Vivek Tandon, Ph.D., P.E.

Education

- Ph.D., The Pennsylvania State University (PSU), University Park, December 94.
- M.S., The University of Texas at El Paso (UTEP), El Paso, August 90.
- Post Graduate Diploma in Business Administration, IPM, Lucknow, India, January 88.
- B. Tech, The Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, India, July 85.

Professional License

- **Professional Engineer (PE)** Texas License No. 88219 since 2001

Professional Experience

- **Prof., Assoc. Prof., Asst. Prof., and Res. Engineer**, Dept. of Civil Engineering, UTEP, Oct. 94 – Present
- **Undergraduate Program Director,** Dept. of Civil Engineering, UTEP, Sep. 07 – Aug. 09
- **Commercial Officer,** NAFED (India), Feb. 86- Aug. 88.

Research

Patent: United States Patent No. 7,162,929 issued on Jan. 16, 2007, on "System and Method for Field Testing a Tack Coat Layer."

Research Interests: My research revolves around the vital concept of sustaining communities through resilient infrastructure. I aim to enhance productivity, minimize disruptions during stressful conditions, prolong the life of existing infrastructure, and reduce maintenance frequency. My primary focus is on developing and assessing sustainable materials for highway infrastructure. These materials aim to reduce the carbon footprint compared to traditional ones like asphalt, aggregate, asphalt concrete, soils, and Portland cement concrete. I'm also involved in the research of innovative materials such as geopolymers.

In addition to my primary focus, I also delve into the following areas: (i) Assessing the impact of extreme climate events (e.g., flooding) on transportation infrastructure, (ii) Utilizing computational tools for the evaluation of complex infrastructure materials, (iii) Exploring sustainable development strategies for smart cities, (iv) Modeling and simulating infrastructure systems.

I have secured funding for my projects from various organizations, including the Texas Department of Transportation, Department of Homeland Security, Federal Highway Administration, National Cooperative Highway Research Program, US Department of Transportation, and National Nuclear Security Administration. Collaborations with faculty members from various departments and universities further promote sustainable development.

Educational Initiatives: I've also been involved in educational efforts, including receiving an NSF grant. This grant focused on educating students with the motto of "more, faster, and better." Currently, I'm actively engaged in developing modular online courses to expand educational opportunities.

Pending Research Proposals (Outside Dept. and Outside Univ. are shown in Bold Italics)

None

Active Research Projects (Outside Dept. and Outside Univ. are shown in Bold Italics)

Project Title: ***NRT: Design for Equity in Policies, Products, Processes, Places, and Pedagogy for People: A Transdisciplinary Approach to Graduate Research Training (Canceled by DOGE/NSF)***
Budget: $2,992,878
Agency: National Science Foundation
Researchers: PI: P. R Pennathur (IMSE), CO-PI: A. Pennathur (IMSE), J.M. Strobel (TE), T. D. Mangadu (PHS), S. R. Singamaneni (Physics), Senior Personnel: Vivek Tandon (CE), E. D. Smith (IMSE), M. Picard-Ami (PS&PA), Corral, Guadalupe (REAS)
Year(s): September 2024 – *August 2028*

Project Title: **Influence of Climate Change Augmented with Extreme WeatherEvents on Coastal Resilience of Transportation Infrastructure**
Budget: $ 114,890
Agency: Department of Homeland Security
Researchers: PI: Vivek Tandon;
Year(s): January 2024 (starting date) – *October 2025*

Project Title: ***The Rio Grande Consortium for Advanced Research on Exascale Simulation (Grande CARES)***
This project has been transferred to Texas A&M Kingsville
Budget: $4,994,135 (UTEP funding amount 1,250,000)
Agency: US Department of Energy
Researchers: *Main Lead UNM.* UTEP PI: V. Kumar (ME); UTEP CO-PI: Arturo Bronson (ME), Deepak Tosh (CS), *Vivek Tandon (CE).*
Year(s): October 2022 – *September 2027*

Project Title: ***Explore STEM Camps Summer for Students with Disability***
Budget: **This project has been continuing for the last several years with an annual budget of roughly 55,000 per year**
Agency: Texas Workforce Development
Researchers: PI: *Vivek Tandon (CE)* and B. Argus-Calvo (COE). *Initially, the PI of the project was Dr. Vinod Kumar from Mechanical Engineering.*
Year(s): March 2020 – *Current*

Project Title: ***Broadening National Foundation on Advanced Modeling & Simulations at HBCU/MSI***
Budget: $44,712
Agency: US Department of Energy

Researchers: PI: Vivek Tandon; CO-PI: Arturo Bronson (ME) and Natasha Sharma (MS). *Vinod Kumar (ME) was the original PI.*
Year(s): September 2022 – *December 2025*

Completed Research Projects ***(Outside Dept. and Univ. are shown in Bold Italics)***

Project Title: **Identification of Critical Transportation Infrastructure to Enhance Resiliency During and After Hydro-meteorological Event**
Budget: $ 61,823
Agency: Department of Homeland Security
Researchers: PI: Vivek Tandon
Year(s): March 2019 – *October 2020*

Project Title: ***Pre-Employment Transition Services Explore Stem Camps***
Budget: $ 32,690
Agency: Texas Workforce Development
Researchers: PI: V. Kumar (ME); CO-PI: *Vivek Tandon (CE),* N. Agarwal (CASS), B. Argus-Calvo (COE)
Year(s): March 2019 – *February 2020*

Project Title: **Evaluation of Techniques to Enhance the Water Infiltration Rate at Water Retention Ponds**
Budget: $ 65,485
Agency: El Paso Water
Researchers: PI: Vivek Tandon;
Year(s): October 2016 – *June 2018*

Project Title: **Development of Decision-Making Framework for Enhancing Climate Resiliency of Transportation Infrastructure**
Budget: $ 25,000
Agency: Department of Homeland Security
Researchers: PI: Vivek Tandon
Year(s): June 2018 – *August 2018*

Project Title: ***Understanding Climate Change Impact on Highway Hydraulic Design Procedures***
Budget: $ 90,000
Agency: Southern Plans Transportation Center
Researchers: PI: Vivek Tandon; CO-PI: *V. Kumar (ME)*
Year(s): January 2016 – *August 2018*

Project Title: ***Understanding the Consequences and Costs of Climate Change to the Texas Department of Transportation***
Budget: $ 249,903

Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *V. Kumar (ME),* S. Nazarian, C. M. Ferregut
Year(s): June 2015 – *August 2017*

Project Title: ***Cost Effective Alternatives to Seal Coats***
Budget: $ 448,765
Agency: Texas Department of Transportation
Researchers: PI: *A. Bhasin (UT Austin)*; CO-PI Vivek Tandon
Year(s): January 2015 – *August 2017*

Project Title: **Use of Geocells in Pavement Design**
Budget: $ 329,671
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian
Year(s): September 2014 – *August 2017*

Project Title: ***Cultivating a Culture of Technical Success and Leadership Excellence Among Hispanic Engineering Students: A Transformative Recruitment Model for Attracting High Achievers***
Budget: $ 579,697
Agency: Division of Undergraduate Education, National Science Foundation
Researchers: PI: Vivek Tandon CO-PI: *Luis Contreras-Sapien (IE)*
Year(s): September 2009 – *August 2015*

Project Title: **Soil Stabilization Using Microbial Activity**
Budget: $79,956
Agency: Rutgers University/US Department of Transportation
Researchers: PI: Vivek Tandon
Year(s): June 2013 – August *2014*

Project Title: **RO Concentrate Minimization and Sustainable Utilization of By-Product Solids**
Budget: $25,000
Agency: Anita Mochan Loya Fund, UTEP
Researchers: PI: Anthony J. Tarquin; CO-PI: Vivek Tandon
Year(s): June 2012 – January *2013*

Project Title: **Performance Life of Various HMA Mixes in Texas**
Budget: $306,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon, Carlos Chang Albitres, and Imad Abdallah
Year(s): September 2011 – *August 2013*

Project Title: ***IUSSTF/JC/Highway & Airport Pavement Engg./99-2007/2008-09***
Budget: $28,000

Agency: Indo-US Science and Technology Forum
Researchers: PI: *M. Amarnatha Reddy, IIT KGP*; CO-PI: *Rajib Mallick (WPI)* , Vivek Tandon, and *Veeraraghavan, IIT Madras*
Year(s): September 2008 – *March 2011*

Project Title: **Development of a New Mix Design Method and Specifications Required for the Asphalt Treated Base**
Budget: $237,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Imad Abdullah
Year(s): September 2008 – *August 2010*

Project Title: **Design, Constructability Review and Performance of Dual Base Stabilizer**
Budget: $229,098
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Deren Yuan
Year(s): September 2006 – *August 2008*

Project Title: ***Role of Coarse Agg. Point and Mass Strength on Resistance to Load in HMA***
Budget: $273,000 (UTEP Share $ 143,000)
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon, and *Eyad Masad (TTI)*
Year(s): September 2005 – *August 2007*

Project Title: **Use of NDT Equipment for Construction Quality Control of HMAC**
Budget: $134, 781
Agency: Arizona Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon
Year(s): October 2004- *June 2006*

Project Title: ***Guidelines for Selecting HMA and Evaluation of Polymer-Modified Mixes***
Budget: $313,000 (UTEP Share $ 160,000)
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian, and *Jorge Prozzi (UT Austin)*
Year(s): September 2003 – *August 2006*

Project Title: **Development of Tack Coat Field Acceptance Criteria**
Budget: $50,000
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon
Year(s): September 2004- *August 2005*

Project Title: ***Mix Design and Performance Testing of Crumb Rubber Modified-Hot Mix Asphalt Concrete***
Budget: $200, 748
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian, and *Kamil Kaloush (ASU)*
Year(s): September 2003- *August 2005*

Project Title: **Feasibility Study for Continuous Deflection Testing for Texas Pavements**
Budget: $55, 792
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian
Year(s): September 2003- *August 2004*

Project Title: ***Improved Test Procedure for Determining the Moisture Damage Susceptibility of Bituminous Pavements***
Budget: $400, 000 (UTEP Share $ 122,000)
Agency: National Cooperative Highway Research Program
Researchers: PI: *Mansour Solemanian (PSU)*: CO-PI: Vivek Tandon, *Maghsoud Tahmoressi (PaveTex)*, and *Raymond Banaquist (AAT)*
Year(s): March 2002- *August 2005*

Project Title: **Geophysical Applications in Highways**
Budget: $29,502
Agency: Federal Highway Administration
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian
Year(s): August 2002 – *July 2004*

Project Title **Development of an Objective Field Test to Determine Tack Coat Adequacy**
Budget: $88, 114
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon
Year(s): September 2002- *February 2004*

Project Title: **Evaluation of State Highway Agency Adoption of Practices for Utilizing SUPERPAVE Asphalt Materials and Mix Design**
Budget: $68,396
Agency: Federal Highway Administration
Researchers: PI: Vivek Tandon
Year(s): August 2001 – *January 2003*

Project Title: **Development of Construction Management Course**
Budget: $30,000

Agency: 3D/International (Houston)
Researchers: PI: Carlos Ferregut; CO-PI: Vivek Tandon
Year(s): August 2002 – *December 2002*

Project Title: ***Mitigating Reflection Cracking in AC Overlays Over PCC Joints Using Geo-Synthetics***
Budget: $ 157, 130 (UTEP Share $ 52,325)
Agency: Federal Highway Administration
Researchers: PI: *Khaled Sobhan (NMSU)*; CO-PI: Vivek Tandon
Year(s): August 2000 – November 2002

Project Title: ***Identification of Alternative Pavement Binders and/or Pavement Materials***
Budget: $60, 019
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *Lawrence E. Murr (MME)*
Year(s): September 1999- August 2000

Project Title: **Evaluate the Reproducibility of the TxDOT FWD Fleet and Recommend Improvements to the FWD Calibration Procedure**
Budget: $295, 436
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon
Year(s): September 1999- August 2002

Project Title: ***Predicting Hot Mix Performance from Measured Properties***
Budget: $100, 000 (UTEP Share $ 40,000)
Agency: Texas Department of Transportation
Researchers: PI: *Emmanuel Fernando (TTI)*; CO-PI: Soheil Nazarian, and Vivek Tandon
Year(s): September 1999- August 2000

Project Title: **Calibration Process for Devices Used for Structural Capacity Measurement**
Budget: $50, 000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon
Year(s): January 1999- August 2000

Project Title: **Performance Monitoring of Tire Chip Embankment**
Budget: $216, 219
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon, S. Nazarian, and S. A. Ashur
Year(s): March 1997- November 2000

Project Title: **Investigation of Electrokinetic Method to Reduce Sulfate Induced Heaving in Soils – A Laboratory Study**
Budget: $33, 661
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon
Year(s): September 1997- August 1998

Project Title: **Development of Structural Field Testing of Flexible Pavement Layers**
Budget: $160,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Deren Yuan
Year(s): September 1997- August 1999

Project Title: **Determining In-Place Engineering Properties of Lime or Cement Stabilized Pavement Layers**
Budget: $46,306
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Deren Yuan
Year(s): September 1996- August 1997

Project Title: ***Development of Instrumentation Testing and Calibration Procedures and Facilities for Pavement Measurements***
Budget: $140,306 (UTEP Share 45,000)
Agency: Texas Department of Transportation
Researchers: PI: *Roger Walker (UT Arlington)*; CO-PI: Soheil Nazarian and Vivek Tandon
Year(s): September 1996- August 1997

Project Title: **Evaluation of ECS for Predicting Moisture Susceptibility of HMAC**
Budget: $184,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Miguel Picornell
Year(s): September 1994- August 2000

Project Title: **Evaluation and Guidelines for Drainable Bases**
Budget: $128,029
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Soheil Nazarian and Vivek Tandon
Year(s): September 1994- August 1996

Project Title: ***Recycled Materials in Vertical Moisture Barriers***
Budget: $29,000
Agency: Texas Department of Transportation
Researchers: PI: *Kent Wray (Texas Tech)*; CO-PI: Miguel Picornell and Vivek Tandon
Year(s): September 1994- August 1996

Unfunded Research Proposals ***(Outside Dept. and Outside Univ. are shown in Bold Italics)***

Project Title: ***Excellence in Research: Microbially Induced Calcium Carbonate Precipitation for Sustainable Production of Portland Cement Concrete***
Budget: $921,998 (UTEP funding amount 225,000)
Agency: NSF-EiR
Researchers: *Main Lead PVAMU.* R. Ramakrishnan UTEP PI: *Vivek Tandon (CE).*
Proposed Year(s): January 2025 – December *2027*

Project Title: ***Sustainable Drying of Bio-Mass using CSP, Machine Learning, and Net Zero Techniques***
Budget: $399,998
Agency: US Department of Agriculture
Researchers: PI: *Vivek Tandon (CE)* and Co-PI: V. Kumar (ME)
Proposed Year(s): October 2023 – *September 2027*

Project Title: ***Modeling and Simulation Center for Resilience Enhancement and GHG Reduction (MSC-REGR)***
Budget: $ 15,000,000
Agency: USDOT
Researchers: PI: Vivek Tandon, CO-PI: George Karniadakis (Brown), Paolo Gardoni (UIUC), Alex Mahalov (ASU), Vinod Kumar (ME); Rene Contreras (IMSE), Deepak Tosh and Shirley Moore (CS)
Proposed Year(s): November 2022 – October *2027*

Project Title: **Enhancing Resilience of EPWater Infrastructure in Northwest Region**
Budget: $ 138,364
Agency: El Paso Water
Researchers: PI: Vivek Tandon; CO-PI: Raed AlDuri *(CE),*
Proposed Year(s): August 2022 – *January 2024*

Project Title: ***Efficient Waste Pre-processing: Using CSP and Machine Learning***
Budget: $ 198,000
Agency: MSRDC
Researchers: PI: Vivek Tandon, CO-PI: Vinod Kumar (ME); Anthony Tarquin (CE)
Proposed Year(s): April 2022 – March *2024*

Project Title: ***21st Century Demographics Workforce Equipped with Modern Computational Tools to Systematically Solve Complex Engineering Problems Project***
Budget: $ 484,691
Agency: NSF
Researchers: PI: Vivek Tandon, CO-PI: V. Kumar (ME); S. C. Madathil (IMSE), R. AlDouri (CE), and P. Agarwal (CS)
Proposed Year(s): October 2022 – September *2025*

Project Title: ***Enabling "glocalization" and power equity through Community DER Adoption***
Budget: $ 380,748
Agency: MSI STEM Research & Development Consortium (NPO)
Researchers: PI: . S. C. Madathil (ISME); CO-PI: *Vivek Tandon (CE), A. Lopez* (IMSE)
Proposed Year(s): May 2022 – *April 2024*

Project Title: ***Development of Diversified Workforce to Enhance Resilience of Critical Transportation Infrastructure***
Budget: $ 469,986
Agency: Department of Homeland Security
Researchers: PI: Vivek Tandon; CO-PI Vinod Kumar (ME), S. C. Madathil (IMSE)
Proposed Year(s): December 2020 – *November 2022*

Project Title: ***Capturing Durability of High Recycled Binder Ratio (RBR) Asphalt Mixtures***
Budget: $ 749,998
Agency: National Highway Cooperative Research Program
Researchers: PI: Vivek Tandon; CO-PI Hussain Bahia (UWM) Zhanping You (MTU)
Proposed Year(s): February 2021 – *January 2024*

Project Title: ***Partnership in AI Research for Engineering & Science (PAIRES)***
Budget: $ 1,350, 000
Agency: US Department of Energy
Researchers: PI: Vinod Kumar (ME), CO-PI: Vivek Tandon
Proposed Year(s): January 2020 – *December 2022*

Project Title: ***The Consortium for Computational and Artificial Intelligence Research in Engineering and Science (C²AIRES)***
Budget: $ 5,000, 000
Agency: National Nuclear Security Agency US Department of Energy
Researchers: PI: Vinod Kumar (ME), CO-PI: Vivek Tandon, Krishna Kota, ME, NMSU, Peter Vorobieff, ME, UNM, Hamid Johari, ME, CSUN
Proposed Year(s): Oct. 2020 – *September 2025*

Project Title: **Establish TxDOT Transportation Resilience Planning Scorecard and Best Practices**
Budget: $ 399,856
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *J. Weidner,* and R. AlDauri
Proposed Year(s): September 2020 – *January 2023*

Project Title: ***Development of an Accurate Method of Structural Design of Overlaid Milled Pavements through Advanced Modeling and Field Testing***
Budget: $ 353, 878
Agency: Asphalt Institute Foundation

Researchers: PI: Rajib B. Malick (WPI), CO-PI: Vivek Tandon, E. R. Brown (NCT) , A. De, and M. El-KHakim (MC), L.M. Masciarell and iN. Karanjgaokar(WPI),
Proposed Year(s): January 2020 – *December 2022*

Project Title: **Evaluation of the Performance of Rumble Strips on Pavements Where Seal Coats Have Been Applied**
Budget: $ 299,999
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon
Proposed Year(s): June 2019 – *August 2021*

Project Title: **Synthesis of Engineered Cementitious Composites (ECC) for Applications in Texas**
Budget: $ 64,981
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon
Proposed Year(s): July 2019 – *June 2020*

Project Title: **Influence of Extreme Events on Resiliency of Watershed and Surrounding Critical Assets**
Budget: $ 48,964
Agency: El Paso Water
Researchers: PI: Vivek Tandon
Proposed Year(s): January 2018 – *Oct 2018*

Project Title: ***Development of Advanced Geopolymeric Materials Utilizing Agricultural Waste Useful for Infrastructural Applications***
Budget: $ 396,320
Agency: Indo US Science and Technology Endowment Fund (2017)
Researchers: PI: *S. Amritphale (CSIR-AMPRI Bhopal, India)*; CO-PI Vivek Tandon
Proposed Year(s): March 2018 – *February 2020*

Project Title: **Synthesis of Alternate Reinforcements for Enhanced Corrosion Resistance in TxDOT Bridges**
Budget: $ 64,969
Agency: Texas Department of Transportation
Researchers: PI: Guikuan Yue; CO-PI: Vivek Tandon, Devesh Misra
Proposed Year(s): September 2017 – *August 2018*

Project Title: **Developing Performance Specification for High Performance Concrete**
Budget: $ 444,995
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Devesh Misra
Proposed Year(s): September 2017 – *August 2020*

Project Title: **Planning the Next Generation of Seal Coat Equipment**

Budget: $ 735,154
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: V. Kumar, Thompson Sarkodi-Gyan, R. Alduri
Proposed Year(s): September 2017 – *August 2020*

Project Title: ***Center for Safe, Efficient and Reliable Preservation of Roads and Bridges***
Budget: $11,700,000 (UTEP Portion 1,875,000)
Agency: US Department of Transportation
Researchers: PI: Rajib Mallick; CO-PI: Vivek Tandon, M. Solaimanian (PSU), S. Brena (UMASS), E. Fini (NCA&T)
Proposed Year(s): September 2016 – *August 2021*

Project Title: **Maximize Savings and Minimizing Air Pollution with On-site Manufacturing of Embankment Soils (Deliverable Base)**
Budget: $ 309,875
Agency: Texas Department of Transportation
Researchers: PI: Wen-Whai Li; CO-PI: Vivek Tandon, Adeeba Raheem
Proposed Year(s): September 2016 – *August 2018*

Project Title: ***Understanding Interdependency of Resilient Transportation Infrastructure Development, Global Climate, and Local Air Pollution: A Holistic Approach***
Budget: $573,930
Agency: United States-India Educational Foundation
Researchers: PI: Vivek Tandon CO-PI: Wen-Whai Li, *Vinod Kumar (ME) and Amit Goel BITS-P (India)*
Proposed Year(s): September 2016 – *August 2019*

Project Title: ***Integration Of Peer-led Team Learning And Dynamic Cyberlearning Model To Evaluate Impact Of Peer-led Learning on Retention of Basic Engineering Knowledge Leading to Higher Undergraduate Retention***
Budget: $ 600,001
Agency: US Department of Education
Researchers: PI: Vivek Tandon CO-PI: *Vinod Kumar (ME)* and *L. Contreras (MSIE)*
Proposed Year(s): January 2016 – *December 2018*

Project Title: **Developing a Surface Drainage rating for inclusion in TxDOT's Asset Management System**
Budget: $ 174,387
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon CO-PI: Carlos Chang
Proposed Year(s): September 2015 – *August 2017*

Project Title: **Innovations Around Successful Lettings**
Budget: $ 104,108
Agency: Texas Department of Transportation
Researchers: PI: Austin Marshall CO-PI: Adeeba A. Raheem and Vivek Tandon
Proposed Year(s): September 2015 – *January 2017*

Project Title: **Use of Geothermal Energy for De-icing Approach Pavement Slabs and Bridge Decks**
Budget: $ 49,999
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon CO-PI: *V. Kumar (ME)*
Proposed Year(s): September 2014 – *August 2015*

Project Title: ***Engineering the Properties of Asphalt Mixtures Using Carbon Nanotubes***
Budget: $ 239,955
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *Ramana Chintalapalle (ME)*
Proposed Year(s): September 2014 – *August 2016*

Project Title: ***EXP: Explore, assess, and refine (EAR) personalized cyber-interventions to alleviate learning barriers***
Budget: $ 549,942
Agency: Division of Cyber-Learning Infrastructure, National Science Foundation
Researchers: PI: *Vinod Kumar (ME)* CO-PI: Vivek Tandon, *Luis Everett (ME)*
Proposed Year(s): September 2014 – *August 2017*

Project Title: **Perf. Evaluation, Specification, and Implementation of Trackless Tack**
Budget: $ 215,387
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon
Proposed Year(s): September 2013 – *February 2015*

Project Title: ***Sodium Silicates: Alternative Binders for Highways***
Budget: $227,778
Agency: Federal Highway Administration
Researchers: PI: Vivek Tandon, CO-PI: Soheil Nazarian, Arturo Bronson (M. E.)
Proposed Year(s): Sept. 2013 – May 2014

Project Title: ***Development of an American-Indo Collaborative Program for Sustainable Transportation Systems***
Budget: $748,659
Agency: US INDIA EDUCATIONAL FOUNDATION (INTL)
Researchers: PI: Vivek Tandon; CO-PI: Carlos Ferregut, *M. A. Reddy, IIT Kharagpur*
Proposed Year(s): July 2013 – June 2016

Project Title: ***Perf. Studies and Future Directions for Mixes Containing RAP and RAS***
Budget: $532,370
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon CO-PI: Soheil Nazarian; C. Chang Albitres, and *J. Prozzi, UT Austin*
Proposed Year(s): September 2012 – *August 2015*

Project Title: ***Establishing Defensible Laboratory Curing Protocols for HMA***
Budget: $348,655
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon CO-PI: Soheil Nazarian and Jose Garibay
Proposed Year(s): September 2012 – *August 2015*

Project Title: ***Validation of TxDOT Flexible Pavement Skid Prediction Model***
Budget: $340,506
Agency: Texas Department of Transportation
Researchers: PI: Carlos Chang Albitres; CO-PI: Soheil Nazarian; Vivek Tandon and *Jorge Prozzi, UT Austin*
Proposed Year(s): September 2012 – *August 2014*

Project Title: **Development of a Procedure for Gathering and Storing Pavement Layer and Work History Information**
Budget: $285,121
Agency: Texas Department of Transportation
Researchers: PI: Carlos Chang Albitres; CO-PI: Soheil Nazarian; Vivek Tandon and Raed Aldouri
Proposed Year(s): September 2012 – *August 2014*

Project Title: **New HMA Shear Resistance and Rutting Test for Texas Mixes**
Budget: $313,478
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Imad Abdallah
Proposed Year(s): September 2012 – *August 2014*

Project Title: ***Performance Tests for Thin Asphalt Layers***
Budget: $349,990
Agency: Texas Department of Transportation
Researchers: PI: *Jorge Prozzi, UT Austin*; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): September 2012 – *August 2014*

Project Title: ***Longer Lasting Permeable Friction Courses (PFCs)***
Budget: $348,460
Agency: Texas Department of Transportation
Researchers: PI: *Jorge Prozzi, UT Austin*; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): September 2012 – *August 2014*

Project Title: ***Educational Resource: Response to Climate Dynamics through Sustainable Watershed Management Project***
Budget: $ 298,567
Agency: US Department of Agriculture
Researchers: PI: Vivek Tandon (IE); CO-PI: Vinod Kumar (ME) and John Walton
Proposed Year(s): September 2012 – *August 2014*

Project Title: ***Transforming Undergraduate Engineering Education through Access and Excellence: Study of Organizational Dynamics in the Business of Learning Engineering***
Budget: $ 199,820
Agency: Engineering Education, Division of Undergraduate Education, NSF
Researchers: PI: *Arun Kumar Pennathur* (IE); CO-PI: Vivek Tandon, *L. C.-Sapien (IE), and S. C. Riccillo (Communications)*
Proposed Year(s): September 2011 – *August 2013*

Project Title: **Improving Fracture Resistance Measurement in Asphalt Binder Specification with Verification on Asphalt Mixtures Cracking Performance**
Budget: $437,009
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian
Proposed Year(s): September 2011 – *August 2014*

Project Title: ***EXP: Engineering Education for the Facebook Generation: Tapping into Student Virtual Presence for Empowering Engineering Learning***
Budget: $ 549,468
Agency: Cyber learning: Transforming Ed, Div. of Undergraduate Education, NSF
Researchers: PI: *Arun Kumar. Pennathur (IE)*; CO-PI: Vivek Tandon, and *L. Contreras-Sapien (IE)*
Proposed Year(s): September 2011 – *August 2014*

Project Title: ***Addressing the Permeability of Superpave Mixes in New Mexico***
Budget: $220,000 (UTEP Share $ 95,000)
Agency: Texas Department of Transportation
Researchers: PI: *Paola Bandini (NMSU)*; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): July 2011 – *June 2013*

Project Title: ***Use of Recycled Asphalt Shingles in HMA***
Budget: $348,250 (UTEP Share 195,250)
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *Samer Dessouky (UTSA)*, Soheil Nazarian, and *Tom Papagiannakis (UTSA)*
Proposed Year(s): September 2010- *August 2012*

Project Title: ***Evaluate Binder and Mixture Aging for Warm Mix Asphalts***
Budget: $460,697 (UTEP Share 229,937)
Agency: Texas Department of Transportation
Researchers: PI: *Samer Dessouky (UTSA)*; CO-PI: Soheil Nazarian, Vivek Tandon, and *Tom Papagiannakis (UTSA)*
Proposed Year(s): September 2010- *August 2013*

Project Title: **Search for a Test Fracture Potential of Asphalt Mixes**
Budget: $282,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian CO-PI: Vivek Tandon, Seong Choi, Jose Garibay, Sergio Rocha
Proposed Year(s): September 2010- *August 2012*

Project Title: ***NSF-CCLI: Development of an Undergraduate Course on Nondestructive Testing and Evaluation of Civil Engineering Infrastructure***
Budget: $200,000 (UTEP Share $ 79,986)
Agency: National Science Foundation
Researchers: PI: *Rajib Mallick of WPI*; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): January 2010 – *December 2012*

Project Title: ***Developing a Fundamental Understanding of the Chemistry of Warm Mix Additives***
Budget: $260,000 (UTEP Share 115,000)
Agency: Texas Department of Transportation
Researchers: PI: *Samer Dessouky (UTSA);* CO-PI: S. Nazarian, Vivek Tandon, *Tom Papagiannakis (UTSA)*
Proposed Year(s): September 2010- August 2011

Project Title: ***Performance Evaluation and Mix Design for High Rap Mixtures***
Budget: $448,794 (UTEP Share 288,000)
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: *Vivek Tandon* and *Tom Papagiannakis (UTSA)*
Proposed Year(s): September 2009- *August 2011*

Project Title: ***Properties and Performance of Warm Mix Asphalt Technologies***
Budget: $849,944
Agency: National Cooperative Highway Research Program
Researchers: PI: *Vivek Tandon*; CO-PI: *Rajib Mallick (WPI), and L. Allen Colley (BCD)*
Proposed Year(s): March 2009- *May 2012*

Project Title: ***Engineering Properties, Emissions, and Field Performance of Warm Mix Asphalt Technologies Mix Design Practices for Warm Mix Asphalt***
Budget: $899,940

Agency: National Cooperative Highway Research Program
Researchers: PI: *Vivek Tandon*; CO-PI: *Rajib Mallick (WPI) and L. Allen Colley (BCD, Inc.)*
Proposed Year(s): March 2008- *June 2011*

Project Title: **Performance Histories of Thermally Segregated HMA**
Budget: $450,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: *Vivek Tandon* and Parisa Shokouhi
Proposed Year(s): December 2008- *November 2011*

Project Title: **Water Retention Techniques for Roadside Vegetation Establishment in Arid Regions of Texas**
Budget: $220,849
Agency: Texas Department of Transportation
Researchers: PI: John Walton; CO-PI: *Vivek Tandon*
Proposed Year(s): September 2008- *August 2009*

Project Title: **Laboratory Evaluation of Influence of Operational Tolerance (Acceptance Criterion) on Performance of HMAC**
Budget: $221,139
Agency: Texas Department of Transportation
Researchers: PI *Vivek Tandon*; CO-PI: Soheil Nazarian, and *Tzu-Liang Tseng (IE)*
Proposed Year(s): September 2008- *August 2009*

Project Title: **Alternatives to Asphalt Concrete Pavement Subbases for Concrete Pavement**
Budget: $235,000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: *Vivek Tandon*; I. Abdallah, and N. Gharibeh
Proposed Year(s): September 2008- *August 2009*

Project Title: ***Mix Design Practices for Warm Mix Asphalt***
Budget: $499,999
Agency: National Cooperative Highway Research Program
Researchers: PI: *Vivek Tandon*; CO-PI: *Rajib Mallick (WPI) and L. Allen Colley (BCD, Inc.)*
Proposed Year(s): February 2007- *January 2010*

Project Title: **Use of Radio Frequency Identification (RFID) Tags in Hot Mix Asphalt**
Budget: $147,500
Agency: Federal Highway Administration
Researchers: PI: *Vivek Tandon*; CO-PI: Parisa Shokouhi
Proposed Year(s) October 2006- *September 2007*

Project Title: **Evaluation of Warm Mix Asphalt New Technology**
Budget: $215,831
Agency: Texas Department of Transportation

Researchers: PI: *Vivek Tandon*; CO-PI: Soheil Nazarian
Proposed Year(s): September 2006- *August 2008*

Project Title: **Using Cement Paste Rheology to Predict PCC Mix Design Problems**
Budget: $241,000
Agency: Texas Department of Transportation
Researchers: PI: *Vivek Tandon;* CO-PI: Soheil Nazarian
Proposed Year(s): September 2006- *August 2008*

Project Title: ***Beneficial Use of Scrap Tire Bales in Highway Projects***
Budget: $290,375 (UTEP Share 161,993)
Agency: Texas Department of Transportation
Researchers: PI: *Vivek Tandon*; CO-PI: Soheil Nazarian and *Anand Puppala (UTA)*
Proposed Year(s): September 2006- *August 2008*

Project Title: ***The Evaluation of a System for Measuring Seal Coat Quality***
Budget: $230,145
Agency: Texas Department of Transportation
Researchers: PI: *Vivek Tandon;* CO-PI: *G. Rosiles, B. Usevitchand and V. Krenovich (EE and CS)*
Proposed Year(s): September 2005- *August 2007*

Project Title: ***Nanotechnology Synthesis Study***
Budget: $67,432
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *Gregory Lush (EE)*
Proposed Year(s): September 2005- *August 2006*

Project Title: **Evaluation of Using Waste Lime-Silica Sludge in Concrete and Roadway Base Materials**
Budget: $74,980
Agency: Southwest Consortium for Environmental Research and Policy
Researchers: PI: Anthony Tarquin; CO-PI: *Vivek Tandon*
Proposed Year(s): June 2005- *May 2006*

Project Title: **Noise Level Adjustments for Highway Pavements in TxDOT**
Budget: $452, 053
Agency: Texas Department of Transportation
Researchers: PI: Nasir Gharaibeh*:* CO-PI: Vivek Tandon
Proposed Year(s): January 2004- August 2008

Project Title: **Integration of Structure Property Performance Relationships and Self-Compensating Concept for Development of Smart PCC Composite**
Budget: $651,026
Agency: NSF CAREER Grant

Researchers: PI: Vivek Tandon
Proposed Year(s): April 2003 – March 2008

Project Title: **Non-Destructive Evaluation for Quality Control/Quality Assurance**
Budget: $29,504
Agency: Federal Highway Administration
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon
Proposed Year(s): August 2002 – January 2003

Project Title: **Reevaluate Current Potential Vertical Rise (PVR) Design Procedures**
Budget: $169, 370
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian and Carlos Ferregut
Proposed Year(s): September 2002- August 2004

Project Title: **Use of Alternative Water Sources in Construction Operations**
Budget: $136, 811
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Charles Turner
Proposed Year(s): September 2001- August 2003

Project Title: **Develop a Simple Mixture Test to Determine Binder Viscosity**
Budget: $138, 537
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Soheil Nazarian
Proposed Year(s): September 2001- August 2003

Project Title: ***Feasibility Study for Continuous Deflection Testing on Pavement Surfaces***
Budget: $59, 920 (UTEP Budget: 44, 920)
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: *Roger Walker (UT Arlington)*
Proposed Year(s): September 2001- August 2002

Project Title: **Development of Smart Self Compensating Portland Cement Concrete Based on Structure-Property Performance Relationships**
Budget: $ 373,580
Agency: NSF CAREER Grant
Researchers: PI: Vivek Tandon
Proposed Year(s): March 2001 – March 2006

Project Title: **Analysis and Development of Asphalt Quality Assurance Procedures**
Budget: $ 202, 137
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon
Proposed Year(s): September 2000 – August 2002

Project Title: ***Use of Innovative Materials to Control Drying Shrinkage Cracking of Concrete Bridge Decks***
Budget: $ 416, 900
Agency: Texas Department of Transportation
Researchers: PI: Vivek Tandon; CO-PI: Carlos Ferregut and *Shailendra K. Varma (MME)*
Proposed Year(s): September 2000 – August 2004

Project Title: **Non-Destructive Test Methods for Determination of Debonding between Different Pavement Layers**
Budget: $ 4,500
Agency: URI UTEP
Researchers: PI: Vivek Tandon
Proposed Year(s): October 1999

Project Title: **Assessment of Cohesionless Materials to be used as Compacted Fill**
Budget: $ 58, 197
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon
Proposed Year(s): September 1998 – August 1999

Project Title: ***Use of Whole Tires and Fly Ash in Earth Retaining Structures***
Budget: $ 173, 961 (UTEP Share 132, 561)
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon and *C. Vipulanandan (UH)*
Proposed Year(s): September 1998 – August 2000

Project Title: **Evaluate the Uses for Scrap Tires in Transportation Facilities**
Budget: $ 47, 346
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon
Proposed Year(s): September 1997 – August 1998

Project Title: **Performance Characteristics of Asphaltic Materials Utilizing Light Weight Aggregate**
Budget: $ 100, 000
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Deren Yuan
Proposed Year(s): September 1997 – August 1999

Project Title: **Development Thermal Coefficient of Expansion Test**
Budget: $ 99, 487
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon
Proposed Year(s): September 1996 – August 1997

Project Title: **Characterization of Asphalt with Ultrasonic Waves**

Budget: $ 110, 384
Agency: ARP/ATP
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon, Miguel Picornell, and D.Yuan
Proposed Year(s): October 1997 – September 1999

Project Title: **Evaluation of Bituminous Patching Materials for Maintenance Applications**
Budget: $ 76, 008
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon
Proposed Year(s): September 1996 – August 1998

Project Title: **Effectiveness Comparison of Former HMAC Specifications and the most Current QA/QC Specification for HMAC**
Budget: $ 61, 280
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon
Proposed Year(s): September 1996 – August 1998

Project Title: **Dynamic Behavior of Frozen-Thawed Pavement-Subgrade Systems**
Budget: $ 258, 360
Agency: ARP/ATP
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): October 1996– September 1999

Project Title: **Specifications for Backfill of Reinforced Earth Retaining Walls**
Budget: $ 130,356
Agency: Texas Department of Transportation
Researchers: PI: Soheil Nazarian; CO-PI: Vivek Tandon and Miguel Picornell
Proposed Year(s): September 1995 – August 1997

Project Title: **Compare Lime/Cement Subgrade Stabilization**
Budget: $ 44, 306
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): September 1995 – August 1997

Project Title: **Guideline for Using Hydrated Flyash as a Flexible Base**
Budget: $ 25, 189
Agency: Texas Department of Transportation
Researchers: PI: Miguel Picornell; CO-PI: Vivek Tandon and Soheil Nazarian
Proposed Year(s): September 1995 – August 1997

Teaching

Philosophy

The first semester I taught a course at the University of Texas at El Paso (UTEP), my teaching evaluations were below my expectations. That eventually led to major discussions with the Department Chair. In the end, we agreed to enhance my teaching skills by attending the ExCEEd Teaching Workshop offered by the Military Academy at West Point (supported by ASCE). The workshop, decades of teaching, research, and learning have shaped my teaching philosophy. Since the goal of faculty is to educate future generations, the most effective approach is to motivate students to be life-long learners.

Even though the literature suggests various teaching styles and delivery approaches, it is almost impossible to incorporate various learning styles and delivery approaches in a classroom. Based on decades of experience, I feel that UTEP students are best motivated by showing them real-life applications of the concepts (experiential learning style). According to McKeachie, the experiential learning technique improves the understanding of concepts and motivates students to seek further knowledge. Experiential learning allows the conversion of abstract concepts to a meaningful experience when students are exposed to "real-life" phenomena. Besides, the field and laboratory experience simulate questions in students' minds that lead to active learning. Most importantly, the experience can link learning, thinking, and practice.

Another important aspect I consider to be a part of teaching philosophy is the assessment of the information provided to students. Even though various assessment tools are available, the selection of appropriate assessment tool(s) is important to gauge the knowledge gained. Besides, the assessment analysis can be used to modify course content and delivery.

Courses Developed and Taught

- *Geotechniques of Landfill*: In Summer 2021, I have developed a new course to teach landfill design with emphasis on geotechnical aspects of landfill design.
- *Sustainable Engineering Design:* In Spring 2016, a new course to teach sustainable design with an emphasis on Life Cycle Assessment was developed. The students were provided with an opportunity to design a facility using conventional and sustainable technology to identify the challenges and benefits.
- *Advanced Civil Engineering Materials:* In Fall 02, I taught this course for the first time and had regularly been teaching. The fundamentals of hot asphalt concrete and Portland cement concrete mix design process are covered in this course. I also assign students papers to read and expose them to the process of how to critique and write research papers. The students also have an opportunity to visit and learn about asphalt concrete and Portland cement concrete construction process.

- *Graphics Fundamental in Engineering Design*: I received a grant from Model Institute of Excellence (at UTEP) to develop computer-based instruction and develop various models to improve visualization of 3-D objects from 2-D drawings or vice versa. A customized version of the book has also been developed for the course. Also, supplemental instructions have been developed to enhance understanding of the graphics fundamentals. The supplemental instructions include AutoCAD lessons, models for drawing, and a website to provide students access to the lesson plans. Additionally, students were provided with an opportunity to design and draw their dream house.
- *Geotechnical Site Investigation*: To teach this course, I collaborate with the local consulting firms to demonstrate field boring, collaborate with the geophysics department to demonstrate geophysical field measurement, and invite local contractors to present site investigation from their perspective along with site visit to expose them to practice.
- *Pavement Material Characterization*: I developed this course based on Professor Training Course offered by the National Center for Asphalt Technology, Auburn. Also, I have setup UTEP's SHRP laboratory for performing SUPERPAVE volumetric mix design of asphalt concrete mixtures. The combination of theoretical and hand's on experience enhances students understanding of pavement material. A field trip is also organized with the help of local asphalt concrete manufacturers to expose students to the asphalt concrete production process.
- *Civil Engineering Materials*: This course was introduced in the spring 2001. For this course, I developed course content, multimedia-based instructions, and laboratory manual. The laboratory sessions include a visit to the local asphalt plant and a safety session. The course also includes a site visit to a production plant for the experiential learning experience.
- *Advanced Geotechnical Engineering (Previously known as Advanced Soil Mechanics)*: This is a graduate-level course, and course content included shear strength, slope stability, and consolidation of soils.
- *Introduction to Engineering and Design*: I had offered this freshmen level course in Fall 99. In this course, students learned about various engineering majors and participated in a group project to learn the concept of design.
- *Geology for Engineers:* Traditionally, this course is taught by the Department of Geological Sciences. However, the shortage of instructors leads to transfer of this course to the Department of Civil Engineering. I taught this course for the first time in the spring of 2003. I modified the course content and PowerPoint presentations. I had developed two sets of presentations. One set was for students with missing components to encourage student interaction while the other set was for an instructor that included answers to the missing components. This eliminated monotony present with PowerPoint Presentations. A website was also developed to provide students access to the lessons, homework assigned, and solutions.

- *Slope Stability:* In Fall 10, I taught this course for the first time. The course covers shear strength of the soils, hand calculation methods and computer software for slope stability analysis, and slope stability management methods.
- *Mechanics, Dynamics, and Statics:* I teach these sophomore-level courses on a need basis and use YouTube to deliver the concept.

MS Students Graduated

Student Names: Jose Carrasco
Thesis Title: **Sustainable Disposal of Pecan Shells**
Degree Expected: December 2024

Student Names: Mauricio Esquivel
Dissertation Title: **Glass Recycling in Asphalt Concrete**
Degree Awarded: December 2022

Student Names: Jose Ramirez Guerrero
Thesis Title: **Recycling of Glass in Portland Cement**
Degree Awarded: May 2022

Student Names: Herman Serrato
Thesis Title: **Identification and Evaluation of Critical Transportation Infrastructure Resilience After Hydro-meteorological Event**
Degree Awarded: December 2021

Student Names: Armando Esquivel
Thesis Title: **Application of Machine Learning in Flood Depth Prediction**
Degree Awarded: May 2021

Student Names: Jorge Navarrette
Thesis Title: ***Influence of Gypsum on Drainability of Water Retention Pond***
Degree Awarded: August 2018

Student Names: Anjuman Ara Akhtar
Thesis Title: **The Influence of Extreme Rainfall Event on Bridge Scour**
Degree Awarded: December 2018

Student Names: Aliasghar Dormohammadi
Thesis Title: ***Influence of overlay thickness on interface bonding***
Degree Awarded: August 2017

Student Name: Arturo Arias
Project Title: **Optimization of ME-Darwin Pavement Design Method Using RealCost**
Degree Awarded: December 2013

Student Name: Maria Gisel Hernandez
Project Title: ***Low-Calcium Fly Ash- Based Geopolymer-An Alternative to Portland Cement***
Degree Awarded: August 2013

Student Name: Bijoy K. Halder
Thesis Title: **Sustainable Disposal of Concentrated Brine**
Thesis Defended May 2012

Student Name: Laith A Al Sabty
Thesis Title: **Selection of Sustainable Rigid Pavement Using The Mechanistic-Empirical Pavement Design Guide**
Thesis Defended December 2011

Student Name: Vamsi K. Pinnamaneni
Thesis Title: **Applicability of MEPDG for India based on Texas Pavement and Environmental Conditions**
Thesis Defended December 2010

Student Name: Kiran Kumar Manick
Project Title: ***Predicting Rutting Potential of HMAC***
Degree Awarded May 2008

Student Name: Srinivasa R. Edula
Thesis Title: ***Evaluate Feasibility of the UTEP Pull-Off Tack Coat Device***
Thesis Defended May 2007

Student Name: Gina Hrdlicka
Thesis Title: ***Estimation of Hot Mix Asphalt Concrete Rutting Potential from Repeated Creep Binder Tests***
Thesis Defended December 2006

Student Name: Rajpal Sugandh
Thesis Title: ***Rutting Potential of Polymer Modified HMAC***
Thesis Defended December 2005

Student Name: Vaibhav Swami
Thesis Title: ***Development and Evaluation of Crumb-Rubber Hot Mix Asphalt Concrete Mixtures***
Thesis Defended August 2005

Student Name: Surendra Varma Sagi
Thesis Title: ***Effect of Construction Variability on Moisture Susceptibility of HMAC***
Thesis Defended November 2004

Student Name: Indranil Deysarkar

Thesis Title: ***Test Set-up to Determine Quality of Tack Coat***
Thesis Defended June 2004

Student Name: Babu S. Kambham
Thesis Title: ***Evaluation of Simple Performance Tests for Predicting Moisture Damage of Hot Mix Asphalt Concrete***
Thesis Defended August 2003

Student Name: Sheetalnath Mahalungkar (Mechanical Engineering student)
Thesis Title: ***Influence of a Discontinuity on Stress Concentrations in Composite Layered Material System***
Thesis Defended: January 2003

Student Name: Xuequn Bai
Thesis Title: ***Assessment of Relationship between Complex and Seismic Moduli of Asphalt Concrete Mixtures***
Thesis Defended: August 2002

Student Name: Marios Kofteros
Thesis Title: ***Development of smart mortar based on self-compensating concept***
Thesis Defended: May 2001

Student Name: Daniel Velazco
Project Title: ***Design and Installation of Instrumentation for Performance Monitoring of Tire Chip Embankments***
Degree Awarded: December 1999

Ph.D. Students Graduated

Student Names: Megha Sharma
Dissertation Title: **Understanding Influence of Climate on Pavement *Performance***
Degree Awarded: August 2018

Student Name: Sundeep Inti
Dissertation Title: ***A Decision Making Approach For Selection Of Sustainable Pavements In Texas By Integrating Life Cycle Cost Analysis (LCCA), Life Cycle Assessment Of Environmental And Social Impacts***
Degree Awarded: June 2016

Student Name: Gottumkkala Bharath (Joint Director with Dr. K. S, Reddy of IIT-Kharagpur)
Dissertation Title: ***Performance Characteristics of Bituminous Mixtures Containing Recycled Asphalt Pavement Material***
Degree Awarded: August 2016

Ph.D. Students in Pipeline:

Student Names: Sharron Murillo
Dissertation Title: **Use of Metakolin in Portland Cement Concrete**
Degree Expected: December 2025

Thesis Committee

Master's: **30+**

Ph.D. **10+**

Undergraduate Students Supported on Fellowship under NSF Grant (2009-2015)

First Name	M.	Last Name
Dijon	M	Anderson
David		Artalejo
Andres	G	Arvizo
Angelica		Bailey
Ismael		Beltran
Juan	N	Cano
Mariana		Chaidez
Mark	T	Chavez
David	R	Delacruz
Laura		Delgado
Luis		Delgado
Daniel		Duran
Roya		Edalatpour
Melissa	I	Escalante
Elizabeth	v	Favela
Juan		Fernandez
Ruben		Gamez
Alan	E	Garcia
Stephen	T	Gavilanes
Kevin		Godina
Sergio	A	Guerrero
Mario		Guillen

First Name	M.	Last Name
Luis		Gutierrez
Alejandro		Hernandez
Zachary	T	Jackson
Christopher	D	Llamas
Daniel		Llausas
Magali		Lopez
Edgar	A	Lopez
Manuel	A	Lozano
Lorenzo		Luevano
Santiago	S	Macias
Humberto		Marquez
Jorge		Martinez
Noel	P	Martinez
Omar		Medina
Karla	E	Montano
Martin	A	Morales
Ulises		Munoz
Jonathan		Navarrete
Andres	G	Navarro
Arturo		Ortiz
Dylan		Ott
Ian	T	Perez

First Name	M.	Last Name
Jazmin		Porras
Isaiah	J	Portillo
Luis	A	Portillo
Leslie		Prat
Paul	A	Rascon
Michael		Rivera
Christian	I	Rodarte
Diana		Rodriguez
Ileana		Rubio
Alejandra		Salinas
Paul		Sanchez
Jessica		Segovia
Daniel	A	Seyffert
Macie	Z	Subia
Trent		Tynan
Victor		Velasco
Steven	V	Velazquez

Undergraduate Students Actively Participated in Research Under My Guidance

- Ms. Adriana Geiger, Research Experience for Undergraduate, Model Institute of Excellence (MIE), UTEP
- Ms. Marisol Sarabia, Research Experience for Undergraduate, MIE, UTEP
- Ms. Marisol Sarabia, Recipient of Eisenhower Undergraduate Scholarship

- Ms. Crystal Franco, Research Experience for Undergraduate, MIE, UTEP
- Mr. Ivan Avelar, Research Experience for Undergraduate, MIE, UTEP
- Mr. Christopher Carlos Villa, Research Experience for Undergraduate, MIE, UTEP
- Ms. Susana Facio, Alliance for Minority Participation, UTEP
- Mr. Edward Paganini, Eisenhower Fellowship, FHWA
- Mr. Jorge Gomar, Research Experience for Undergraduate, MIE, UTEP
- Mr. Isaac Puentes, Alliance for Minority Participation, UTEP
- Mr. Jesus Salina, Undergraduate Research Assistant
- Mr. Ubaldo Ortega, Undergraduate Research Assistant
- Mr. Edgar Guerrero, Undergraduate Research Assistant
- Ms. Valeria Lopez, Undergraduate Research Assistant
- Ms. Sofia Martin, Undergraduate Research Assistant
- Ms. Catherine Nadour, Undergraduate Research Assistant
- Mr. Jose Luis Aria, Undergraduate Research Assistant
- Mr. Armando Esquival, Undergraduate Research Assistant
- Mr. Sadeer Mustafa, Undergraduate Research Assistant
- Mr. Rafael Silva, Undergraduate Research Assistant

Publications

1. Bharath, G.; Gatiganti, S. C., Kakade, V., Reddy, K.S., Tandon, V., and Reddy, M.A., "Evaluation of Dynamic Modulus Predictive Equations for Asphalt Mixtures with Recycled Asphalt Pavement Material," Innov. Infrastruct. Solut. 10, 328 (2025). https://doi.org/10.1007/s41062-025-02131-6.
2. Bharath, G., Kakade, V., Reddy, K.S., Tandon, V., Reddy, A. M. "Investigation of rutting performance of dense and gap graded recycled asphalt mixtures." Innov. Infrastruct. Solut. 8, 252 (2023). https://doi.org/10.1007/s41062-023-01221-7
3. Gottumukkala, Bharath & Kakade, Vijay & Reddy, K. & Tandon, Vivek & Reddy, M.. (2022) "Evaluation of Effect of Moisture on Fatigue Performance of Pavement Designed with Recycled Asphalt Mixtures," Canadian Journal of Civil Engineering. DOI:10.1139/cjce-2022-0086.
4. Inti, S., and Tandon, V. "Cost Analysis of Geocell Reinforced Layer in Highways," Geo-Congress 2022, https://doi.org/10.1061/9780784484012.053.
5. Inti, S., and Tandon, V., "Towards precise sustainable road assessments and agreeable decisions," Journal of Cleaner Production, https://doi.org/10.1016/j.jclepro.2021.129167
6. Gottumukkala, B, Kusam, S.R., Tandon, V., Muppireddy, A.R., and Mullapudi, R.S., "Restriction of RAP% in HMA Based on Aggregate Gradation and Binder Properties," CivilEng 2021, 2, 811–822, doi.org/10.3390/civileng2030044.
7. Inti, S., and Tandon, V., "Designing Geocell Reinforced Roads through Fragility Modeling," Journal of Geotextiles and Geomembranes, https://doi.org/10.1016/j.geotexmem.2021.03.003, March 2021.
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34. Nazarian, S., Tandon, V., Crain, K., and Yuan, D., "Feasibility Study on Improvements to Dynamic Cone Penetrometer," Report No. TX-97 3903-2, Texas Department of Transportation, Texas, 1997.
35. Tandon, V., and Picornell, M., "Evaluation and Guidelines for Drainable Bases," Report No. TX-96 1456-1F, Texas Department of Transportation, Texas, 1996.
36. Tandon, V., Vemuri, N., and Nazarian, S., "A Comprehensive Evaluation of Environmental Conditioning Systems," Report No. TX-96 1455-1, Texas Department of Transportation, Texas, 1996.
37. Wray, W.K., Tandon, V., Picornell, M., Narayan, R.S., and Mikel, N.J., "Recycled Materials in Vertical Moisture Barrier," Report No. 1354-1F, Texas Department of Transportation, Texas, 1996.
38. Tandon, V., "Streamlining, Calibration, and Validation of Preliminary SHRP Thermal Cracking Performance Prediction Model," Ph.D. Dissertation, Department of Civil and Environmental Engineering, The Pennsylvania State University, 1994.
39. Tandon, V. and Nazarian, S., "Comprehensive Evaluation of Sensors Used for Pavement Monitoring," Research Report 913-1F, Center for Highway Materials Research, The University of Texas at El Paso, 1991.
40. Tandon, V. and Nazarian, S. "An Absolute Calibration System for Nondestructive Testing Devices," (with Tandon), Research Report 913-2, Center for Geotechnical and Highway Materials Research, UTEP, September 1990.
41. Tandon, V. and Nazarian, S. "User's Manual to Program CALIBRAT," Research Report 913-3, Center of Geotechnical and Highway Materials Research, UTEP, September 1990.
42. Tandon, V., "Development of an Absolute Calibration System for Nondestructive Testing Devices," Master of Science Thesis, Department of Civil Engineering, The University of Texas at El Paso, August 1990.

National and State Committee Member

- Chair- Subcommittee AKG30(2) on Seasonal and Climatic Impacts, Transportation Research Board 23-25.
- Member Committee AMR50 (Committee on Extreme Weather And Climate Change Adaptation), Transportation Research Board 23-25.
- Member Committee AKG30 (Committee on Geo-Environmental and Climatic Impacts on Geomaterials), Transportation Research Board 20-25.

- Technical Panel Member National Cooperative Highway Research Program Project 52-10 "Subsurface Drainage Practices in Pavement Design, Construction, and Maintenance."
- Handling Editor, Transportation Research Record Editorial Board, 19-current.
- Member Committee AFP50 (Seasonal Climatic Effects on Transportation Infrastructure), Transportation Research Board, 19-20.
- Technical Advisor for the Materials and Design Team of our Technical Advisory Council, Greenroads Foundation, 19-21.
- Technical Panel Member National Cooperative Highway Research Program Project 9-52 "Short-Term Laboratory Conditioning of WMA Mixtures for Mix Design and Performance Testing"
- Technical Advisory Panel Member (Research Management Committee for Pavements) of the Texas Department of Transportation, 95-Current.
- Chair, Professional Engineers in Higher Education, Texas Society of Professional Engineers, Sep. 11-15.
- Chair, ASCE Construction Institute (CI) Bituminous Materials Sub-Committee, *14-15*.
- Member Committee AFK20 (Characteristics of Bituminous Materials), Transportation Research Board, 08-*11*.
- Member Committee AFK30 (Characteristics of Nonbituminous Components of Bituminous Paving Mixtures), Transportation Research Board, *01-10.*
- Member Committee AFS60 (Subsurface Drainage), Transportation Research Board, *99-07.*
- Member, ASCE Construction Institute (CI) Bituminous Materials Sub-Committee, *00-Current*.
- Tuning Oversight Committee Member, Texas Higher Education Coordinating Board, 10-12.

University Committee Member

- Computational Science Faculty Search Committee, 23-24.
- Faculty Welfare Committee, 23-26.
- Computational Science Graduate Admission Committee.
- Committee on Committee 16-18, 21-24
- Graduate Council, 15-18
- Student Grievance Committee 13-20
- Undergraduate Curriculum Committee 11-14
- Chair, Undergraduate Curriculum Committee 13-14
- Faculty Senate *00-02*
- Teaching Effectiveness Committee *03-06*
- Chair Student Conduct Committee *00-03*
- Customer Service Committee *02-05*
- Chair Library Coffee Committee (a subcommittee of the Customer Service Committee) *02-03*

- Chair Student Advising Committee (a subcommittee of Customer Service Committee) *03-04*
- Assistant Dean of Student Search Committee *03-04*

Department/College Committee Member

- *Construction Faculty Search Committee 22-23*
- *Software Faculty Search Committee 22-23*
- *ABET Co-Coordinator, Construction Engineering and Management Program, 20-21*
- *Engineering Faculty Council 19-current*
- *Dean Search Committee 15-16*
- *College Safety Committee, 14-18*
- College Curriculum Committee 11-19
- Chair, College Curriculum Committee, 14-16
- Structural Faculty Search Committee, *03-04, 08-09, 10-12*
- Geotechnical Faculty Search Committee, *10-12*
- Water-Energy Nexus Faculty Search Committee, 10-11
- Faculty/Staff Budget Process Team, *02-03*
- Public Health Policy Faculty Search Committee, *01-02*
- College Strategic Goal Committee, *07-08*
- College Scholarship Committee, *03-09*
- ABET Coordinator for the Department of Civil Engineering, *99-09*
- Undergraduate Program Director, Department of Civil Engineering 07-09

Workshops/Courses Attended

- 2024 ABET EAC Self-Study Development Workshop, San Diego.
- Higher Innovation for Students in Hispanic Serving Institutions (HIS in HSIs), NSF Conference For Hispanic Serving Institutions, September 10-11, Albuquerque, New Mexico-2016.
- 2015 Professor Training workshop, PCA Education Foundation, July 20-24.
- NSF Grant Training Workshop February 22-23, 2010 at NSF Headquarters, Arlington, VA
- Attended Professor Training Course on Driven Piles Offered by PDCA in Logan, Utah, June 2006.
- Attended The Exceed Teaching Workshop Offered by American Society of Civil Engineers in US Military Academy, July 2002.
- LTPP Data Analysis Professor Training Workshop Sponsored by American Society of Civil Engineers and Federal Highway Administration, University of Reno, Dec. 2001.
- Seventh Faculty Enhancement Workshop on Repair, Monitoring, and Rehabilitation of Concrete Structures Sponsored by ACBM/PCA, Purdue University, July 2000.
- Integrating Design Across the Undergraduate Engineering Curriculum, University of Oklahoma, July 2000.
- Professor Training Course in Asphalt Technology, National Center for Asphalt Technology, June 1996.

- SHRP Superpave Mix Design Course, Asphalt Institute, May 1995.

Workshops Organized

- Life cycle Assessment Workshop at the Annual Transportation Research Board Meeting 2023.
- Conference Chair 2012, Gulf-Southwest Section of American Society of Engineering Education
- Organizing Committee Member: INDO-US Workshop on Recent Developments in Highway and Airport Pavement Engineering 07-08 Aug. 2009 held at IIT Madras, India

Miscellaneous/International Activities

- Invited to teach the "Holistic Approach For Design, Construction, And Maintenance Of Resilient Road Pavement Infrastructure" course by Global Initiative of Academic Network (Sponsored by the Government of India) at the National Institute of Technology, Tiruchirappalli (December 2023).
- Invited to offer the sustainability component of a course at Universidad Santo Tomas, Columbia
- International Reviewer of Ph.D. dissertations from premier engineering institutes like Indian Institute of Technology, National Institute of Technology, etc.
- Invited to be a Panel Member at the Vaishwik Bharatiya Vaigyanik Summit (Vaibhav) in October 2020.
- Invited to be a Speaker at the XI Regional Congress of Civil Engineering Students - COREIC 2019, organized by the Academic Program of Civil Engineering of the UDEP Engineering School, Universidad de Piura, Peru.
- Invited to be a Keynote Speaker at the International Conference on Pavements and Computational Approaches Organized by CRRI on November 16-17, 2018.
- Invited to teach the "Maintenance and Preservation Treatment of Highways to Economically Enhanced Service Life in Sustainable Manner" course by Global Initiative of Academic Network (Sponsored by the Government of India) at the National Institute of Technology, Rourkela (December 2016).
- Editorial Board of Journal of Sustainability Research.
- Editorial Board of International Journal of Engineering Technology and Sciences.
- Invited to be Keynote Speaker at the CTRG 2015, 3rd Conference of the Transportation Research Group of India held between 17-20 December 2015.
- Invited to Attend National Seminar on Moisture Sensitivity (attendance by invitation)
- Invited Speaker: INDO-US Workshop on Highway and Airport Pavement Engineering: Challenges and Opportunities 30-31 July 2010 at IIT Kharagpur, India.
- Organized INDO-US Workshop on Recent Developments in Highway and Airport Pavement Engineering 07-08 August 2009 held at IIT Madras India.

- Reviewed Miscellaneous papers for various journals and proceedings:
  - American Society of Civil Engineering (Geotechnical Institute, Journal of Materials in Civil Engineering)
  - Eastern Asia Society for Transportation Studies, Japan
  - AFS60 (Subsurface Drainage), Transportation Research Board
  - AFK40 (Characteristics of Asphalt-Aggregate Combinations To Meet Surface Requirements), Transportation Research Board
  - AFK30 (Characteristics of Nonbituminous Components of Bituminous Paving Mixtures), Transportation Research Board
  - AFK20 (Characteristics of Bituminous Materials), Transportation Research Board
  - AF000 (Design and Construction Group), Transportation Research Board
  - Association of Asphalt Paving Technologists
  - International Journal for Pavement Engineering
  - Conference of Transportation Research Group, India.
  - Gulf Southwest Section of American Society of Engineering Education
  - Construction and Building Materials
  - Journal of Testing and Evaluation
  - Journal of Hazardous Materials
  - Journal of Transportation in Developing Economy
  - International Scientific Committee, Eastern Asia Society for Transportation Studies
  - Iranian Journal of Science and Technology
- Books Reviewed:
  - Fundamentals of Graphics Communications (by Bertoline et al.)
  - Engineering Design Communication, Lockhart/Johnson
  - Report on the Use of Fly Ash in Concrete 232.2R, ACI Technical Committee Document
  - Elements of Nature and Properties of Soils, Brady, and Well.
- Reviewed Proposals from:
  - University of Rhode Island Transportation Center (URITC), University Of Rhode Island Transportation Center
  - Mid-Atlantic Universities Transportation Center (MAUTC), Pennsylvania State University
  - Southern Plains Transportation Center (SPTC)
- A reviewer of the Fulbright Specialist Program