Welcome

Welcome to the Tran-SET Conference at CRC 2018!

On behalf of the organizing committee, I am honored to welcome you to the inaugural Transportation Consortium of South Central States (Tran-SET) Conference held in the lively city of New Orleans, Louisiana.

Tran-SET is a University Transportation Center (UTC) comprising of 11 partnering institutions across Region 6 (AR, LA, NM, OK, and TX), with an aim to address the accelerated deterioration of our transportation infrastructure through the development, evaluation, and implementation of cutting-edge technologies, novel materials, and innovation construction management processes: from research to implementation. We believe that our focus on implementation makes us unique and our strong alliances with industry, academic, and government agencies will help us succeed and reach our goals.

The Tran-SET Conference will bring together academics, industry professionals, state DOTs, and other government agencies interested in solving transportation challenges facing Region 6. Attendees will be introduced to Tran-SET’s research, education, workforce development, and technology transfer activities. Attendees will also see a variety of technical contributions covering multiple transportation fields, including pavements, asphalt and concrete materials, structures, geotechnical, safety, intelligent transportation systems, and policy and planning. The Tran-SET Conference will host an exhibition showing some of the technologies that have been developed/utilized in our research projects.

Please enjoy the exhibition and the conference! Your presence is an indication that you are committed to making a positive difference, not only to our transportation industry, but also throughout your state and the country. We hope you have a productive meeting and enjoy all that New Orleans has to offer!

Marwa Hassan, Ph.D., PE Civil (VA)
Director of Tran-SET
CRC 2018 President
Keynote Speaker

Dr. Shawn Wilson, State Secretary of the Department of Transportation

Dr. Shawn Wilson was appointed Secretary of the Louisiana Department of Transportation and Development (DOTD) by Governor John Bel Edwards on January 11, 2016 after more than 10 years of executive service at DOTD.

Secretary Wilson earned a B.A. in Urban and Regional Planning from the University of Louisiana and holds a Master of Public Administration degree as well as a Ph.D. in Public Policy from the Nelson Mandela School of Public Policy and Urban Affairs from Southern University.

Since his appointment, Secretary Wilson has been a tireless advocate for new revenue, maximizing federal dollars available to Louisiana, advancing a balanced and comprehensive transportation policy for Louisiana, and ensuring the department is more collaborative in its work at every level.

Under his leadership, DOTD was successful at securing $60 million Fastlane Grant in 2016, obligating additional federal dollars on major I-10 widening from I-49 to New Orleans, the Baton Rouge I-10 bottleneck, and this January broke ground on widening I-10 from Highland to LA 73. Most recently, DOTD announced it would be pursuing new innovative funding in the form of GARVEE bonds to fund the widening of I-10 from the Mississippi River Bridge to the 10-12 split, a new I-10 Interchange at Loyola Drive to serve the new Louis Armstrong International Airport terminal under construction, access from I-20 directly to the Barksdale Air Force Base, and that Louisiana will seek to begin its first public-private-partnership on LA 23.

Shawn and his wife, Rocki, reside in Lafayette. Together they have two children, Shawn Denise Arceneaux and Star Scout Joshua Bakari.
**Tran-SET Team**

**CENTER DIRECTOR**
Dr. Marwa Hassan

**ADMINISTRATIVE STAFF**
Christopher Melson
Dr. Jose Milla

**ASSOCIATE DIRECTORS**
Dr. Charles Berryman
Dr. Susan Bogus
Dr. Ibrahim Karaman
Dr. Craig Newton
Dr. Stefan Romanoschi
Dr. Samer Dessouky
Dr. Raghava R. Kommalapati
Dr. Zahid Hossain
Dr. Samir A. Ahmed
Dr. Gholam Ehteshami
Timothy Dykes

**PROGRAM DIRECTORS**
Dr. Paola Bandini
Dr. Sam Cooper
Dr. Mostafa Elseifi
Dr. Anand J. Puppala
Dr. Louay Mohammad
Dr. Tyson Rupnow
Dr. Mahmoud Reda Taha

**PROGRAM COORDINATORS**
Dr. Chao Wang
Dr. Christofer Harper

**CENTER ADVISORY BOARD CHAIR**
Eric Kalivoda

**CENTER ADVISORY BOARD**
Susan Schowen
Ava Dejoie
Joe Accardo
Jamie Setze
W. Dennis Epps
Kathy Trahan
Jon Long
Connie Fabre
David F. Mayer
Bryan Sims
Brett Haggerty
Fadi N. Faraj
David Hadwiger
Aan Stevenson
Elisha Wright-Kehner

*Please visit our website (http://transet.lsu.edu/) for additional details and contact information of our members and staff.*

---

**ABOUT TRAN-SET**
The theme of the Center is “Solving Emerging Transportation Resiliency, Sustainability and Economic Challenges through the Use of Innovative Materials and Construction Methods: From Research to Implementation.” The Center’s Mission is to support all phases of research, technology transfer, workforce development, and outreach activities of emerging technologies that can solve transportation challenges in Region 6.

**ABOUT REGION 6**
The combined Region 6 UTC team represents a collaborative partnership between nine major institutions and two community colleges. This partnership will combine the distinct characteristics and strengths of each institution to deliver a Center with unique capabilities to tackle regional transportation challenges.
ABOUT THE INTERCONTINENTAL HOTEL
InterContinental New Orleans is located in the heart of New Orleans’ Central Business District, where shopping, entertainment, and the city’s best restaurants meet. Just steps away from the French Quarter and Warehouse District, InterContinental New Orleans is a symbol of unpretentious luxury and hosts discerning travelers from all over the world.

ABOUT THE STEAMBOAT NATCHEZ
True to tradition in every detail, boarding the NATCHEZ makes you feel as if you have entered another era. The captain barks his orders through an old-time hand-held megaphone. The calliope trills a melody into the air while the great wheel, 25 tons of white oak, churns the heavy waters of the Mississippi. You soon find yourself slipping into a sense of the old, vast and timeless river.

Program at a Glance

TUESDAY, April 3, 2018

8:00am - 5:00pm Conference Registration
Grand Staircase (2nd Floor)

11:00am - 12:00pm Student Poster Competition
Frenchman Room II (2nd Floor)

12:00pm - 1:30pm Lunch
LaSalle Ballroom (3rd Floor)

1:30pm - 4:30pm Student Poster Competition (cont.)
Frenchman Room II (2nd Floor)

1:30pm - 5:30pm Tran-SET Business Meeting (Invitation Only)
Frenchman I (2nd Floor)

5:30pm - 6:00pm Break and Travel to Steamboat Natchez Riverboat Banquet
Transportation will be provided at the entrance of the Intercontinental Hotel at 4:30pm to 5:30pm

6:00pm - 9:00pm Welcome Reception
Steamboat Natchez Riverboat Cruise (Invitation Only)

WEDNESDAY, April 4, 2018

7:00am - 12:00pm Conference Registration
Grand Staircase (2nd Floor)

7:00am - 8:00am Continental Breakfast
Le Salon Pre-Function Area (3rd Floor)

8:00am - 9:00am Keynote Speaker Presentation
LaSalle Ballroom (3rd Floor)
Remarks by Dr. Charles Berryman – Louisiana State University; Speech by Dr. Shawn Wilson – Louisiana Department of Transportation and Development

9:00am - 9:10am Break and Travel to Session 1

9:10am - 10:30am Technical Session 1
Session 1A: Intelligent Transportation Systems – Frenchman I (2nd Floor)
Session 1B: Pavements – Frenchman II (2nd Floor)
Program at a Glance Contd.

WEDNESDAY, April 4, 2018

10:30am - 10:40am  Break and Travel to Session 2
10:40am - 12:00pm  Technical Session 2  
   Session 2A: Policy and Planning – Meloprene (2nd Floor)  
   Session 2B: Geotechnical – Frenchman II (2nd Floor)
12:00pm - 1:30pm  Lunch  
   LaSalle Ballroom (3rd Floor)
1:30pm - 1:40pm  Travel to Session 3
1:40pm - 3:20pm  Technical Session 3  
   Session 3A: Structures – Meloprene (2nd Floor)  
   Session 3B: Asphalt Materials – Frenchman II (2nd Floor)
3:20pm - 3:30pm  Break and Travel to Session 4
3:30pm - 5:10pm  Technical Session 4  
   Session 4A: Structures – Meloprene (2nd Floor)  
   Session 4B: Concrete Materials – Frenchman II (2nd Floor)
5:30pm  Tran-SET Conference concludes. Thanks for joining us!

Student Poster Competition

TUESDAY | 11:00am – 12:00pm; 1:30pm - 4:30pm | Frenchman II

Please join us as Tran-SET-sponsored students present on their research and participate in a poster competition. 17 posters from 7 universities will be judged by a panel – and certificates for first, second, and third prize will be awarded. We are also asking attendees to participate in the competition – by judging and voting for their favorite. A Fan Favorite will also be awarded!
Session 1A: Intelligent Transportation Systems (ITS)

Moderator: Julius Codjoe | Frenchman I (2nd Floor)

As transportation agencies are asked to increasingly maximize the benefits of their investments, they are continually exploring more innovative, lower-cost solutions. This session will investigate such solutions for a wide-range of transportation issues: mobility, safety, and emissions. During this session, Tran-SET research and analysis will be presented on: (1) improving operational performance at a common chokepoint in Baton Rouge, LA (Mississippi River Bridge), (2) decreasing crashes at urban intersections in San Antonio, TX, (3) improving overall freight mobility, and (4) decreasing freight emissions.

Improving the Transportation System Performance in the Baton Rouge Area, LA, through Supply- and Demand-Oriented Measures for Mitigating Traffic Congestion
Samir Ahmed – Oklahoma State University
Osama Osman – Louisiana State University
Julius Codjoe – Louisiana Transportation Research Center

Relationship between Road Network Characteristics and Traffic Safety
Hatim Sharif, Samer Dessouky – University of Texas at San Antonio

Study the Impacts of Freight Consolidation and Truck Sharing on Freight Mobility
Tieming Liu, Devaraja Radha Krishnan, Chaoyue Zhao – Oklahoma State University

Emission Analysis of Diesels Derived from Biomass used for Hybrid Transportation Fleet
Hongbo Du, Arndreya Howard, Raghava Kommalapati – Prairie View A&M University

Session 1B: Pavements

Moderator: Stefan Romanoschi | Frenchman II (2nd Floor)

One of the four major research themes of Tran-SET is Preserving the Existing Transportation System. In order to adequately preserve the existing transportation system, it is critical to understand the current condition and to properly monitor the system. This provides the necessary data as to provide cost saving maintenance strategies. This session presents a variety of structural detection, evaluation, and health monitoring methods related to pavements.

Non-Destruction Detection of Moisture Damage in Pavements Using Ground Penetrating Radar
Mohammad Bashar, Mostafa Elseifi, Momen Mousa – Louisiana State University
Zhongjie Zhange – Louisiana Transportation Research Center

Evaluation of Comparative Damaging Effects on Flexible Pavements from Multiple Truck Axles
Stefan Romanoschi, Mohsen Talebsafa, Constantin Popescu – University of Texas at Arlington
Athanassios T. Papagiannakis, Rajesh Kaphe – University of Texas at San Antonio

Simplified Approach for Structural Evaluation of Flexible Pavements at the Network Level
Mena Souliman, Karthikeyan Loganathan, Mayzan Isied – University of Texas at Tyler
Stefan Romanoschi – University of Texas at Arlington
Samer Dessouky – University of Texas at San Antonio

Structural Health Monitoring using Magnetic Shape Memory Alloy Cables in Concrete
Allen Davis, Mirimalid Mrisayar, Emery Sheahan, Darren Hartl – Texas A&M University
Technical Sessions Contd.

WEDNESDAY  |  10:40am – 12:00pm  |  Session 2

Session 2A: Policy and Planning
Moderator: Christopher Melson | Melopemene (2nd Floor)
As transportation practitioners and researchers, it is important to think of the transportation system holistically when addressing issues; such as the user’s perspective, equity, and interaction with system components. This session investigates a variety of user-related issues and potential solutions in Region 6 (AR, LA, NM, OK, and TX), such as: (1) distracted driving in LA, (2) sustainable and equitable practices for financing pedestrian sidewalks in Albuquerque, NM, (3) workforce recruitment, retention, and promotion at transportation agencies, and (4) closure of railroad grade crossings.

Incentive Program for Closure of Grade Crossing in the United States: A State-of-the-Practice
Julius Codjoe – Louisiana Transportation Research Center
Samira Soleimani, Seth Ledet – Louisiana State University

Current Practices for Recruiting and Retaining Qualified Workers at State Transportation Agencies
Julia Hernandez, Christofer Harper – Louisiana State University
Kristal Metro, Susan Bogus Halter – University of New Mexico

Sustainable and Equitable Financing for Pedestrian Infrastructure Maintenance and Reconstruction
Alexis Corning-Padilla, Gregory Rowangould – University of New Mexico

Investigating Problem of Distracted Drivers on Louisiana Roadways
Xiaoduan Sun, M. Ashifur Rahman, Ming Sun, Yi He – University of Louisiana at Lafayette

Session 2B: Geotechnical
Moderator: Samer Dessouky | Frenchman II (2nd Floor)
One can imagine the many and wide-ranging geotechnical issues facing transportation infrastructure in Region 6: from clay soils, marshlands, to coastal zones and extreme weather events. This session presents on a broad range of geotechnical-related topics relevant to the southeastern United States: (1) investigating various Geopolymer-based compositions for stabilizing base and subgrade foundations using natural and waste materials abound in Region 6, (2) forming a knowledge base of surface fault locations relating to critical infrastructure in the coastal zone of LA, (3) developing a framework for identifying high-risk locations that may fail through slope stability issues in a changing climate, and (4) evaluating current and emerging in-situ tests methods/devices to inform development of an improved automated in-situ testing device for compacted aggregates.

Development of Field-friendly Mechanical Characterization Method for Compacted Unbound Aggregates
Douglas Cortes, Paola Bandini – New Mexico State University

Environmentally-friendly and Sustainable Soil Stabilization for Transportation Infrastructure
Rini Samuel, Aritra Banerjee, Ananda Puppala – University of Texas at Arlington
Oscar Huang, Miladin Radovic – Texas A&M University

Predication and Rehabilitation of Highway Embankment Slope Failures in a Changing Climate
Navid Jafari, Jack Cadigan – Louisiana State University
Burak Boluk, Tejo Bheemasetti, Anand Puppala – University of Texas at Arlington

Understanding the Influence of Subsurface Geologic Faulting on Transportation Infrastructure, Southeast Louisiana
Chris Young, Nancye Dawers – Tulane University
Elizabeth McDade, David Culpepper – The Culpepper Group, LLC
Technical Sessions Contd.

WEDNESDAY | 1:40pm – 3:20pm | Session 3

Session 3A: Structures

Moderator: Michele Barbato | Melopmene (2nd Floor)

In conjunction with Session 4A, this session further explores Tran-SET’s research theme of Preserving the Existing Transportation System by showcasing research projects involving inspection techniques, health monitoring systems, and novel materials/techniques to improve resiliency and durability of transportation structures. Specifically, this session presents on: (1) developing cost-effective shape memory alloys with structural health monitoring capabilities, (2) developing a bridge response model to mitigate risk and improve resiliency to extreme weather events, (3) developing a system to assist engineers in the inspection of bridges using unmanned aerial vehicles, and (4) developing a technique to retrofit corroded metal culverts using glass fiber reinforced polymers (GFRP).

Integrated Health Monitoring and Reinforcement of Transportation Structures with Optimized Low-Cost Multifunctional Braided Cables
H. Ozcan, J. Ma, I. Karaman – Texas A&M University

Coastal Bridges under Hurricane Stresses along the Texas and Louisiana Coast
Adolfo Matmaros, Firat Testik – University of Texas at San Antonio

Design Consideration in the Use of Unmanned Aerial Vehicles for the Purpose of Bridge Inspection
Paul Darby – University of Louisiana at Lafayette

Retrofitting Corroded Metal Culverts using GFRP Composites
Rahulreddy Chennareddy, Susan Bogus Halter, Mahmoud Red Taha – University of New Mexico

Multi-Hazard Risk Analysis of Bridges Considering Climate Change
Omid Khandel, Mohamed Soliman – Oklahoma State University

Session 3B: Asphalt Materials

Moderator: Zahid Hossain | Frenchman II (2nd Floor)

One of the four major research themes of Tran-SET is Enhancing the Durability and Service Life of Infrastructure. This session explores this theme by applying cutting-edge technologies and novel materials to asphalt materials. This session presents on: (1) evaluating the feasibility of nanoclays to enhance performance of asphalt binder, (2) developing a test method to characterize modified asphalt binders and quantify degradation due to aging, (3) developing a test protocol to quantify moisture susceptibility for asphalt pavements, and (4) developing an approach to address the aging of asphalt binders and improve performance of the mixture against cracking and rutting.

Use of Nanoclays as Alternatives of Polymers toward Improving Performance of Asphalt Binder
M.M. Tariq Morshed, Mohammad Nazmul Hassan, Zahid Hossain – Arkansas State University

Evaluation of Polymer Degradation Due to Aging in Asphalt Binder and Determination of Polymer Content in Asphalt Emulsion using an Extensional Deformation Test
Roksana Hossain, Waleed Mohammed Omer, Nazimuddin Wasiuddin – Louisiana Tech University

Evaluation of Effects of Moisture on Asphalt Pavements
Sumon Roy, Zahid Hossain – Arkansas State University

Enhancing the Durability and the Service Life of Asphalt Pavements through Innovative Light-induced and Self-Healing Materials
Sharareh Shirzad, Marwa Hassan, Max Aguirre, Ioan Negulescu, Louay Mohammad – Louisiana State University
Sam Cooper, Jr. – Louisiana Transportation Research Center

Development of Self-healing and Rejuvenating Mechanism for Asphalt Mixtures Containing Recycled Materials
Max Aguirre, Marwa Hassan, Sharareh Shirzad, Ioan Negulescu, Louay Mohammad – Louisiana State University
Sam Cooper, Jr. – Louisiana Transportation Research Center
Session 4A: Structures

Moderator: Craig Newson | Melopemne (2nd Floor)

In conjunction with Session 3A, this session further explores Tran-SET’s research theme of Preserving the Existing Transportation System by showcasing research projects involving various health monitoring systems and novel materials/techniques to improve durability of transportation structures. Specifically, this session presents on: (1) developing and investigating ultra-high performance fiber-reinforced concrete (UHP-FRC) for fast, sustainable, and conventional concrete repair through a series of laboratory tests, (2) developing cost-effective technologies such as drones and augmented reality tools for structural health monitoring, and (3) developing and evaluating a thermoelectric generator prototype, that generates electricity from the temperature gradient of pavements and its sublayers.

Use Ultra-High Performance Fiber-Reinforced Concrete (UHP-FRC) for Fast and Sustainable Repair of Concrete
Ashish Karmacharya, Shih-Ho Chao – University of Texas at Arlington

Deterministic and Probabilistic Modeling Framework of Electrochemical/Corrosion Behavior of Reinforced Concrete Specimens Exposed in Marine Environments
C. Kim, A.I. Karayan, H. Castaneda – Texas A&M University
D. Choe – Prairie View A&M University; P. Castro – Cinvestav
A. Okeil – Louisiana State University
M. Taha – University of New Mexico

High School Students Building and Using Sensors Towards Smart Management of Transportation Systems
Fernando Moreu, Christopher Lippitt, Rhytham Soni, Ali Ozdagli, Bideng Liu, Xiaomeng Li, Emmanuelle Ayorinde, Su Zhang – University of New Mexico

Development of a Thermal Energy Harvester for Powering Structural Health Monitoring Systems in Remote Areas
Utpal Datta, Andrew Ortega, Samer Dessouky, A.T. Papagiannakis – University of Texas at San Antonio
Aydin Karsilayan – Texas A&M University

Session 4B: Concrete Materials

Moderator: Tyson Rupnow | Frenchman II (2nd Floor)

This session further explores Tran-SET’s research theme of Enhancing the Durability and Service Life of Infrastructure. It investigates the application of novel materials to increase the durability of concrete materials and concrete structures, while using locally available products/by-products; effectively constituting these high-performing materials more cost-effective and implementable. Join us to learn more about: (1) testing the feasibility of rice husk ash as a suitable supplementary cementitious material, (2) optimizing engineered cementitious composites (ECCs) for potential field implementation using local materials, and (3) developing ultra-high performance concrete (UHPC) produced with local materials for bridge deck overlay applications.

Use of Rice Hull Ash (RHA) as a Sustainable Source of Construction Materials
Kazi Tamzidul Islam, Zahid Hossain – Arkansas State University
Mohammad Badrul Ahsan – Tennessee Department of Transportation

Low Fiber Content PVA-ECC for Transportation Infrastructure
Gabriel Arce, Hassan Noorvand, Marwa Hassan – Louisiana State University
Tyson Rupnow – Louisiana Transportation Research Center

UHPC Overlays on Concrete Bridge Decks
William Toledo, Ahmed Al-Basha, Craig Newton, Brad Weldon – New Mexico State University

Characterizing and Understanding Self-Healing Microcapsules Embedded in Reinforced Concrete Structures Exposed to Corrosive Environments
J. Milla, M. Hassan – Louisiana State University

The Influence of Osmotic Pressure on the Deformation of Concrete Exposed to Sulfate Solution
Syeda Rahman – University of Texas at Austin
Zachary Grasley – Texas A&M University
Stay Connected with Tran-SET!

- transet@lsu.edu
- https://www.facebook.com/utclsu
- http://transet.lsu.edu/
- https://twitter.com/utclsu

Access Conference Proceedings Online!

You can access the full conference proceedings, including the extended abstracts for each presented research project by visiting our website (http://transet.lsu.edu/2018-tran-set-conference) or by scanning the QR code seen here!