Mayzan M. Isied, Ph.D., M.ASCE

Michael & Elizabeth McNally Endowed Professor • Graduate Programs Coordinator • Assistant Professor

Civil, Construction & Environmental Engineering, The University of Texas at Tyler

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Professional Summary

University faculty member specializing in **pavement engineering**, sustainable asphalt materials, and machine learning applications for transportation infrastructure. Lead and collaborate on TxDOT- and USDA-funded projects; coordinate the MSCE and MSEL graduate programs; and mentor undergraduate and graduate researchers. Active contributor to TRB committees, guest editor, and frequent reviewer for top journals. Committed to rigorous, student-centered teaching and impactful, practice-informed research.

Academic Appointments

- **Michael & Elizabeth McNally Endowed Professor in Civil Engineering**, 2025–present
- **Graduate Programs Coordinator**, MSCE & MSEL Programs, UT Tyler, 2024–present
- **Assistant Professor**, Civil, Construction & Environmental Engineering, UT Tyler, Aug 2023–present
- **Graduate Research & Teaching Assistant**, North Carolina State University, 2019–2023
- **Graduate Research & Teaching Assistant**, The University of Texas at Tyler, 2017–2019

Education

- **Ph.D., Civil Engineering (Transportation/Pavement Materials)**, North Carolina State University, 2019–2023
  Dissertation: Critical Assessment of Asphalt Mixture Design Procedures and Asphalt Mixture Classification Systems.

- **M.S., Civil Engineering (Transportation/Pavement Materials)**, The University of Texas at Tyler, 2017–2019
  Thesis: Mechanical Analysis for Reacted and Activated Rubber Modified Asphalt Mixtures.

- **B.Sc., Civil Engineering**, Hashemite University (Jordan) — Ranked 1st in class (GPA 3.79/4.00), 2008–2011
  Department Honors (2009–2012); University Honors (2010–2011).

Honors & Awards

- Michael & Elizabeth McNally Professorship in Civil Engineering, University of Texas at Tyler, 2025.
- Outstanding Faculty Mentor Award (UT Tyler 10th Annual Lyceum Research Showcase), UT Tyler Honors Program, 2025.

Research Interests

Balanced mix design RAP/RAS availability Sustainable asphalt materials

ANN / PINN / Physics-guided ML Pavement condition & IRI Faulting & skid resistance

Performance-related specs Mechanistic–empirical analysis

Grants & Sponsored Research

FUNDED – IN PROGRESS

- **Incorporating Lab Skid Measurements into the Balanced Mix Design Process** — Texas Department of Transportation (RTI Division); Total ≈ $600,000; UT Tyler share ≈ $45,276. Role: Co-PI (PI: D. Goehl, TTI; Co-PI: M. Souliman); Oct 2024 – Oct 2027.
- **Sugarcane Bagasse Effects on Mechanical & Mechanistic Performance of Hot-Mix Asphalt** — USDA–ARS; $170,000 initial award + $30,000 extension (Nov 2024). Role: Co-PI (PI: M. Souliman); Sep 2023 – May 2028.

SUBMITTED – UNDER REVIEW / RECENT SUBMISSIONS

- **Develop Heavy Duty Intersection Designs with HPG Binder or Suitable Asphalt Mixtures** — TxDOT. PI (Co-PI: M. Souliman); $800,000; Submitted Spring 2025.
- **Develop Performance Models for Different Preventive Maintenance Treatments** — TxDOT. PI (Co-PI: M. Souliman); $675,000; Submitted 2024–2025.
- **Assessing the Use of Intact Sugarcane Bagasse as a Modifier for HMA** — American Sugar Cane League. Co-PI; $29,600; Submitted Nov 2024 / Spring 2025.

SUBMITTED – NOT FUNDED

- **MRI: Aerial-DT – Acquisition of a Digital Twin Testbed for AI-enabled Autonomous Aerial Systems** — NSF MRI. Co-PI; $600,000; Submitted 2024.
- **A Practical Approach to Determine the Minimum Virgin Binder Contents for Ensuring Durable RAP Mixes** — TxDOT RTI. PI (Co-PI: M. Souliman); $322,981; 2024.

Publications

Filter by keyword, author, or venue… Type to filter. Results update instantly.

PEER-REVIEWED JOURNAL ARTICLES

[1] Karki, B., Prova, S., **Isied, M. M.**, & Souliman, M. (2025). Neural Network Approach for Fatigue Crack Prediction in Asphalt Pavements Using Falling Weight Deflectometer Data. *Applied Sciences*, 15, 2076–3417.

[2] Ahmed, T., **Isied, M. M.**, & Souliman, M. (2025). Leveraging Physics with Deep Learning: Physics-Informed Neural Networks (PINN) for IRI Prediction in Flexible Pavements. *Canadian Journal of Civil Engineering* (accepted).

[3] Ahmed, T., **Isied, M. M.**, & Souliman, M. (2024). Artificial neural network-based investigation of factors impacting faulting in rigid pavements for dry-freeze and dry no-freeze climatic zones. *Material Science & Engineering International Journal*.

[4] Mocelin, D. M., **Isied, M. M.**, da Costa, R. F., & Castorena, C. (2024). Availability adjusted mix design method to mitigate adverse effects of RAP on asphalt mixture performance. *Construction and Building Materials*, 422, 135813.

[5] **Isied, M.**, Mocelin, D. M., Preciado, J., Vestena, P., Underwood, B. S., Kim, Y. R., & Castorena, C. (2024). Mechanical Properties and Performance of Mixtures Containing a High Level of Recycled Materials That Are Designed Using Alternative Approaches. *Transportation Research Record*.

[6] **Isied, M.**, Williams, I., Saleh, N. F., Kuchiishi, A. K., Underwood, B. S., & Kim, Y. R. (2024). Mechanical Properties and Performance of Mixtures with the Same Volumetric Classification. *Transportation Research Record*.

[7] Mocelin, D. M., **Isied, M. M.**, & Castorena, C. (2023). Influence of RAP/RAS binder availability on the composition of asphalt mixtures. *Journal of Cleaner Production*, 426, 139156.

[8] Mocelin, D. M., **Isied, M. M.**, Alvis, M., Kusam, A., Underwood, B. S., Kim, Y. R., & Castorena, C. (2023). Laboratory performance evaluation of alternative approaches to include recycled binder availability in mix design. *Transportation Research Record*, 2677, 519–533.

[9] **Isied, M.**, & Souliman, M. I. (2021). Neural Network Modeling for the Rotational Viscosity of Reacted and Activated Rubber-Modified Binders. *Advances in Civil Engineering Materials*.

[10] **Isied, M.**, Souliman, M. I., Zeiada, W. A., & Bastola, N. R. (2021). Predictive ANN Laboratory Fatigue Endurance Limit Model for Asphalt Concrete Pavements. *Transportation Research Record*.

[11] Souliman, M. I., Gc, H., **Isied, M.**, Walubita, L. F., Sousa, J., & Bastola, N. R. (2020). Mechanistic analysis and cost-effectiveness evaluation of asphalt rubber mixtures. *Road Materials and Pavement Design*, 21(S1), S76–S90.

[12] Souliman, M. I., GC, H., **Isied, M.**, & Walubita, L. F. (2020). Treated versus Untreated Aggregate Bases for Flexible Pavements: Nationwide Comparative Case Study. *Transportation Research Record*, 2674(2), 225–236.

[13] Loganathan, K., **Isied, M.**, Coca, A. M., Souliman, M. I., Romanoschi, S., & Dessouky, S. (2020). Estimated remaining fatigue life of flexible pavements based on normalized comprehensive area ratio deflection parameter. *Canadian Journal of Civil Engineering*, 47(5), 546–555.

[14] Gc, H., Souliman, M. I., Zeiada, W., & **Isied, M.** (2019). Mechanistic Assessment of Fatigue Performance and Cost Analysis of Pavement Overlays. *Advances in Civil Engineering Materials*, 8(1), 611–622.

[15] Souliman, M. I., Tripathi, A., & **Isied, M.** (2019). Mechanistic analysis and economic benefits of fiber-reinforced asphalt mixtures. *Journal of Materials in Civil Engineering*, 31(8).

[16] Loganathan, K., **Isied, M.**, Coca, A. M., Souliman, M., Romanoschi, S., & Dessouky, S. (2019). Development of comprehensive deflection parameters to evaluate structural capacity of flexible pavements. *International Journal of Pavement Research and Technology*, 12(4), 347–355.

[17] **Isied, M.**, & Souliman, M. I. (2018). Integrated Predictive ANN Fatigue Endurance Limit Model for Asphalt Concrete Pavements. *Canadian Journal of Civil Engineering*.

[18] Souliman, M., Tripathi, A., Walubita, L., & **Isied, M.** (2018). Performance Evaluation of JPCP with Sealed and Unsealed Joints in North Texas. *Canadian Journal of Civil Engineering*.

[19] Loganathan, K., **Isied, M.**, Coca, A. M., Souliman, M., Romanoschi, S., & Dessouky, S. (2018). Temperature Prediction Model for Flexible Pavements at Various Depths (AZ & MN). *International Journal of Forensic Engineering*.

SELECTED CONFERENCE PAPERS & PRESENTATIONS

- RPUG 2025 (Dallas, TX): Neural network–based models for roughness and skid resistance prediction (co-authored).
- ASCE T&DI Airfield & Highway Pavements 2025 (Glendale, AZ): Multiple papers on PINN for IRI prediction, ML-based faulting detection, and FWD-driven rutting prediction (co-authored).
- AM3P 2025 (Vienna, Austria): Comparative analysis of ML models for faulting prediction; IRI models for rigid pavements (co-authored).
- ICONFBMP 2024 (International Conference on Bituminous Mixtures and Pavements): Papers on rutting prediction, bleeding prediction, and SWCC coefficient prediction

(co-authored).

- UT Tyler Engineers Week 2024: Invited presentation on recycled materials and performance-related specifications in the pavement industry.
- UT Tyler Lyceum (2024–2025) and LSUS Student Scholars Forum (2024–2025): Supervised and co-authored numerous student-led presentations on ML applications in pavement engineering.

Research Reports

- Castorena, C., Costa, R., Alvis, M. C., Mocelin, D., **Isied, M.**, & Kusam, A. (2024). *A Practical Method to Determine RAP Binder Availability*. NCHRP-IDEA Project 236 (Final Report).
- Castorena, C., Underwood, B. S., Kim, Y. R., Mocelin, D., **Isied, M.**, & Alvis, M. C. (2023). *Modifying Existing Asphalt Mix Design Procedures for RAP/RAS Surface Mixtures*. NCDOT Research & Development Unit.
- Underwood, B. S., Castorena, C., Kim, Y. R., Mocelin, D., **Isied, M.**, et al. (2022). *Calibration of Structural Layer Coefficients for North Carolina Asphalt Pavements*. NCDOT R&D Unit.
- Underwood, B. S., Castorena, C., & **Isied, M.** (2021). *Evaluation of New Asphalt Concrete Job Mix Formula Specifications*. NCDOT R&D Unit.

Teaching

COURSES TAUGHT AT UT TYLER

- CENG 5350 – Advanced Topics in Civil Engineering: Asphalt & Bituminous Materials (Graduate).
- CENG 4350 – Topics in Civil Engineering: Asphalt & Bituminous Materials (Undergraduate).
- CMGT 4331 – Construction Scheduling.
- ENGR 1204 – Engineering Graphics I.
- CENG 5395 – Thesis; CENG 5399 – Independent Study (Supervision).

TEACHING ENHANCEMENT

- Learning Cohort for Online Courses (video pedagogy: lighting/sound; Canvas Studio).
- Classroom Without Walls – The Art of Virtual Peer Teaching (peer-collaboration pedagogy).

Graduate Supervision & Mentorship

- Primary advisor for multiple M.S. theses/projects in pavement engineering (**4 active MS advisees in 2024–2025**).
- Mentor for undergraduate and graduate researchers presenting at UT Tyler Lyceum (2024–2025).

Leadership & Service

UNIVERSITY

- Graduate Programs Coordinator, MSCE & MSEL: admissions, advising, curriculum, MSCE self-study (10-year review), launched accelerated MSEL (Summer 2025), chaired MSCE comprehensive exam committee.
- Faculty Search Committee (2024–2025; three tenure-track hires).
- Ad Hoc Committee on GTA/GRA Practices & Guidelines (2025–present).
- Outreach & student engagement: Ratliff Relay; Patriots Premiere Day; TEXO/ASC Region 5 CM competition (faculty advisor, 2025).
- Judge, UT Tyler Lyceum Research Showcase (2025).

PROFESSIONAL

- Guest Editor, *Coatings* (MDPI) — Special Issue on Asphalt & Concrete Technologies (2025–present).
- Committee Member, TRB AMS20 (Resource Conservation & Recovery) (2024–present).
- Journal Reviewer: ASCE J. of Engineering Mechanics; ASCE J. of Materials in Civil Engineering; Transportation Research Record; International Journal of Pavement Engineering; Construction & Building Materials; Journal of the Association of Asphalt Paving Technologists; Environmental Science & Technology; Mechanics of Materials; Journal of Composite Materials; Canadian Journal of Civil Engineering; International Journal of Pavement Research & Technology.

Memberships

- Transportation Research Board (TRB) — Member.

Technical Skills

- Pavement analysis & design; mechanistic-empirical methods; balanced mix design.
- Machine learning for pavement applications (ANN, PINN); Python / MATLAB.
- Engineering software: ETABS, SAP2000, AutoCAD; Microsoft Office.
- Experimental design; materials characterization; data analysis; technical writing.

Prior Industry Experience

- Controls Engineer – Civil, Consolidated Contractors Company (CCC), Aqaba, Jordan (2013–2017).
- Civil Design Engineer, Omrania & Associates, Amman, Jordan (2012–2013).
- Site Engineer, Azmi Zreiqat Contracting (2012–2013).
- Trainee Engineer, Consolidated Contractors Company (CCC), Muscat, Oman.