

**Total number of posters presented: 17**

- Construction & Maintenance Area (4)
- Planning & Environmental Area (4)
- Structures & Hydraulics Area (1)
- Safety & Operations Area (2)
- Technology & Innovation Area (6)

### Synthesis of Precast Column Designs for Texas Bridges

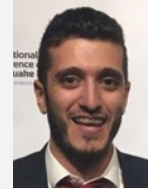
By Ghassan Fawaz, Dr. Oguzhan Bayrak, and Dr. Juan Murcia-Delso

This study will evaluate the state of the art of national research and construction projects involving precast columns for bridges. The study will also evaluate the suitability of existing precast column solutions for Texas bridges, and determine criteria for the selection of precast columns over conventional cast-in-place solutions for Texas bridges.

PI: Dr. Juan Murcia-Delso (murcia@utexas.edu)

Presenter: **Ghassan Fawaz**

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### Understanding the impacts of freeway lane closures through data : a combined analysis of NPMRDS and fixed-sensor data

By Dr. Amber Chen, Yun Li, Heidi Westerfield Ross, Tengkuo Zhu, Dr. Natalia Ruiz-Juri

This study presents an approach to developing a speed/flow relationship using NPMRDS and limited fixed-sensor data. Numerical analyses using traffic counts on I-35 suggest that the proposed technique is accurate and that it improves upon similar methodologies that use NPMRDS data.

PI: Dr. Natalia Ruiz Juri (nruizjuri@mail.utexas.edu)

Presenter: **Amber Chen, Ph.D.**

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### Virtual Reality Potential Applications

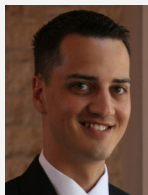
By Cameron Schmeits and Nabeel Khwaja

This study created a virtual construction site where a crane is placing a beam in a tight environment. In the model, users can move around the model and review the crane activity from any vantage point they choose using Virtual Reality (VR).

PI: Nabeel Khwaja (khwaja@mail.utexas.edu)

Presenter: **Cameron Schmeits, M.S.**  
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### An Adaptive Signal Control Method Involving the Lighthill Whitham Richards Model Using Mixed Integer Linear Programming

By Hao Liu, Dr. Amber Chen, and Dr. Randy Machemehl

This study developed an adaptive signal control framework for a single intersection in an attempt to reduce traffic delays. The framework includes two key components, traffic volume prediction and signal optimization, so that it adapts itself to the rapidly changing traffic conditions rather than depending on the pre-timed control.

PI: Dr. Randy Machemehl (rbm@mail.utexas.edu)

Presenter: **Hao Liu**

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### Construction Engineering and Inspection (CE&I) Staffing

By Julie Faure, Dr. Kasey Faust, Nabeel Khawja and Dr. William O'Brien

This study provides an overview of CE&I costs incurred by TxDOT between 2001 and 2017 to identify optimal allocation of resources (and consequently costs) for CE&I functions at the project level. The results indicate that the CE&I costs have an inverse relationship with construction cost and vary based on the project type.

PI: Dr. William O'Brien (wjob@mail.utexas.edu)

Presenter: **Julie C. Faure**

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### Cross-Functional Planning of Projects in TxDOT: Sandbox Tool

By Chirag Kothari, Jojo France-Mensah, Dr. William O'Brien, and Nabeel Khwaja

This study developed a planning (Sandbox) tool to provide a collaborative platform to support cross-functional planning of highway projects. The developed tool helps in identifying spatial-temporal conflicts at early stages of planning and provides a structured documentation for conflict resolution.

PIs: Dr. William O'Brien (wjob@mail.utexas.edu) & Nabeel Khwaja(khwaja@mail.utexas.edu)

Presenter: **Chirag Kothari**

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### A Data-Driven Methodology for Prioritizing Traffic Signal Retiming Operations

By Michael Dunn, H. Westerfield Ross, and Dr. R.B. Machemehl et al.

This study developed an approach for corridor selection/prioritization utilizing probe-based speed data to improve the signal retiming process. This systematic prioritization approach is likely to lead to larger improvements in system performance than the schedule-based system.

PI: Dr. Natalia Ruiz-Juri & Dr. Randy Machemehl (rbm@mail.utexas.edu)

Presenter: **Natalia Ruiz-Juri, Ph.D.**

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### Determine Use of Alternative Retroreflective Pavement Markers (RPMs) on Highways with Centerline Rumble Strips and Winter Weather Pavement Marking Improvements

By Vivel Turkar, Dr. Raissa Ferron, Dr. Amit Bhasin, Michael Rung, and Dr. David Fowler

This study evaluated two alternative RPM approaches, rumble stripes and rumble inserts. The research recommends the rumble inserts approach with flexible memory makers. The use of flexible material will eliminate the damage to the snowplow blade while preventing any kind of hazardous projectile motion.

PI: Dr. Raissa Ferron (rferron@mail.utexas.edu)

Presenter: **Vivek Turkar**

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### Develop A Tool to Automate Damage Claim Process

By Oscar Galvis, Dr. Zhe Han, Dr. Mike Murphy, and Dr. Zhanmin Zhang

This study develops an Excel-based tool to automate Damage Claim (DC) process for Austin District. This tool saves time of maintenance section staff and improves efficiency in preparation of DCs. This tool would help the District to increase and track the number of claims being filled and claim more money from insurance companies.

PI: Dr. Zhe Han (hanzhe@utexas.edu)

Presenter: **Oscar Galvis**

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### Enhancing Road Weather Management during Wildfires and Flash Floods through New Data Collection, Sharing, and Public Dissemination Technologies

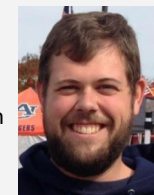
By Kenneth Perrine, Dr. Chandra Bhat et al.

This study focuses on enhancing road weather management during extreme weather through exploring data collection and sharing technologies. The two training workshops conducted in Abilene and Austin, TX to demonstrate key concepts needed for conducting a successful sensor deployment and data analytics practice.

PI: Dr. Chandra Bhat (bhat@mail.utexas.edu)

Presenter: **Michael Moore**

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### Evaluate Economic Impacts of Freight Corridor Projects

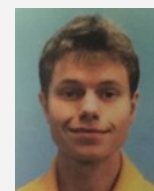
By Rydell D. Walthall, Ruohan Li, Dr. Nan Jiang, and Dr. Michael Walton

This study develops a methodology to measure the network-wide economic effects of a whole series of transportation projects or interventions. It can be applied to questions of local, corridor, or statewide scope, and can deal with different types of projects, such as tolling, expansion, and upgrading.

PI: Dr. Michael Walton (cmwalton@mail.utexas.edu)

Presenter: **Rydell Walthall**

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### Expanding Access to & Discovery of Research Information

By Kevyn Barnes and Michael Nugent

The TxDOT Research Library serves as the official repository for all publications produced through the cooperative research program. The library is a central location for reference materials that support transportation research and TxDOT. The library provides document delivery, literature search services, and a robust online search tool for users.

CTR Research Library (ctrlib@austin.utexas.edu)

Presenter: **Michael Nugent, M.S.**

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### Factors Affecting Microcracking in Pre-Stressed Concrete Girders

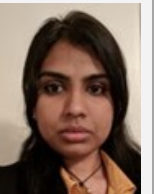
By Savitha Sagari Srinivasan and Dr. Raissa Douglas Ferron

This study identifies factors affecting microcracking and quantifies its relationship with the loss in durability and strength, and develops a prediction model of the remaining service life of these girders. The results from this study are expected to facilitate an increase in the understanding of the temporal behavior of microcracks in real world specimens.

PI: Dr. Raissa Douglas Ferron (rferron@mail.utexas.edu)

Presenter: **Savitha Sagari Srinivasan**

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### Incorporating Wildlife Crossings into TxDOT's Project Development, Design and Operations Processes

By Dr. Nan Jiang, Lisa Loftus-Otway, Dr. Mike Murphy, et al.

This study provides benefit-cost ratios for various animal-vehicle conflict (AVC) mitigation efforts across the TxDOT highway system. The study recommends specific language modifications to 18 TxDOT manuals. The project findings demonstrate that carefully planned and well-designed wildlife crossing structures can enhance traffic safety significantly.

PI: Dr. Nan Jiang (jiang@utexas.edu)

Presenter: **Nan Jiang, Ph.D.**

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### Modeling Individuals' Willingness to Share Trips with Strangers in an Autonomous Vehicle Future

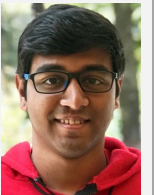
By Patricia Lavieri and Dr. Chandra Bhat

The study examines individuals' values of travel time (VTT) and develops the notion of willingness to share (WTS). The study results show that pooled shared autonomous vehicles (PSAVs) may have a large market penetration potential. This has substantial implications for addressing urban traffic congestion and improving safety.

PI: Dr. Chandra Bhat (bhat@mail.utexas.edu)

Presenter: **Aupal Mondal**

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### A Multivariate Model of Ride-Hailing Trip Characteristics in Dallas

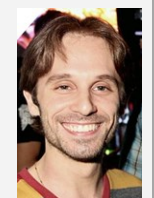
By Patricia S. Lavieri and Dr. Chandra Bhat

This study characterizes ride-hailing usage by investigating four dimensions of ride-hailing trips using the survey data from Dallas-Fort Worth (DFW), Texas. The study reveals that ride-hailing has the potential to fundamentally change the activity-travel landscape of individuals.

PI: Dr. Chandra Bhat (bhat@mail.utexas.edu)

Presenter: **Felipe Dias**

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### Revisiting Performance Metrics in Performance Grade (PG) Asphalt Binders and Recycled Asphalt

By Ramez Hajj, Angelo Filonzi, and Dr. Amit Bhasin

Asphalt binder is the most critical component of a flexible pavement that directly dictates its durability and serviceable life. This study identified and developed metrics that are more representative of the actual performance of virgin and reclaimed asphalt binders in the field.

PI: Dr. Amit Bhasin (a-bhasin@mail.utexas.edu)

Presenters:

**Angelo Filonzi**  
**Satyavati Komaragiri**  
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