SPARTAN PREMIER

Spartan Premier, LLC – Executive Biographies and Major Past Experiences

Sana Moran, *CEO/Co-Founder*

Sana Moran is a highly skilled entrepreneur and researcher who has started three successful companies in the engineering and construction fields after working nearly a decade at Texas A&M Transportation Institute (TTI) as a Transportation Researcher. While at TTI, Mr. Moran worked with some of the most prominent engineers in the world while designing, testing, and analyzing roadside safety infrastructure and perimeter security systems. During his time at TTI, Mr. Moran authored and co-authored over fifty research reports and journal articles. This experience has given him in-depth knowledge of the AASHTO MASH standards for assessing roadside safety hardware. Following his time at TTI, Mr. Moran started a company named Safe Stop Barrier Systems as the Vice President. During his time at this company, Mr. Moran led the design and development of innovative roadside safety and infrastructure protection products. He invented or co-invented nearly ten roadside safety or perimeter security products. Mr. Moran holds BS and MS degrees in Civil Engineering from Texas A&M University.

Tyler Skinner, *President/Co-Founder*

Tyler Skinner is a very experienced researcher and construction manager that has a multitude of experience leading large-scale projects. Mr. Skinner spent several years with Texas A&M Transportation Institute (TTI) as an Assistant Researcher. Mr. Skinner worked with Mr. Moran and other prominent roadside safety researchers at TTI where his main responsibilities were to analyze, design, and provide support for testing roadside safety and perimeter security hardware. While at TTI, Mr. Skinner specialized in developing 3D computer models and drawings of roadside safety hardware and analyzing/designing these systems to meet MASH criteria. Following his time at TTI, Mr. Skinner spent several years as a county civil engineer along the Texas coast where he became an expert in the design of hydrology, erosion control, and roadway systems. Mr. Skinner then rejoined Mr. Moran at Safe Stop Barrier Systems, where he helped further advance the company with his broad engineering skillset. He holds a BS degree in Civil Engineering from Lamar University.

Major Past Experiences

Project Name: *PennDOT MASH-E03657-Compliance with FHWA/AASHTO MASH Joint Implementation Agreement*
Client**:** Pennsylvania DOT (PennDOT)
Project Summary: Mr. Moran was a lead TTI researcher for this project where he successfully led numerous phases to provide PennDOT with MASH compliant roadside safety barriers and hardware. Mr. Moran designed, analyzed, and supervised the full-scale crash testing of various roadside median barriers, bridge rail systems, guardrails, guardrail and concrete barrier transitions, and other roadside safety devices. Mr. Skinner was also part of the research team for several phases of this project. Mr. Skinner provided essential drafting and analysis support that helped lead to the design of numerous roadside safety hardware. Many of the roadside safety systems designed by Mr. Moran and Mr. Skinner were crash tested and are now considered MASH TL-3, TL-4, or TL-5 compliant. This project led to the design of nearly fifty (50) roadside safety barriers and devices that are currently in use throughout the state of Pennsylvania and various other states.

Project Name: *Review and Assessment of Past MnDOT Bridge Barrier Type* (Final Report no. MN 2020-24)
Client**:** Minnesota DOT (MnDOT)
Project Summary: As part of this project, Mr. Moran and Mr. Skinner developed an analysis methodology with respect to the current MASH strength and performance criteria to evaluate all bridge barriers currently installed in Minnesota. A total of 1,721,892 lineal feet of barrier exists on MnDOT bridges, and many of these barriers were constructed in the late 1960's and early 70's. Therefore, a thorough assessment of these barriers was requested by MnDOT. Altogether, roughly 60 bridge barrier designs were evaluated under this project. The results of the analyses were used to determine which barriers can be considered MASH compliant and which would require further analysis or crash testing to establish MASH compliance. For the bridge barriers that were found unsatisfactory based on this analysis procedure, retrofit designs were established to enhance these barriers so they could be considered MASH compliant without performing full-scale crash testing. By performing these analyses, new barrier designs were developed to greatly

improve roadside safety on critical roadways leading to the implementation throughout the state of Minnesota.

Project Name: *MASH Evaluation of TxDOT Roadside Safety Features: Phases I - III*
Client**:** Texas DOT (TxDOT)
Project Summary**:** Mr. Moran and Mr. Skinner were part of the TTI research team for Phases I-III of the "MASH Evaluation of TxDOT Roadside Safety Features" project. Mr. Moran successfully led numerous project tasks in each phase to provide TxDOT with MASH compliant roadside safety barriers and hardware. All barriers designed by Mr. Moran successfully passed MASH TL-4 or TL-3 crash testing criteria. Mr. Moran and Mr. Skinner designed, analyzed, and/or supervised the full-scale crash testing of numerous bridge rail systems, concrete barriers, guardrails for numerous applications, and other roadside safety devices under this project. Altogether, 38 roadside safety barriers and hardware were designed, analyzed, and crash tested as part of this project. The roadside safety barriers and hardware designed and evaluated by Mr. Moran and Mr. Skinner are currently in use, or will be in the near future, throughout the state of Texas and numerous other states.

Project Name: *MASH Evaluation of Oregon Bridge Rail Systems*
Client**:** Oregon DOT
Project Summary: Mr. Moran was a lead TTI researcher on the Oregon DOT sponsored "MASH Evaluation of the Oregon Bridge Rail Systems" project. As part of this project, Mr. Moran designed a bridge rail system for Oregon DOT and then used data acquired from strain gauges placed on rebar in the deck of the bridge rail to predict the loads that the deck experiences during MASH Test 4-12. This data was used to aid in the design and evaluation of other barrier designs used by Oregon DOT. In addition, Mr. Moran established a design procedure under this project that allows DOT engineers the ability to efficiently design their bridge deck overhangs to withstand impact from errant vehicles.

Project Name: *NCHRP 20-07/Task 395-MASH Equivalency of NCHRP Report 350-Approved Bridge Railing*
Client: National Cooperative Highway Research Program (NCHRP)
Project Summary: Mr. Moran and Mr. Skinner were part of the research team for the “NCHRP 20-07/Task 395-MASH Equivalency of NCHRP Report 350-Approved Bridge Railings” project. Mr. Moran’s most prominent contribution to this project was the creation of the bridge railing evaluation spreadsheets which were used to perform analyses of the bridge rail systems chosen for review under this project. Mr. Moran and Mr. Skinner used these evaluation spreadsheets to analyze 25 of the most utilized bridge rail systems in the United States. The results of the analyses were used to determine which bridge rails can be considered MASH compliant and which would require further analysis or crash testing to establish MASH compliance. In fact, the evaluation spreadsheets developed under this project are currently being utilized by many DOT bridge engineers across the country to design and analyze their state’s bridge rail systems.

Project Name: *NCHRP Project 22-35 - Evaluation of Bridge Rail Systems to Confirm AASHTO MASH Compliance*
Client: National Cooperative Highway Research Program (NCHRP)
Project Summary: Mr. Moran was part of the TTI research team for the "NCHRP 22-35 - Evaluation of Bridge Rail Systems to Confirm AASHTO MASH Compliance"
project. Mr. Moran’s primary contribution to this project was to analyze various bridge rail system design configurations by performing computer simulations of MASH crash tests. The purpose of this evaluation was to update the bridge rail geometric design for AASHTO MASH criteria in the "AASHTO LRFD Bridge Design Specifications" and the "AASHTO Roadside Design Guide". The results of this study are still under review by the NCHRP research panel. Once finalized, the analysis results will provide engineers with updated bridge rail design specifications under MASH criteria.

Sana Moran

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EDUCATION

Texas A&M University, College Station, TX
Master of Science in Civil Engineering May 2022
Concentration: Structural Engineering
Diversity Fellowship Award Recipient ($75,000)
Bachelor of Science in Civil Engineering May 2016
Concentration: Structural Engineering
Magna Cum Laude Latin Honors

EXPERIENCE

Spartan Premier, LLC
CEO / Co-Founder March 2022 – Present

- Founded the company for the purpose of inventing new roadside safety, infrastructure protection, and perimeter security products.
- Oversee all operations that involve expanding the company and managing business finances.
- Create and maintain ownership of intellectual property through patent development and collaboration with IP attorneys.
- Identify company growth opportunities through investments and partnerships.

Easi-Set Worldwide/Smith-Midland Corporation
Director of Technical Business Development May 2022 – Present

- Conceptualize deliverables, select and apply appropriate analysis techniques and procedures to ensure the accomplishment of objectives, and develop and implement growth opportunities.
- Develop and analyze new and current products as well as potential new techniques, policies, procedures, and recommendations.
- Interact with state DOT officials, building code officials, third party testing services, intellectual property services, product specifiers, and other organizations.
- Author and co-author technical reports, guidebooks, product specifications, product articles, and other works.

Safe Stop Barrier Systems, Columbus, TX
Vice President September 2020 – March 2022

- Furthered company expansion by developing the company business model and oversaw the mergers and acquisitions team for the purpose of seeking investors in company products.
- Managed intellectual property through development of patents and collaboration with IP attorneys.
- Led the design and development of innovative roadside safety and infrastructure protection products.
- Designed a crash testing facility in which over thirty full-scale crash tests of vehicles ranging in size from small cars to 18-wheelers going speeds of up to 75 mph were conducted.
- Collaborated with the marketing team to develop the company logo, merchandise, product technical sheets, and website.

Chief Development Officer (CDO) April 2020 – September 2020

- Aided in creating the business foundation as part of a startup company and facilitated company expansion.
- Designed innovative roadside safety products by utilizing intricate analysis methods.
- Developed prototypes and molds to be used in short-run production for testing various systems.
- Created manufacturing processes for product development.

Texas A&M Transportation Institute (TTI), College Station, TX

Assistant Transportation Researcher Full Time: May 2018 – April 2020, Part Time: April 2020 – May 2022

- Designed, analyzed, and supervised the full-scale crash testing of various concrete roadside and median barriers, bridge rail systems, guardrails, guardrail and concrete barrier transitions, and other roadside safety devices.
- Developed and analyzed roadway infrastructure and physical security systems such as bridge rail systems, thrie beam and W-beam transitions, guardrails, security fences, security bollards, and cable rail barriers.
- Authored and co-authored over 50 research reports and journal articles.

Structural Engineering Graduate Assistant Researcher August 2016 – May 2018

- Created large-scale spreadsheets that can efficiently assess the adequacy of bridge rail systems and other rigid roadside safety barrier systems.
- Evaluated many bridge rail systems in the United States under a large-scale project for the purpose of transitioning these bridge rail systems to a new standard known as *AASHTO MASH*.
- Developed thorough new designs and retrofit designs of roadway infrastructure such as bridge rail systems, thrie beam transitions, W-beam transitions, security fences, and drop-arm systems.

Structural Engineering Student Technician May 2014 - August 2016

- Designed and analyzed roadway infrastructure such as bridge rail systems, concrete barriers, guardrails, security bollards, security fences, and drop-arm systems.
- Applied technical drafting skills in order to design and analyze roadway safety and physical security systems.

CONFERENCE PRESENTATIONS

Transportation Research Board (TRB) AFB20 Midyear Meeting, Reno, Nevada July 2019

- Presented on various roadside safety research projects conducted at Texas A&M Transportation Institute (TTI) – Joint Meeting of the AASHTO Committee on Design and Council on Active Transportation in collaboration with TRB Roadside Safety Design Committee (AFB20) **https://active.transportation.org/wp-content/uploads/sites/53/2019/08/2019-COD_CAT-final-agenda.pdf**

Task Force 13, College Station, Texas September 2019

- Presented on various roadside safety research projects conducted at TTI – Task Force 13 Joint Meeting with the Roadside Safety Pooled Fund

Roadside Safety Pooled Fund, College Station, Texas September 2019

- Presented on numerous research projects that I had performed and expected to perform in the upcoming year at TTI through the Roadside Safety Pooled Fund – Roadside Safety Pooled Fund yearly meeting

AFFILIATIONS

Member, Task Force 13
AKD20 Committee of Transportation Research Board (TRB)
Member, American Society of Civil Engineers (ASCE)
Member, Chi Epsilon Honor Society in Civil Engineering, Texas A&M University

INTERESTS & SKILLS

Entrepreneurship, Business Development, New Product Development, Intellectual Property
Roadside Safety Barriers and Devices, Physical Security and Infrastructure Protection Products and Structures, Structural Design, Dynamic Structural Analysis, Simulation, Bridge Engineering
Advanced knowledge of Microsoft Office (Word, Excel, PowerPoint, Outlook), Bluebeam Revu, SolidWorks, Matlab, Mathcad
Familiar with Solidworks Simulations, LS-DYNA, LS-PrePost, AutoCad, STAAD, ETABS, and SAP

Tyler Skinner

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Email: tyler.skinner@spartanpremier.com

EDUCATION

Lamar University, Beaumont, TX — Graduation: May 2017
Major: Civil Engineering
Overall GPR: 3.50

EXPERIENCE

Spartan Premier, LLC
President / Co-Founder — March 2022 – Present

- Founded the company for the purpose of inventing new roadside safety, infrastructure protection, and perimeter security products.
- Manage business finances.
- Create and maintain ownership of intellectual property through patent development and collaboration with IP attorneys.
- Identify company growth opportunities through investments and partnerships.
- Oversee product development and preliminary crash testing.

Easi-Set Worldwide/Smith-Midland Corporation
Engineering Specialist — May 2022 – Present

- Conceptualize deliverables, select and apply appropriate analysis techniques and procedures to ensure the accomplishment of objectives, and develop and implement growth opportunities.
- Develop and analyze new and current products as well as potential new techniques, policies, procedures, and recommendations.
- Develop specifications and detailed drawings of products utilizing engineering/modeling software.
- Author and co-author technical reports, guidebooks, product specifications, product articles, and other works.

Safe Stop Barrier Systems, Columbus, TX — March 2021 – March 2022
Research Specialist

- Develop roadside safety and infrastructure protection.
- Create CAD drawing roadside safety and infrastructure products.
- Develop patent documents and drawings.
- Perform preliminary full scale crash tests.

Chambers County Road and Bridge, Anahuac, TX — June 2019 – March 2021
Engineering Graduate

- Completed reviews of subdivision plans and inspections of new subdivision roads to determine if the roads will meet the county's standards to become county roads.
- Managed and inspected multiple projects including asphalt, concrete, cement stabilized base, and limestone base.
- Completed hydrology reviews to determine detention/retention ponds and drainage maps to determine new road construction and culvert sizing.
- Completed multiple project cost estimates for various projects in the county.

Texas A&M Transportation Institute (TTI), College Station, TX — May 2017 – May 2019
Structural Engineering Student Technician

- Design and analysis of roadway infrastructure including bridge rails and other roadway safety devices.
- Apply technical drafting skills to design and analyze roadway safety infrastructure under the supervision of William Williams (M.S., P.E.).

Bellhops, College Station, TX — February 2013 - January 2014
Co-Campus Director (Internship)

- Managed forty college students for a nationally recognized moving company

- Oversaw several major installment jobs of major apartment complexes across College Station area
- Learned how to manage an entire moving company through advertisements, job outreach programs, etc.

ACTIVITIES

First Baptist Church Group, Woodville, TX June 2008 - June 2012

Leader/Coordinator

- Lead group of other youths on mission trips, worship, and meetings
- Coordinated gatherings and functions
- Helped plan various community service activities across Southeast Texas

HONORS

Chi Epsilon Spring 2016

- Civil Engineering Honor Society
- Marshall of Chi Epsilon
- Accomplished various community service activities in the Beaumont area

Lamar University Presidents List Spring 2016

Lamar University Deans List Spring 2017

SKILLS

- Advanced knowledge of Management/Leadership Skills, SolidWorks, and AutoCAD Civil 3d
    - Also familiar with STAAD, C++, and MicroStation