary indicators of performance (i.e concrete compressive strength), Level 2 for medium residual risk, and Level 3 for low residual risk. For Level 1, statistical F- and t-tests are performed on the QA and OV test results to validate that they are consistent within a specified level of significance. Verification for Level 2 is performed by plotting QA and OV test results and comparing them for reasonableness and Level 3 verification is performed by observing QA personnel performing the test.

Joshua Tree I

Collaborative Conservation in Transportation: Preserving the Arizona Hedgehog Cactus

Speakers: Steve Blackwell, Desert Botanical Garden; Joshua Fife, ADOT Environmental Planning; and Jessica Rybczynski, AZTEC Engineering Group, Inc.

Introduction • Arizona hedgehog cactus • Brief life history • status /distribution • Pinto Creek Bridge Project • Project overview • Survey methods and constraints • Biology and consultation history - Formal consultation with FWS • project mitigation development • Partners - discuss issues with contracts and bringing DBG on. How we overcame hurdles • Pre-construction work • salvage - discuss steps taken to ensure safe salvage • Cactus at DBG - discuss care at DBG • long term conservation - seed collection and seed bank at DBG • Unforeseen challenges • Telegraph fire • Post fire precipitation • Post construction work • Replanting/Reintroduction • Monitoring

Joshua Tree II

Making Streets Enjoyable for Active Transportation: Innovative Design and Programs in Phoenix

Speakers: Anthony Rios-Gurrola, City of Phoenix, and Leticia Vargas, City of Phoenix

Three recent projects in Phoenix – a two-way protected bikeway on 3rd Avenue, a traffic calmed, shared street on Oak Street, and buffered bike lanes on 3rd Street have created a low-stress bikeway for all users based on the surrounding context, traffic volumes and speed. Additionally, how Phoenix has integrated a comprehensive micromobility program to add more transportation options will be presented.

Coronado I

ADOT P2P GIS Tool Development

Speaker: Scott Beck, WSP USA

Scott Beck, and an ADOT MPD staff (TBD), will provide an overview of the ADOT P2P GIS Tool purpose and development. The MPD group, on an annual basis, evaluates and scores hundreds of projects to develop a shortlist of projects to be submitted for the 5-year STIP. The evaluation is driven by performance-based data from numerous ADOT Groups and has historically been completed using manual processes. The GIS Tool concept removes much of the manual processing and assigns data to GIS-mapped project elements. The presentation will highlight the need, development, and application of the GIS Tool during the past STIP development and provide lessons learned and future improvements.

Agave Ballroom

Digging Deep into the Deck Park Tunnel: 30 Years in Operation ADOT's Maintenance Effort to Keep Traffic Flowing and DRY!

Speakers: Raul Amavisca, ADOT Central District; Dave Locher, ADOT; and Shantala Ramaiah, Jacobs

The Deck Park Tunnel (DPT) is one of the most discussed and interesting of the ADOT assets. From its approval as a multi-modal transit center in1979 and construction start in 1983, to host of concerts and festivals and 32-acre park above, the tunnel serves as a critical structure and is a key Interstate-10 (I-10) commerce corridor from Florida to California. Come learn about its history and future, conversion to LED, upcoming work and complexities of ensuring this aging infrastructure is maintained and continues to meet city, state, and interstate needs. Also learn about its recent large-scale maintenance effort initiated in 2020 of installing waterproofing system to overhead joints to eliminate leaking onto traffic below. A robust system featuring self-healing non-curing gel, HDPE membrane, and mechanically fastened pressure bar was developed by second-generation DPT structural engineer and New York tunnel waterproofing structural engineering to provide a sound, dependable and cost-effective system that would serve for years to come. Come hear about the steps taken to ensure the detailing and installation would ensure the new waterproofing system would stand the test of time...and AZ heat.

Palo Verde

New Ideas to Address Severe Crashes

Speakers: Margaret Herrera, Maricopa Assoc. of Governments, and Nicole Waldheim, Burgess & Niple

In 2020, people drove significantly less, yet the number of people involved in fatal transportation crashes rose eight percent since 2019 to over 42,000. And preliminary numbers for 2021 are not better - through September 2021, fatalities increased 12 percent compared to the same timeframe the year before. Even prior to 2020, transportation-related fatalities consistently averaged about 35,000 - that's 35,000 more than the acceptable number of zero. Traffic crashes take people away without notice, but what makes them even worse is they could be prevented. Metropolitan Planning Organizations (MPOs) are required to consider safety during the transportation planning process and set performance measures and targets. And local agencies, while not required to address safety specifically, are well-positioned to implement safety improvements to help meet performance goals. One of the biggest challenges, even in regions and local jurisdictions where safety is being addressed, is fatalities are still increasing. The time couldn't be better for MPOs and local agencies to re-think their approaches to safety. Frustrated over the conventional business model for reducing traffic injuries and deaths, the Maricopa Association of Governments (MAG) in Phoenix, Arizona decided not to continue with business as usual. MAG is one of the first MPOs in the country to take steps to incorporate the Safe System Approach (SSA) into their organizational and planning processes to prevent severe crashes. They developed a stand-alone Safe System in an action plan with the primary focus on creating a culture where safety is prioritized. To achieve this culture, the plan identifies areas and locations of opportunity, promotes the use of high-value countermeasures, and communicates safety as a shared language. MAG is now working alongside local agencies, and other partners to implement these ideas and engrain safety as the number one business priority. This presentation will highlight how the SSA and its focus on culture is a new way to address severe crashes. The City of Denton, TX, in coordination with Burgess & Niple, is currently working through a Safety Readiness Assessment. To develop a successful safety practice, the City realized several elements need to be considered and addressed first.

Coronado II

Current Research at Northern Arizona University

Speakers: Dr. Steven Gehrke, Northern Arizona University; Dr. Brendan Russo, Northern Arizona University; and Dr. Edward Smaglik, Northern Arizona University

This session will contain three separate presentations from researchers at Northern Arizona University who are conducting research through AZTrans, the Arizona Laboratory for Applied Transportation Research. First, Dr. Brendan Russo will discuss the results of a recently completed project which analyzed the safety impacts of three different bicycle-focused treatments at signalized intersections (bike boxes, mixing zones, and bicycle signals) using surrogate safety measures. To achieve this objective, data were collected from three sources: 1) field-collected video at twelve intersections, 2) microsimulation modeling, and 3) a bicycling simulator experiment. Factors associated with bicycle-vehicle conflict frequency and severity were assessed, and utilizing data from all three sources, guidance was developed regarding the conditions under which each treatment could/should be considered. Next, Dr. Steven Gehrke will present on a project exploring the impacts that the commercial deployment of autonomous sidewalk delivery robots on NAU's campus has had on pedestrians and bicyclists. For this research, a surrogate safety measure was adapted to identify the prevalence and severity of conflicts between Starship robots and human pathway users observed in passive video recordings. This study's findings are intended to provide early evidence that can help shape future transport-land use policies for safely operating automated sidewalk delivery robots in multimodal, urban settings. Finally, Dr. Edward Smaglik will discuss the methods and results of a recently completed project which developed an algorithm to identify malfunctioning traffic detectors using eventbased traffic controller data and traffic theory (Greenshields Fundamental Relationships).

Tucson

Valley Metro's NW Extension Phase II Light Rail Project

Speakers: Andrew Haines, Jacobs Engineering; William Rodriguez, Jacobs Engineering; and Tony Santana, Valley Metro

Presentation of the design and construction phases of the NWE project, which included: different bridge superstructure types and materials, elevated station with stairs and elevator, an operator building & steel canopy. Present topic in vibration & deflection control, and rail/ structure interaction.

White Dove

TRIPS – Traffic Responsive Intelligent Priority System: Cheap, Easy... and Effective

Speaker: Angie Przybylo

With the implementation of Bus Rapid Transit (BRT) on Prospect Avenue in Kansas City, MO the Kansas City Area Transportation Authority (KCATA) was looking to provide enhanced Transit Signal Priority (TSP) along the corridor. The custom TSP solution uses data from the existing transit fleet. **Oro Valley**

THURSDAY, SEPT. 29TH SESSIONS . 3:10 P.M. TO 4 P.M.

Northwest Valley Transportation Taiwan Semiconductor Manufacturing Company (TSMC) Road Infrastructure – Building Streets at Gigabit Speeds

Speaker: Mario Brown, City of Phoenix

The presentation will present a glimpse of what it takes to successfully deliver a project of this magnitude from concept through completion. Coordinating with multiple stakeholders, navigating technical aspects of the project, while working with and around other infrastructure improvements.

Coronado I

What Lies Beneath-A Stormwater Origin Story

Speaker: Michael Culp, ADOT

To educate and enforce the importance of maintaining stormwater assets and drainage features. All while showing what's involved in starting such an operation. Show how it affects all aspects of the transportation industry.

Coronado II

Top Five Ways to Mess-Up Your Agency's Pavement Management System

Speaker: Kurt Keifer, IMS Infrastructure Management Services, LLC

When implemented and maintained properly, a pavement management system can serve as an effective tool for data-driven decision making. However, if these systems are not cared for properly, they may end-up generating sub optimal – if not entirely incorrect – recommendations. The presentation will focus on the most common mistakes made by agencies when implementing, updating, and using a pavement management system, and how to avoid making them. Topics will include: (1) how not to segment your roadway network in GIS; (2) why the Pavement Condition Index (PCI) and the International Roughness Index (IRI) should never be rolled-up into an Overall Condition Index (OCI); (3) why municipal pavements rarely, if ever, deteriorate the way they are modeled; (4) why rehabilitation activities should never be based on pavement surface condition only; and (5) the importance of collaborative QC/QA of pavement condition data. The presentation will close with recommendations for how to effectively communicate pavement maintenance and rehabilitation needs to a non-technical audience.

Joshua Tree I

DB & P3 – The perfect models to expand Broadband

Speakers: Jim Avitabile, RS&H; Bryan Kendro, RS&H; Sia Kusha, Plenary Americas; Ryan Pedraza; and Jeff Sobotka

Since 2019, almost every state has enacted legislation to assist in expanding broadband service. All 50 states have commissioned an entity to lead broadband expansion, and 21 states have formal broadband-funded programs. Several states have enlisted their DOT agencies with helping to facilitate this expansion along public rights-of-way. Kentucky, Virginia, Pennsylvania, North Carolina, Georgia, Arizona, and the District of Columbia are examples where agencies are using alternative project delivery models to facilitate this expansion. This panel of industry professionals will share their experience with broadband expansion and help identify the models that work best and why.

Oro Valley

The Critical Infrastructure No One Is Talking About — Interns University

Speaker: Jordan Rodriquez, Stantec Consulting Services, Inc.

The civil engineering labor market is extremely competitive and is suffering from a continual shortage of quality people to hire. Traditionally, companies hire interns as a way to cultivate the next generation of professionals, but they also do so to fill their staffing gaps. Today, engineering firms are challenged to attract and retain quality interns. While interns crave work that is fulfilling, and firms are faced with a limited pool of top candidates, simply having an internship program is no longer enough. Companies need to provide a fulfilling and supportive work environment to successfully hire the best. Where most internship programs fall short is in how they treat interns. It is not uncommon that firms view them as no more than a cheap labor source to improve project profitability or to outsource busy work that is boring and soul-crushing. The ability to leverage a new way of looking at interns and augment existing intern programs is key to the future success of organizations. It is key that today's employers develop an intern program with a multi-faceted approach to professional development and invest in the interns as if they are full-time staff. Some key criteria include technical experience, client relations, public speaking, business development, project management, career exploration, community engagement, and conflict resolution. Providing interns with the respect, responsibility, and a workload that they have typically been deprived, is an essential investment in the human infrastructure of a company. It is the best way to retain interns as full-time staff post-graduation. In addition, a happy and supported intern is a more productive intern. Providing comprehensive professional development is a crucial strategy for allowing interns to reach their greatest potential. There is so much more to civil engineering than design and interns are eager to roll-up their sleeves and get to meaningful work. Joshua Tree II

Ocotillo Road, Greenfield Road to Higley Road

Speakers: Ryan Blair, Town of Gilbert, and David Rutkowski, Kimley-Horn

The Town of Gilbert is currently designing the extension of Ocotillo Road between Greenfield Road and Higley Road. Improvements will take place along the Ocotillo Road alignment from east of Greenfield Road to Higley Road. This roadway extension will ultimately provide visitors direct access to the Gilbert Regional Park from Ocotillo Road. The roadway extension will incorporate four structures to span existing water courses including the Roosevelt Water Conservation District Canal, East Maricopa Floodway, Chandler Heights Regional Basin, and Queen Creek Wash. This project also includes finalizing the roadway alignment, designing a multimodal roadway, analyzing the need for traffic signal modifications, planning for future trails, relocating the 69kV overhead power lines, and providing enhanced pedestrian and bicycle facilities. This presentation will walk through the aesthetics process to narrow the iconic bridge design down to one final concept, early utility relocation work necessary to make way for the new roadway extension, the interconnectivity between the roadway extension project and the Gilbert Regional Park Master Plan, and modifications to the typical section made to enhance pedestrian and bicycle facilities.

White Dove

Cutting Edge in Equity: Developing Equitable Practices in Transportation Engineering and Design

Speakers: Melrose Pan and Alyssa Ryan, University of Arizona

The up-and-coming topic of transportation equity is becoming a critical component of how all transportation professionals make decisions day-to-day, and how projects are (or are not) funded throughout the country. However, with it being a relatively new focus area for agencies, it is unclear how transportation professionals are defining equity, and how agency members should respond/take equity into account in their processes. This presentation will cover the methods of measuring equity throughout the country, how agencies can define transportation equity, and what all transportation professionals should be considering in this space.

Agave Ballroom

Assessing Safety Using Drones and Artificial Intelligence

Speakers: Cynthia Alvarez, Burgess & Niple; Shuyao Hong, Maricopa Association of Governments; and Mohammad Shaheed, Maricopa Association of Governments

The Maricopa Association of Governments (MAG) initiated the Emerging Technology Program to pilot emerging technologies and innovations and assess their benefits and challenges for MAG and its member agencies. The MAG Pedestrian and Bicyclist Safety Analysis and Non-Motorized Users Safety Analysis Pilot through Drone Data Collection and Video Analytics were joint projects in this program to assess near miss crashes for vehicles, pedestrians, and bicyclists at select locations near light rail stations. A drone was utilized to collect video data during peak ridership hours and used for safety analysis utilizing computer vision and artificial intelligence. At the same time, a road safety assessment was conducted at the same sites in order to be able to recommend safety improvements. The combination of drone-collected video and artificial intelligence-powered video analytics brings in additional quantitative and qualitative information to the road safety assessment, supplementary to the field observation and crash data analyses. Through the Emerging Technology Program and this case study, safety concerns were identified, and findings compared. Results of the case study will be presented, and lessons learned, benefits, and challenges will be shared.

Palo Verde

THURSDAY, SEPT. 29TH SESSIONS + 4:10 P.M. TO 5 P.M.

Better Lights for Better Nights: How Holistic Consideration of Roadway Lighting Design can Reduce Light Pollution and Enhance Public Safety

Speakers: John Barentine, Dark Sky Consulting, LLC, and Michelle Ogburn, Dudek

Light pollution resulting from the indiscriminate application of artificial light at night is now a ubiquitous environmental pollutant in much of the world, bringing with it a host of negative social and biological consequences. As a major source of light pollution, the world's cities are increasingly the focal point of efforts to solve this burgeoning problem. Roadway lighting is typically one of the largest contributors to urban light emissions, but evidence strongly favors the careful application of outdoor lighting as a means of lowering risks to public safety at night. Lighting design considerations should therefore be confronted in the early stages of project planning rather than becoming an afterthought. In this presentation, we will review the problem generally, explain why light pollution is a transportation concern, and summarize the scientific evidence on the subject to date. We will then review some core lighting technical concepts that inform decisions about roadway lighting and conclude with information about where attendees can learn more.

White Dove

SR 24 – Gateway to the Southeast Valley

Speakers: T.C. Fish, Civil Solutions Engineering & Management (CSEM); Mike Lynch, FNF Construction; Gary Melita; Robby Richards III, ADOT; and Roger Vial

Learn about the challenges, successes, and lessons learned from design and construction of the SR 24 freeway from Ellsworth Road to Ironwood Road. The project team will provide viewpoints from the Designer (Stanley Consultants), Owner (ADOT), and Contractor (FNF Construction).

Coronado I

Authentic Communication Development for Leaders

Speaker: Shaan Rais, Omni Solutions Consultation

During the first 15 minutes Shaan Rais will engage the crowd colorfully in vivid descriptions of what true authenticity is and how it translates to effective communication in the workspace. Humorously detailing examples of success and failure through storytelling. The audience will laugh, relate, and let their guard down to learning as rapport is established. During the second segment of the keynote, 15 minutes will be strategically utilized to personalize authenticity to each leaders' personal brand. Many people are under the assumption that true authenticity exists separate and apart from their true identity and story. Nothing could be further from the truth. The more of ourselves that we bring into the workspace, the more authentically we communicate. When our direct reports search for inconsistencies, there are none to be found. This also offsets any feelings of inauthenticity, undue stress, and cognitive dissonance that occurs from having to leave our proverbial authentic self at the door of the establishment. When people are able to be genuine, honest, and comfortable in their skin in any organization, sentiments of organizational citizenship and loyalty are established. Thus, lowering attrition, heightening retention, and strengthening organizational culture of diversity, equity, and inclusion throughout all levels of the organization. In the last 15 minute segment of the keynote, Shaan will deliver an authenticity accountability call to action within an Authenticity Development Strategic Action Plan. This ADSAP will come with identifiable challenges, goals/objectives, and desired dates of completion. For the purpose of identifying and rectifying three areas of opportunity to strengthen effective authentic communication. Replete with follow up and coaching opportunities. 3 Learning Objectives of this presentation: 1) Critically identifying components of authentic communication. 2) Opportunities to integrate the whole self into leadership roles through identification and use of personal story, thus creating the authentic personal brand. 3) Enhancing and improving self assessment and self awareness through development of the Authenticity Development Strategic Action Plan (ADSAP).

Joshua Tree I

City of Phoenix Pedestrian Clearance Interval Update

Speakers: Keith Christian, Kimley-Horn; Sanjay Paul; and Simon Ramos, City of Phoenix

With the assistance of Keith Christian, Kimley Horn Associates, City of Phoenix staff will discuss: In signal timing, the pedestrian walk and clearance intervals (commonly referred to as the walk and flash don't walk) are fundamental parameters designed to provide pedestrians with adequate time to safely leave the sidewalk and cross the street at a signalized intersection. Guidance for determining these pedestrian intervals is provided in the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD guidelines provide some flexibility in how to determine the intervals and leave some decisions up to the agencies. As such, the process for determining pedestrian intervals can be difficult for the average person to understand and replicate. Because of this, the City of Phoenix set out to update their existing methodology for determining the pedestrian intervals so that it is easier for the average person to follow and replicate; and would still provide adequate time for pedestrians to cross the street, while still following the guidelines in the MUTCD. It was also important that the updated methodology typically provide at least as much time to cross the street as was provided under previous conditions. The City's updated methodology includes a standard walk interval and pedestrian walking speed as well as a simplified method for measuring the crossing distance. As part of the development process,

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the City wanted to understand how using this updated pedestrian interval methodology might affect the existing coordinated phase splits and cycle lengths. To understand the potential effects of using the updated methodology on the phase splits, the City of Phoenix evaluated 104 signalized intersections for a total of 385 pedestrian crossings. These intersections included a mix of major and minor street intersections, pedestrian hybrid beacons, three-, four, and five-legged intersections, locations with high and low pedestrian activity, and areas with and without a history of serious pedestrian crashes. It was found that on average the updated methodology increased the pedestrian intervals by only 2.8s, although some increased by 10s or more.

Coronado II

Over, Under, Around and Through with the I-10, Ruthrauff Rd TI

Speakers: Jay Koesters, WSP, and Doug Moseke, ADOT South Central District

Jay Koesters, WSP, and a Sundt Construction individual (TBD) and Doug Moseke, ADOT, will provide an overview of the design and construction that will discuss some of the specific design issues including long haul utility relocations inside UPRR R/W, pipe strengthening of a box culvert on UPRR R/W, protection of a large diameter HOBUS sewer pipe, aesthetic treatment development, construction sequencing/MOT/utility design and linear phase schedule preparation and A+B bidding. Construction discussion will focus on construction of the bridge over UPRR, cultural resource avoidance and additional items. The presentation will highlight development and construction and provide lessons learned.

Agave Ballroom

Electric Vehicle Planning (The Good, The Bad, The Ugly)

Speakers: Blake Hansen; John Hansen, Olsson; and Brian Marshall, Olsson

Few transportation initiatives have had an impact on the traveling public like the emphasis and support for alternative fuel vehicles and especially the Electric Vehicle (EV). It is predicted that by 2030 over 20% of the vehicles will be electric. Up from the current level of less than 2%. An increase in all forms of transportation types are impacted by the EV Initiative. This includes both private and public use, commercial and fleet use along with support vehicles that are currently utilizing carbon types of fuels. The first consideration is the charging stations necessary to support this growth. IIJA, Volkswagen Funds, and local funds will help with the planned growth. But it is estimated that on average there will be a need for over 50,000 charging sites per state on average just to address this near-term growth. What about the power grid to support? Is it able to support this 20% plus an increase in power needs per community per power provider? Is the existing electric transmission lines capable of this increase? What is the net effect on the power grid? Can we produce a number of charging stations to meet this demand? Can we support the maintenance of this vast increase? Who has that responsibility to support those charging stations? What about policies and legislation to address this initiative? How are we to determine locations for EV charging? What about the lost revenue from gas tax? Will there be a need to certify and train a new group of individuals to service these vehicles due to their use of electric power? What about building codes for the anticipated impact of accommodating (planning) for the addition of EV charging stations to your community? What impact will this have on our rural communities? Are they prepared to support the traveling public when traveling beyond their communities? Are their needs the same or different from urban planning for EVs? The requirements for all transit vehicles to be EV by 2035 (sooner in some states) realistic and what about the facilities necessary to house those vehicles. Then there are the Commercial Vehicle Operators and their requirement to also provide "alternate fuel," vehicles in the same timeframe? Do the distances and weight require an all-new focus on the goods to be shipped? What effect do weather and temperature have on the performance of all EV types?

Oro Valley

We Need Broadband! HELP!

Speakers: Todd Fredericksen and Angie Przybylo

The future is clear... stable and sufficient broadband is a requirement! This presentation will explore the federal, state, and local sources and uses for broadband funding opportunities. As funding remains a moving target, it is extremely important for internet service providers and/or communities to plan ahead and be efficient with available funds.

Joshua Tree II

40 Day Bridge Replacement: A-1 Mountain TI, Flagstaff, Arizona

Speakers: Lance Briley; Tad Niemyjski, ADOT; and Ivan Tullao

The existing I-40 A-1 Mountain TI bridge was constructed in 1966 with a span of 302 ft. The A-1 Mountain TI is 5 miles west of Flagstaff, AZ and provides only access to a small community to the north of this interchange. At an elevation of about 7,300 feet, this area has a short construction season and the detour for the residents who want to head toward Flagstaff would be 8 miles. After many options for the replacement of this bridge were considered, it was determined that GRS-IBS was the most advantageous option for construction that minimized the impact to the nearby residents. The choice to pursue GRS-IBS was based on the success ADOT experienced during the construction of ADOT's first GRS-IBS which was completed in 2018. This accelerated bridge construction method minimizes the closure of the A-1 Mountain cross road, minimizes the impact to the interstate traffic, maintains the existing roadway alignments and with the creation of a GRS median allows for two bridges to be constructed in one construction season. The existing A-1 Mountain bridge structure will be replaced with a pair of GRS-IBS bridge structures, each with a 110 foot span, that crosses a direction of I-40 roadway. The bridges share a Median Island constructed using two GRS Abutments separated by a narrow retaining wall. The construction of this project is 40 calendar days with incentives offered to reduce construction duration up to an additional 5 days. Lessons learned from the construction of the Meteor City OP bridges were incorporated into the plans and specifications for the bridges. It was a challenge to develop plans and specifications that were detailed enough to be biddable and avoid specifying proprietary products for the geosynthetic reinforcement. The contractor provided engineered drawings based on our plans and specifications using their chosen building materials that met our requirements. The success of the accelerated opening schedule for this project is the use of polyester polymer concrete (PPC) deck to overlay the box girders to provide a driving surface that would not allow water and salt to penetrate into the deck structure. The PPC deck will be a minimum 2 inches thick and work as an unreinforced deck surface. Arizona has used PPC as an overlay twice before. The first time was on the previous Meteor City project. The overlay experienced significant construction issues during the construction of this project.

Palo Verde

THURSDAY, SEPT. 29TH SESSIONS . 5:15 P.M. TO 6:15 P.M.

Arizona Transportation Partnering Excellence Awards

Coronado I

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FRIDAY, SEPT. 30TH + 7 A.M. TO 9 A.M.

Continental Breakfast with Tradeshow Exhibitors
 Presidio Ballroom

FRIDAY, SEPT. 30TH + 7 A.M. TO NOON

Tradeshow Open – Stop By and Visit

Presidio and Turquoise Ballrooms

FRIDAY, SEPT. 30TH SESSIONS 8 A.M. TO 8:50 A.M.

Extension of Proposition 400: HB 2685 Veto, the Need for Enabling Legislation, and Importance of Maricopa County's Dedicated Sales Tax

Speakers: John Bullen, Maricopa Association of Governments, and Audra Koester Thomas, Maricopa Association of Governments

On June 23, 2021, the MAG Regional Council unanimously approved the Proposition 400 extension investment plan. This plan guides regional project and program investments over a 25-year period and is supported by an extension of the county's dedicated half-cent sales tax for transportation. Marico-pa County is the only county in Arizona that must get authorization from the state legislature to ask county voters for an extension of the county's transportation sales tax. On June 24, 2022, the Arizona State Legislature approved HB 2685, the legislation to authorizing Maricopa County to call a ballot for the consideration of the sales tax extension. That legislation was subsequently vetoed by Governor Doug Ducey on July 6, 2022. An overview on the Proposition 400 investment plan, impacts of the HB 2685, and role of Maricopa County's dedicated half-cent sales tax for transportation in the regional and statewide economy will be provided.

White Dove

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FRIDAY, SEPT. 30TH SESSIONS 9 A.M. TO 11 A.M.

Ethical Compliance Saves Civil Enigineers from Business and Liiigation Risks

Speakers: Joe Gervasio and Mike King

The Code of Ethics of The American Society of Civil Engineers was revised in October 2020. Learn what changed and what it means to you. Learn how to apply the ASCE Code of Ethics to protect against business and litigation risks. We will present "real-life" examples of the bad consequences of unethical engineering.

White Dove

FRIDAY, SEPT. 30TH OPEN HOUSES . 9 A.M. TO NOON

ADOT District Engineers/Counties Open House

Coronado Ballroom

Cities/Towns Open House

Joshua Tree and Agave Ballroom

FRIDAY, SEPT. 30TH . 11:10 A.M. TO NOON

ACEC Arizona Principal Roundtable

White Dove

FRIDAY, SEPT. 30TH . NOON TO 1 P.M.

Grab and Go Bag Lunch

Turquoise Ballroom Foyer





EL CONQUISTADOR TUCSON . CONVENTION CENTER MAP



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EL CONQUISTADOR TUCSON . TURQUOISE BALLROOM



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Dibble Booth 409 www.dibblecorp.com

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FNF Construction, INC. Booth 1215 www.fnfinc.com

Foley Concrete Products Booth 704 rinkerpipe.com

Fonroche Lighting America Booth 1404 fonroche.us

Franklin Striping, Inc. Booth 510 www.franklinstriping.com

GHD Booth 313 ghd.com

Grand Canyon University Booth 114 www.gcu.edu

Granite Construction Company Booth 407 www.graniteconstruction.com

GSM Arizona Booth 1207 gsmaz.com

Guardtop, LLC Booth 1509 www.guardtop.com HDR Booth 402 www.hdrinc.com

Holbrook Asphalt Booth 1103 https://holbrookasphalt.com/

Horrocks Booth 1513 www.horrocks.com

Huitt-Zollars Booth 213 www.huitt-zollars.com

Hunter Contracting Co. Booth 501 www.huntercontracting.com

Intertek-PSI Booth 1315 intertek.com

J2 Engineering & Environmental Design, LLC Booth 203 www.j2design.us

Jacobs Booth 410 www.jacobs.com

JDR Company Booth 406 www.jdrcompany.com

KE&G Construction, Inc. Booth 105 www.kegtus.com

Keller North America Booth 1406 www.keller-na.com

Kimley-Horn and Associates, Inc. Booth 202 www.kimley-horn.com

Legacy foundations Booth 111 legacyfoundations.com

Lindsay Transportation Solutions Outside Presidio Lot www.lindsay.com/usca/en/

Lithified Technologies - LithTec Booth 1305 lithtec.com





M R Tanner Construction Booth 109 https://mrtanner.com

Matrix Design Group Booth 308 www.matrixdesigngroup.com

Maxwell Products Booth 208 maxwellproducts.com

Michael Baker International, Inc. Booth 209 www.mbakerintl.com

Morgan Pavement Booth 1405 morganpavement.com

Neenah Foundry Booth 307 www.nfco.com

Ninyo & Moore Booth 205 www.ninyoandmoore.com

Northern Arizona University Booth 112 www.nau.edu

Olsson Booth 708 www.olsson.com

Pacific GeoSource Booth 1303 pacificgeosource.com

Pacific Products and Services Booth 413 pacificproductsandservices.com

Paradigm Design Booth 1514 paradigmae.com

Parsons Transportation Group Booth 1402 www.parsons.com

Pavement Marking LLC Booth 411 www.pmiaz.com Pavement Restoration, Inc. Booth 1409 www.paverstore.com

Pexco LLC, Davidson Traffic Control Products Booth 1109 pexco.com

Pile Dynamics, Inc. Booth 204 www.pile.com

PPG Booth 405 ppg.com

Precision Concrete Cutting Booth 103 safesidewalks.com

Psomas Booth 403 www.psomas.com

Pulice Booth 1314 www.pulice.com

Quail Construction Booth 311 www.quailcorp.com

Riley Engineering Booth 1116 riley-eng.com

Rinker Materials Booth 1203 www.rinkerpipe.com

Ritoch-Powell & Associates (an Ardurra Company) Booth 113 www.rpaeng.com

RoadSafe Traffic Systems Booth 1504 www.roadsafetraffic.com

RS&H Booth 1508 www.rsandh.com

Rummel Construction Inc Booth 1206 www.rummelconstruction.com

Sealmaster Booth 1612 www.sealmasteraz.com





Solmax/Tencate Booth 1608 solmax.com

Southwest Slurry Seal Booth 1502 www.southwestslurryseal.com

Stantec Consulting Services, Inc. Booth 1403 stantec.com

Stinger Bridge & Iron Booth 700 www.stingerbridgeandiron.com

Sundt Construction Booth 1602 www.sundt.com

Sunland Asphalt & Construction, LLC. Booth 1100 www.sundlandasphalt.com

Sunrise Engineering Booth 1414 www.sunrise-eng.com

Superior Supply/Aqua Patch Booth 102 https://superiorsupplyinc.com

SWCA Environmental Consultants Booth 1307 www.swca.com

T2 Utility Engineers Booth 312 https://t2ue.com/

Tam Consulting Services LLC Booth 1204 tam-cs.com

Terracon Consultants Booth 304 terracon.com

THE GEOHOLICS PODCAST Booth 406 https://thegeoholics.com/

The Reinforced Earth Company Booth 212 reinforcedearth.com

Tierra Right of Way Services, Ltd. Booth 1415 www.tierra-row.com Trafficade Service Booth 1214 www.trafficade.com

TrafFix Devices, Inc. Booth 511 www.traffixdevices.com

TYLin Booth 207 www.tylin.com

UNIQUE Paving Materials Corp. Booth 1309 uniquepavingmaterials.com

University of Arizona Booth 108 www.arizona.edu

Vacmasters Booth 508 https://vacmasters.com

Valmont Structures Booth 1104 valmont.com

ViaSun Corporation Booth 1501 www.viasuncorp.com

VSS International Booth 1105 www.slurry.com

VSS Macropaver (Reed International) Booth 506 https://macropaver.com

William Charles Construction Booth 206 williamcharles.com

Wilson & Co Booth 1604 www.wilsonco.com

WSP USA Inc. Booth 502 www.wsp.com





Professional Development Hours Awarded To:

First and Last Name

Check each session you attended at the 71st Arizona Conference on Roads & Streets September 28-30, 2022

The following list follows the order of sessions in this program.

Wednesday, September 28th 1 PDH____ Welcome and Opening Remarks

Thursday, September 29th

1 PDH____ Get Rid of the BS 1 PDH_____1st Avenue Separated Bicycle Lane 1 PDH____ Automated Vehicles Are Coming 1 PDH____ Building the Engineering Workforce 1 PDH____ I-17 Broadband - The State's First 1 PDH___ Improving Your Construct Schedule 1 PDH____ Keeping Up with the Growing Tide 1 PDH____ Practical Exploration for Geotechnical 1 PDH____ "Old Tool, New Trick" 1 PDH____ Alternative Fuel Corridors and NEVI 1 PDH___ Cannabis: Impairment of Vision 1 PDH____ Cement and Polymer Additives 1 PDH___ Guide to BUILD/RAISE Grants 1 PDH____ The Challenging 35-Day Bridge Recon. 1 PDH___ The Results of the World's Largest 1 PDH____ The Yo-Yo Diet of Market Volatility 1 PDH____ AASHTO Transpo. Ops. Manual 1 PDH____ Building A Super Project 1 PDH____ Bldg Safe, Efficient, & Sustainable Communities 1 PDH____ Feedback Loop: Using Data 1 PDH____ MAG Region Freeway Noise Analysis 1 PDH____SME-PS Concrete Infrastructure 1 PDH____ The Intersection of Environ Justice 1 PDH____ Two Ways of Modifying Bridges

1 PDH____ What's So Funny About Transpo

- PDH____ADOT P2P GIS Tool Development
 PDH____Collaborative Conservation in Transpo
- 1 PDH____ Current Research at NAU
- 1 PDH____ Digging Deep into Deck Park Tunnel
- 1 PDH____ Making Streets Enjoyable
- 1 PDH____ New Ideas to Address Severe Crashes
- 1 PDH____ TRIPS Cheap, Easy and Effective
- 1 PDH____ Validation is Key: ADOT's Program
- 1 PDH____ Valley Metro's New Extension Phase II
- 1 PDH____ Assessing Safety Using Drones & AI
- 1 PDH___ Cutting Edge in Equity
- 1 PDH____ DB & P3 The perfect models
- 1 PDH____ Northwest Valley Transportation TSMC
- 1 PDH____ Ocotillo Road, Greenfield Road
- 1 PDH____ The Critical Infrastructure Interns
- 1 PDH____ Top Five Ways to Mess-Up
- 1 PDH____ What Lies Beneath Stormwater
- 1 PDH____ 40 Day Bridge Replacement: A-1
- 1 PDH____ Authentic Comm Dev for Leaders
- 1 PDH____ Better Lights for Better Nights
- 1 PDH____ City of Phoenix Pedestrian Clearance
- 1 PDH____ Electric Vehicle Planning
- 1 PDH____ Over, Under, Around and Through
- 1 PDH____ SR 24 Gateway to the SE Valley
- 1 PDH____ We Need Broadband! HELP!

Friday, September 30th

- 1 PDH____ Extension of Prop 400: HB 2685 Veto
- 1 PDH____ Ethical Compliance
- 1 PDH____ ACEC Arizona Roundtable

Total Professional Development Hours: _