

# **Danniel D. Rodriguez, PhD, EIT**

**Research Assistant Professor**  
**CTIS/Department of Civil Engineering**  
**The University of Texas at El Paso**  
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**Bilingual: Fluent Spanish Speaker/Native English**

## **EDUCATION**

### **PhD in Civil Engineering, May 2015**

The University of Texas at El Paso, GPA 3.7

*Dissertation title:* "Performance Life of Various Hot Mix Asphalt Mixtures in Texas"

*Committee:* Soheil Nazarian, Imad Abdallah, Carlos Chang, Patricia Teller

### **Bachelors of Science in Civil Engineering, December 2011**

The University of Texas at El Paso, GPA 3.07

## **WORK EXPERIENCE**

### **Research Assistant Professor, October 2017-Present**

*The University of Texas at El Paso: Center for Transportation Infrastructure Systems, Dept. of Civil Engineering*  
El Paso, Texas

- ✓ Researcher for ASPIRE: Integrating Electrified Road System Components to Transportation Asset Management. Retrofit of road electrification concepts to pavement management practices under NSF: Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE) ERC
- ✓ Principal Investigator for Development Project for El Paso Metropolitan Planning Organization Task Order 4. Develop an interactive web application for performing data entry and processing data activities/data visualization of the TIP/MTP. Lead and manage development team and lead development activities.
- ✓ Principal Investigator for PCASE Validation and Testing task order 0010. Support the U.S. Army Corps of Engineers by providing technical guidance and comprehensive testing and validation for development of Pavement-Transportation Computer-Assisted Structural Engineering 7 (PCASE 7).
- ✓ Lead Researcher for TxDOT Implementation Project: *Performance Life of Various HMA Mixes in Texas (PERMIT) Web Application*. TxDOT Implementation Project 5-6679. Quantify statewide, HMA mix performance in Texas through merging of PMIS, Letting Database, DCIS, Site Manager
- ✓ Lead for the data collection on Interagency Contract: *Task Extension of 6658-Collection of Materials and Performance Data for Texas Flexible Pavements and Overlays*. Compile field and laboratory pavement performance data in database towards development of pavement design/analysis models.
- ✓ Project management, data analyses and lead research teams. Draft and lead proposal efforts, supervise and mentor graduate and undergraduate students on funded research studies. Perform research projects from funded El Paso MPO R&D, TxDOT Interagency Contracts, TxDOT Implementation Project, DoD Project.

### **Research Civil Engineer, September 2015-September 2017**

*United States Army Corps of Engineers: Engineer Research and Development Center: Airfields and Pavements*  
Vicksburg, Mississippi

- ✓ Co-Principal Investigator for the development of various pavement design and analysis tools and methodologies (PCASE) for the Department of Defense. Duties also include serving as the lead-government liaison for projects, provide technical recommendations, establish project schedules, and generate funding/expenditure reports.

- ✓ Develop proposals, test plans, perform data collection and data analysis and deliver findings utilizing engineering and statistical approaches.
- ✓ Mediator for conflict resolution concerning pavement design business rules between Air Force, Special Operations, Army, and Navy representatives.
- ✓ Facilitate collaboration between diverse research teams consisting of engineers, scientists, computer scientists and management personnel.
- ✓ Deliver regular briefings to customers to disseminate research progress and expenditures. Briefings include preparing agendas, presentations, meeting minutes and action items.

#### **Doctoral Research Assistant, January 2012-July 2015**

*The University of Texas at El Paso: Center for Transportation Infrastructure Systems (CTIS)*

- ✓ Completed funded research project by the TxDOT Research Technology and Implementation Office on quantifying the performance life of the various hot mix asphalt mixtures
- ✓ Analyses of HMA performance, data mining, statistical and cluster analysis
- ✓ Destructive and non-destructive testing of HMA and bases/sub-grades
- ✓ Modifying current TxDOT specifications for design of asphalt stabilized bases

#### **Undergraduate Research Assistant, September 2010-December 2011**

*The University of Texas at El Paso: Center for Transportation Infrastructure Systems (CTIS)*

- ✓ Performing resilient and dynamic modulus testing, actuator programming, sensor calibration, specimen compaction, Free-Free Resonant Column testing, Tube Suction Testing, Moisture-Density Curves, device troubleshooting

### **RECENT PROJECTS**

- ✓ **Researcher for ASPIRE: *Integrating Electrified Road System Components to Transportation Asset Management*.** Faculty-researcher on developing the framework of a transportation asset management methodology that considers electrified road system components (i.e. wireless charging systems). Involves modifying life-cycle cost methods to account for ERS within the Highway Economic Requirements System State (HERS-ST) platform. (Customer: NSF).
- ✓ **Principal Investigator for development *Task Order 4: Development of the El Paso MPO TIP/MTP Web Application*.** Lead the complete development of the web application and manager/supervise development team consisting of computer science research assistants. Perform complete project management and main point-of-contact to customer (Customer: El Paso MPO).
- ✓ **Lead Developer for TxDOT *Implementation Project 5-6679 Implementation of Performance Life of Various HMA Mixes in Texas*.** Funded TxDOT project that involves developing a comprehensive pavement management online-tool that will be utilized to assess HMA mix type service life, network-level pavement performance, and associated QA/QC tests and specification information.
- ✓ **Lead Researcher for UTEP on *Interagency Contract: Task Extension of 6658-Collection of Materials and Performance Data for Texas Flexible Pavements and Overlays*.** Funded TxDOT interagency contract that consists of semi-annual data collection of pavement performance on 33 test sections throughout Texas. The comprehensive data will be utilized towards developing flexible TxDOT performance models for pavement design and analysis.
- ✓ **Principal Investigator for *Task Order 0010 for Pavement-Transportation Computer Assisted Structural Engineering (PCASE ver. 7.0)*.** Provide support to USACE: TSC in the form of providing

technical guidance and comprehensive testing and validation of the software modules as part of the development of PCASE 7.

- ✓ **Co-Principal Investigator for development of DoD's *Pavement-Transportation Computer Assisted Structural Engineering, Version. 7.0* (PCASE 7).** Implement engineering recommendations for airfield pavement evaluation and design on flexible, unsurfaced and rigid pavement structures. Manage software development encompassing mechanistic-empirical pavement analysis and linear-elastic procedures included in software suite.
- ✓ **Co-Principal Investigator for development of *Air Force Special Operations Command Dynamic Cone Penetration Analysis Program* (AFSOC DCP AP).** Provide technical recommendations for unsurfaced pavement analysis and lead formulation of decision logic and all-around engineering and user-interface framework.
- ✓ **Principal Investigator for Joint Testing Investigation: Project Grey Eagle-395777 at White Sands Missile Range, Ft. Bliss, Texas.** Performed comprehensive load-transfer analysis of doweled-joints along unmanned aerial system runway. Developed test plan, data collection procedures and performed and delivered data analysis and findings.
- ✓ **Engineer for pavement condition evaluation of Biggs AAF (2016), Simmons AAF (November 2015), and Mackall AAF (November, 2015).** Non-destructive testing for structural analysis and visual condition survey.
- ✓ **Department of Defense Instructor for Pavement Design and Analysis Certification Workshops.** Provide Department of Defense (DoD) personnel and private industry designers on the design and evaluation of airfield pavements following current state-of-the-practice guidance. Workshops include pavement design theory, practice problems and material assessment. Workshop locations at United Kingdom Wittering Royal Air Force Station (February 2017), NAVFAC Southwest-San Diego (January 2017), Hill Air Force Base, Utah (May, 2016), Naval Air Station, Florida (July 2016) and NAVFAC Pacific, Hawaii (August 2016).
- ✓ **Instructor for Infrastructure Management Course.** Instruct United States Army Corps of Engineers personnel on pavement management system theory and infrastructure management practices. Course held at Engineer Research and Development Center, Vicksburg, Mississippi (April, 2016).
- ✓ **Lead research pavement engineer** for Marine Corps Intelligence Agency (MCIA) study investigating the feasibility of mobilization of marine expeditionary brigade (MEB) across unsurfaced roads in a theater of operation.
- ✓ **Lead research engineer** for TxDOT IAC consisting of performing Ground Penetrating Radar (GPR) on Bents/Columns project in El Paso, TX. Perform data processing and develop analysis methods for i) presentation to TxDOT stakeholders and ii) documentation in technical report.
- ✓ **Teacher/Instructor for Air Force Special Operations Runway Assessment Analysis Course.** Lead workshop on the use of AFSOC DCP AP software to Air Force Special Operations personnel. This workshop was held at Engineer Research and Development Center, Vicksburg, MS (April, 2016).
- ✓ **Professor/Instructor for CE 2334: Mechanics of Materials (Fall 2018).** Teach course to over forty Civil Engineering undergraduate students at The University of Texas at El Paso: Dept. of Civil Engineering. Course content: stress, strain, torsion, shear, moment, flexure, combined stresses and column action.

## PUBLICATIONS

1. Saghafi, M., Nazarian, S., Abdallah, I.N., Tirado, C., and **Rodriguez, D.D.** (2022). *Harmonizing Flexible Pavement Rutting Design with Balanced Mix Design*. Journal of the Transportation Research Board, Washington, D.C.
2. **Rodriguez, D.D.**, Torres Escobedo, L.A., Abdallah, I.N., Haggerty, B., and Nazarian, S. (2016). *Methodology for Determining Performance Life of Hot-Mix Asphalt Mixtures*. Journal of the Transportation Research Board, Washington, D.C.
3. **Rodriguez, D.D.**, and Edwards, L. (2017). *Implementing the Traffic Speed Deflectometer for Airfield Runway Assessment*. International Journal of Pavement Engineering, United Kingdom. (Accepted)
4. Ioannides, A.M, and **Rodriguez, D.D.** (2017). *Reliability demystified, at Last*. International Journal of Pavement Engineering, United Kingdom. (Accepted)
5. Mazari, M., and **Rodriguez, D.D.** (2016). *A Novel Approach for Prediction of Pavement Roughness Using a Hybrid Gene Expression Programming-Neural Network Technique*. Journal of Traffic and Transportation Engineering, Elsevier, The Netherlands.

## CONFERENCE PRESENTATIONS

1. **Rodriguez, D.D.** (2019). "Methodology for the Design of Optimum Asphalt Content of Asphalt-Treated Bases" *Geostructural Aspects of Pavements, Railways, and Airfields Conference*, Colorado Springs, CO.
2. **Rodriguez, D.D.** (2017). "Determining Optimum Asphalt Content of Asphalt Stabilized Base" *Lectern Session: The Transportation Research Board 96<sup>th</sup> Annual Meeting*, Transportation Research Board, Washington, D.C.
3. **Rodriguez, D.D.** (2017). "Implementing the Traffic Speed Deflectometer for Airfield Runway Assessment": *Tenth International Conference on the Bearing Capacity of Roads, Railways*, Athens, Greece. (Upcoming)
4. **Rodriguez, D.D.** (2015). "Methodology for Determining Performance Life of Various Hot-Mix Asphalt Mixtures in Texas" *Poster Session: The Transportation Research Board 94<sup>th</sup> Annual Meeting*, Transportation Research Board, Washington, D.C.
5. **Rodriguez, D.D.** (2014). "Performance Life of Various Hot-Mix Asphalt Mixtures in Texas." *Dwight David Eisenhower Transportation Fellowship Program Research Showcase: The Transportation Research Board 93<sup>rd</sup> Annual Meeting*, Transportation Research Board, Washington, D.C.

## LEADERSHIP/TEAMWORK

**Department of Defense PCASE Committee Member (2015-Present)** - provides technical recommendations on engineering features of pavement design software and pavement analysis criteria. Brief Army, Air Force, and Navy sponsors on program development and status.

**Vice-President, Society of Hispanic Professional Engineers-Mississippi Chapter (2016-2017)** -lead this professional engineering chapter in promoting STEM awareness and the engineering discipline to make a positive impact on the Greater-Vicksburg and Jackson community.

**Community Outreach Chair, Society of Hispanic Professional Engineers- Mississippi Chapter (2016-Present)** -organize local events and initiatives with the goal of educating Vicksburg community youth and encourage active participation in STEM.

**Faculty Advisor, Transportation Leadership Council (TLC), UTEP (2022-Present)**

**Faculty Advisor, Chi Epsilon Civil Engineering Honor Society**, Chapter #86 UTEP (2020-Present)

**President, Southwestern District Caucus for Chi Epsilon, Civil Engineering Honor Society** (2014-2015)

**President, Chi Epsilon, Civil Engineering Honor Society, Chapter #86**, The University of Texas at El Paso (2013-2014)

**Vice President, Chi Epsilon, Civil Engineering Honor Society, Chapter #86**, The University of Texas at El Paso (2012 -2013)

**Lead Coordinator, UTEP Excellence in Science, Technology and Engineering Summer Program** (2010)

## HONORS AND AWARDS

- ❖ **Achievement Medal for Civilian Service Recipient, fifth highest award** for Army Honorary-Employees (2016)
- ❖ **US Army ERDC Award for Excellence in Operation Support** (2017)
- ❖ **United States Department of Transportation: CAIT Student of the Year** (2014)
- ❖ **National Science Foundation: LSAMP Bridge to the Doctorate Fellowship** (2011-2013)
- ❖ **Dwight David Eisenhower HSI Fellowship** (2014-2015)
- ❖ **Dwight David Eisenhower HSI Fellowship** (2013-2014)
- ❖ **International Test and Evaluation Association Scholarship** (2011)

## COMMUNITY SERVICE

- ❖ **Organizer**, *El Paso Catholic Young Adult Missioners (Service Projects)*-El Paso, TX (2017-2019)
- ❖ **Lead organizer**, *SHPE Noches de Ciencias (STEM awareness)*-Vicksburg and Jackson, MS (2016)
- ❖ **Mentor**, Big Brothers Big Sisters of El Paso (2008-2013)
- ❖ **Facilitator**, *Science Night* at Mississippi State University (2016)
- ❖ **Facilitator**, *Science Fun Event* - Vicksburg Intermediate School (2015)
- ❖ **Kickball Coach**, Ministry for Children with Disabilities, St. Pius X Parish (2013)
- ❖ **Science Fair Judge**: Warren Central Intermediate School science fair in January, 2016
- ❖ **Lead Organizer**, TxDOT Adopt-a-Highway Chi Epsilon Initiative (2012-2014)

## PROFESSIONAL MEMBERSHIPS and CREDENTIALS

1. **Engineer-in-Training (EIT)** in the **state of Texas** (Texas Board of Professional Engineers)
2. **SIPR CAC card credential for classified research** studies
3. Society of Hispanic Professional Engineers-Mississippi Chapter
4. Chi Epsilon Civil Engineering Honor Society

## REFERENCES

**Mr. George Van Steenburg**, PCASE Program Manager  
United States Army Corps of Engineers, Transportation Systems Center  
(402) 326-5646, [George.W.VanSteenburg@usace.army.mil](mailto:George.W.VanSteenburg@usace.army.mil)

**Mr. Jeb Tingle**, Senior Research Engineer  
United States Army Corps of Engineers, US Army Engineer Research and Development Center  
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**Ms. Mary Adolf**, Senior Engineer  
United States Army Corps of Engineers, Transportation Systems Center  
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