

MOJDEH A. PAJOUH, Ph.D., P.E.

Postdoctoral Research Associate
Midwest Roadside Safety Facility
University of Nebraska-Lincoln

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EDUCATION

Texas A&M University College Station TX
Ph.D. (2015) Civil Engineering – Geotechnical Engineering
Dissertation: Experimental and Numerical Investigation of Impact Loads on Group of Piles

Tehran Polytechnic Tehran Iran
M.Sc. (2009) Civil Engineering – Structural/Earthquake Engineering

KNT University of Technology Tehran Iran
B.Sc. (2006) Civil Engineering

RESEARCH INTERESTS

- **Computational Mechanics:** theoretical and numerical modeling; impact engineering
- **Geomechanics:** soil-structure interaction; design of infrastructure systems against extreme hazards
- **Experimentation and Testing Techniques:** in-situ soil characterization, full-scale testing, dynamic component testing
- **Transportation Systems Crashworthiness:** highway safety and defense engineering
- **Geo-Seismic Engineering:** soil dynamic, geotechnical earthquake engineering, site response analysis

RESEARCH EXPERIENCE

University of Nebraska-Lincoln, MwRSF (12/2015 – Present)

- *Computation, Experimentation, and Design of Crashworthy Systems*
 - Performed advanced computer simulations (using LS-DYNA) and designed testing (full-scale and component testing) to study impact characteristics of soil and structures
 - Developed impact-resistant systems: (~ detailed in technical papers and reports)
 - Transition from free-standing to reduced-deflection concrete barriers
 - Downstream anchorage system for guardrails
 - High tension cable barrier to be installed along roadways (*ongoing research*)
- *Vehicle Dynamics Testing and Validation of Vehicle Models*
 - Investigated vehicle traversals over rock ditch liners on slopes through a full-scale crash test and computer simulation (~ detailed in technical papers and reports)
- *Safe Placement of Poles behind MGS along Roadways (sponsored by Illinois Tollway)*
 - Determined critical pole location along roadways, designed full-scale tests with small passenger car and pickup truck impacting guardrail offset a luminaire pole and accordingly provided State DOTs guidance.
- *Study of Rail Height Effects on Safety Performance of Barriers (sponsored by 16-State DOTs)*
 - Investigated performance of guardrails with increased rail height in redirecting cars
- *Barrier Deflections at Lower Speed Impacts (sponsored by 16-State DOTs)*
 - Investigated the safety hardware installations in lower-service level roadways

Texas A&M University (8/2011 – 12/2015)

- *Protection of Civil Infrastructure against Extreme Vehicle Crashes (collaborated with Texas Transportation Institute, TTI, Sponsored by U.S. Dept. of State-Homeland Security)*
 - Designed single piles and group of piles to sustain truck impacts
 - Developed a model (TAMU-POST) to predict pile response under vehicular impacts
 - Performed probabilistic analyses to provide probability of failure of designed systems
 - Performed numerical modeling, studied constitutive models to simulate soil response

Tehran Polytechnic (8/2006 – 2/2009)

- *Geo-Seismic Engineering, soil dynamic, earthquake geotechnical engineering*
 - Studied wave amplification and site response analysis in alluvial zones
 - Generated seismic microzonation maps for studied zones (case study)

TEACHING EXPERIENCE**Texas A&M University**

Lecturer	Mechanics of Materials (CVEN 305) 90 undergraduate students, evaluation score: 4.4/5.0	Spring 2015
Teaching Assistant	Introduction to Geotechnical Engineering (CVEN 365)	Summer 2014
Teaching Training	Received Graduate Teaching Academy Certificate Center of Teaching Excellence, Texas A&M University	Fall 2014
	Selected to participate in STEM Faculty Launch Program Worcester Polytechnic Institute (WPI), Boston, MI.	Sept. 2015
	Participated in National Science Foundation (NSF) Workshop, Career Development from Senior Undergraduates to Navigating Assistant Professorship, University of Houston, Houston, TX, June 2015	

University of Nebraska-Lincoln**Mentoring Experience**

Tewodros Yosef (Ph.D. Student in Geotechnical Eng.) 05/2016 – present

Reviewed/Assisted with “Program of Undergraduate Creative Activities & Research Experiences”, which supports undergraduate students to incorporate a creative research into their education, April 2016, 2017

PUBLICATIONS**Peer-Reviewed Journal Publications**

1. **Asadollahi Pajouh, M.**, Briaud, J. L., Lim, S. G., and Mirdamadi, A. (2017). Dynamic Response of In-Line Pile Groups Subjected to Vehicle Impact. ASCE Journal of Geotechnical and Geoenvironmental Engineering, 143(7), 04017024.
2. **Asadollahi Pajouh, M.**, Schmidt J.D., Meyer, C.L., Lechtenberg, K.A., Faller, R.K. (2017). Crash Reconstruction Technique for Cable Barrier Systems. Journal of Transportation Safety and Security , DOI 10.1080/19439962.2017.138625 (in press).
3. **Asadollahi Pajouh, M.**, Ramen, J.D., Stolle, C.S., Reid, J. D., and Faller, R.K. (2017). Rail Height Effects on Safety Performance of Midwest Guardrail System. Journal of Traffic Injury Prevention. DOI: 10.1080/15389588.2017.1353687.

4. **Asadollahi Pajouh, M.**, Bielenberg, R.W., Schmidt J., Faller, R.K. (2017). Safe Placement of Breakaway Luminaire Poles behind Midwest Guardrail System. International Journal of Crashworthiness. DOI: 10.1080/13588265.2017.1359367.
5. Mirhosseini, S.M., **Asadollahi Pajouh, M.** (2012). "A Comparative Study on Equivalent Linear and Fully Nonlinear Site Response Analysis." Arabian Journal of Geosciences, Vol. 5, Issue 4, pp 587-597.

Journal Papers – Accepted with Revision/Under Review

1. **Asadollahi Pajouh, M.**, Briaud, J. L., and Mirdamadi, A. Measured and Simulated Dynamic Response of Two Single Piles Subjected to Lateral Impact Loads. ASCE Journal of Geotechnical and Geoenvironmental Engineering (submitted 08/15/2017).
2. **Asadollahi Pajouh, M.**, Schmidt, J.D., Bielenberg, R.W., Faller, R.K., Reid, J. D., and Emerson, E. Development of a Transition between Free-Standing and Reduced-Deflection Portable Concrete Barriers. Journal of Transportation Research Board TRB2018 (submitted 08/01/2017).
3. Bielenberg, R.W., Schmidt, J.D., Faller, R.K., **Asadollahi Pajouh, M.**, Reid, J. D., and Emerson, E. Development of Retrofit, Low-Deflection Portable Concrete Barrier System. Journal of Transportation Safety and Security (submitted 06/28/2017).
4. **Asadollahi Pajouh, M.**, and Briaud, J. L. TAMU-POST: An Analysis Tool for Vehicle Impact on In-line Pile Group. Journal of Transportation Geotechnics (submitted).

Peer-Reviewed Conference Papers

1. **Asadollahi Pajouh, M.**, and Briaud J.L. (2017). Reliability Analysis of TAMU-POST: a Tool for Analysis of Vehicle Impact on In-line Pile Group. Proceedings of ASCE-GeoRisk2017, 6th International Symposium on Geotechnical Safety and Risk, pp. 598-608.
2. **Asadollahi Pajouh, M.**, Reid, J. D., Bielenberg, R.W., Schmidt, J.D., and Faller, R.K. (2017). Pole Placement near The Midwest Guardrail System. Proceedings of ASME 2017 International Mechanical Engineering Congress and Exposition IMECE2017.
3. **Asadollahi Pajouh, M.**, Stolle C.S., Reid, J.D., Faller, R.K., and Emerson, E. (2017). An Initial Investigation into Traversability of Rock Ditch Liners. Transportation Research Circular, Proceedings of 1st International Roadside Safety Conference (IRSC), pp. 52-63.
4. **Asadollahi Pajouh, M.**, Stolle C.S., Weiland N., Reid, J.D., and Faller, R.K. (2017). MGS Dynamic Deflections and Working Widths at Lower Speeds. Transportation Research Circular, Proceedings of 1st International Roadside Safety Conference (IRSC) pp. 631-643.
5. Faller, R.K., Rosenbaugh S., Bielenberg, R.W., Lechtenberg, K.A., Holloway, J., Stolle C.S., Schmidt, J.D., Reid, J.D., and **Asadollahi Pajouh, M.** (2017). Investigation and Mitigation of Post Penetration into Floorpan of 1100C Small Cars. Transportation Research Circular, Proceedings of 1st International Roadside Safety Conference (IRSC), pp. 687-704.
6. **Asadollahi Pajouh M.**, Briaud J.L., et al. (2015). Full Scale Crash Test on a Group of Piles in Clay. Proceedings of ASCE-IFCEE 2015, pp. 1132-1141, doi: 10.1061/9780784479087.101
7. **Asadollahi Pajouh M.**, Lim S.G. and Mirdamadi A. (2014). Full-Scale Impact Test and Numerical Simulation of a Truck against a Group of Piles. Proceedings of ASCE GeoCongress 2014, pp 1750-1760, doi:10.1061/9780784413272.172.

8. Briaud J.L., Mirdamadi A., and **Asadollahi Pajouh M.** Horizontal Load on Piles: Evaluation of the SALLOP Method. ISP7 the 7th International Symposium on Pressuremeter, Hammamet, Tunisia, May 2015.
9. Briaud J.L., Mirdamadi A., and **Asadollahi Pajouh M.**, Modeling Single Piles under Lateral Impact. International Conference on Geotechnical Engineering, Soil-Structure Interaction Underground Structures and Retaining Walls, Saint Petersburg, Russia, June 2014.
10. **Asadollahi Pajouh M.**, Mirdamadi, A., Seok Gyu, L., Briaud J.L. Protection of Civil Infrastructure against Extreme Vehicle Crashes. ASCE Proceedings of IFCEE 2018, Geotechnical Special Publication (GSP), Orlando, Florida, March 2018 (accepted).
11. **Asadollahi Pajouh, M.**, Schmidt, J.D., Bielenberg, R.W., Reid, J. D., and Faller, R.K. Simplified Soil-Pile Interaction Modeling under Impact Loading. ASCE Proceedings of GEESDV 2018, 5th Geotechnical Earthquake Engineering and Soil Dynamics Conference, Austin, Texas, June 2018 (accepted).

Research Reports

1. **Asadollahi Pajouh, M.**, Bielenberg, R.W., Schmidt, J., Lingenfelter, J.L., Faller, R.K., and Reid, J.D., Placement of Breakaway Light Poles Located Directly Behind Barrier, Report to Illinois Tollway, Transportation Report No. TRP-03-361-17, Midwest Roadside Safety Facility, University of Nebraska-Lincoln, Lincoln, Nebraska, 2017.
Available at <http://mwrsf.unl.edu/researchhub/files/Report336/TRP-03-361-17.pdf>
2. **Asadollahi Pajouh, M.**, Reid, J.D., Stolle, C.S., and Faller, R.K., Phase II: Vehicle Dynamics Testing of Rock Ditch Liners, Report to Wisconsin Department of Transportation, Transportation Report No. TRP-03-364-17, Midwest Roadside Safety Facility, UNL, Lincoln, Nebraska, 2017. Available at <http://mwrsf.unl.edu/researchhub/files/Report339/TRP-03-364-17.pdf>
3. **Asadollahi Pajouh, M.**, Schmidt, J.D., Bielenberg, R.W., and Faller, R.K., Development of a Transition Between Free-Standing and Reduced-Deflection Portable Concrete Barriers, Report to Wisconsin Department of Transportation, Transportation Report No. TRP-03-366-17, Midwest Roadside Safety Facility, UNL, Lincoln, Nebraska, 2017.
Available at <http://mwrsf.unl.edu/researchhub/files/Report340/TRP-03-366-17.pdf>
4. Rosenbaugh, S.K., **Asadollahi Pajouh, M.**, Bielenberg, R.W., Faller, R.K., and Schmidt, J.D., Development of Top-Mounted Socket for Weak-Post Guardrail on Culverts, Report to Nebraska Department of Roads, Transportation Report No. TRP-03-386-17, Midwest Roadside Safety Facility, UNL, Lincoln, Nebraska, 2017.

PROFESSIONAL ACTIVITIES

Professional License

PE Licensed – State of Texas

Professional Leadership Roles

- **Committee Member** –Transportation Research Board (TRB) Standing Committee on Geotechnical Site Characterization - AFP20 (April 2017 - April 2020)
- **Chair**, Postdoc Advisory Council, University of Nebraska-Lincoln (2017 – Present)
- **President**, Geo-Institute TAMU Chapter, Texas A&M University (2014-2015)
- **Board Member**, Society for Underwater Technology, Texas A&M University (2013 – 2014)

Reviewer of Journal Papers

- ASCE Journal of Geotechnical and Geoenvironmental Engineering
- Journal of Earth Sciences and Geotechnical Engineering (Member of Editorial Board)
- International Journal of Crashworthiness
- Journal of the Transportation Research Board
- Journal of Sustainable and Resilient Infrastructure
- Journal of Geotechnical and Transportation Engineering
- Journal of Rock Mechanics and Geotechnical Engineering
- Journal of Transportation Geotechnics

Reviewer of Conference Papers

- GeoRisk2017, International Symposium on Geotechnical Safety and Risk
- International Roadside Safety Conference IRSC-2017
- ASCE-IFCEE 2018 Conference

Community Service

- Panel Evaluator, Institute for International Teaching Assistants (ITA), University of Nebraska- Lincoln, August 2017
- Judge, Program of Undergraduate Creative Activities & Research Experiences (UCARE), University of Nebraska- Lincoln, April 2016
- Co-organizer, UNL Professional Development Workshop and Science Slam Competition, Office of Postdoctoral Studies, University of Nebraska-Lincoln, Fall 2016

PROFESSIONAL PRESENTATIONS

- “Maximum Mounting Height for Midwest Guardrail System (MGS).” Transportation Research Board 96th Annual Meeting, TRB committee AFB20 Standing Committee on Roadside Safety Design, Washington DC, January 2017.
- “FEA Investigation into Safe Placement of Luminaire Poles behind Midwest Guardrail System.” Transportation Research Board AFB20 Committee on Roadside Safety Design Summer Meeting, Baltimore, MD, June 2016.
- “Reliability Analysis of TAMU-POST: a Tool for Analysis of Vehicle Impact on In-line Pile Group.” ASCE-GeoRisk2017, 6th International Symposium on Geotechnical Safety and Risk, Denver, Co. June 2017.
- “Pole Placement near The Midwest Guardrail System” ASME 2017 International Mechanical Engineering Congress and Exposition IMECE2017.
- “An Initial Investigation into Traversability of Rock Ditch Liners.” 1st International Roadside Safety Conference (IRSC), San Francisco, California, June 2017.
- “MGS Dynamic Deflections and Working Widths at Lower Speeds.” 1st International Roadside Safety Conference (IRSC), San Francisco, California, June 2017.
- “Full Scale Crash Test on a Group of Piles in Clay”. ASCE IFCEE 2015, San Antonio, TX, March 2015.
- “Full-Scale Impact Test and Numerical Simulation of a Truck against a Group of Piles.” ASCE Proceedings of GeoCongress 2014, Atlanta, GA, February 2014.

HONORS AND AWARDS

- **Academic Excellence Award**, two consecutive years, Texas A&M University, 2014 and 2015, awarded for excellent scholastic records, community activities, and leadership positions.
- **Graduate Teaching Lecturer Fellowship**, Zachry Department of Civil Engineering, TAMU, 2015, Nominated by TAMU faculties and awarded for excellent teaching/communication skills.
- **USUCGER Grant**, United States Universities Council on Geotechnical Education and Research, awarded to attend the ASCE-IFCEE 2015 conference.
- **Geo-Institute Organizational Member Council Grant**, 2015, awarded for outstanding service to Geo-Institute Student Chapter.
- **1st Place Graduate Presentation Winner**, Annual Student Research Week Competition, The largest single-university student-run research symposium in the U.S., Texas A&M University, 2014
- **SIawe Scholarship**, Society of Women for Education, 2014
- **Graduate Teaching Academy Fellow**, Center for Teaching Excellence, TAMU, 2014
- **Graduate Climate Award** by Dwight Look College of Engineering, Texas A&M University, 2014
- **Graduate Council Student Grant**, Zachry Department of Civil Engineering, 2014
- **Worcester Polytechnic Institute (WPI) Grant**, awarded to attend STEM Faculty Launch Program, WPI, Boston, Sept. 2015

CONSULTING/INDUSTRY EXPERIENCE

- Civil Engineer, Shaloodeh-Khak Consulting Engineering Company, Tehran, Iran (Feb. 2009 – June 2010)
 - Seismic retrofitting of a 25-story reinforced concrete building, located in Tehran
 - Geotechnical site characterization and site response analyses for a number of projects
 - Retrofitting of masonry school buildings, Province of Kerman, Iran
- Intern, Sharif Industrial Research Institute, Tehran, Iran (June 2006 – Aug. 2006)

RESEARCH FEATURED IN NEWS

- Interview with TV channel ABC Lincoln on new guardrail systems with increased height
<http://www.klkntv.com/story/36044415/study-roadside-guardrails-may-seek-new-heights>
<https://www.facebook.com/nicolecousinstv/videos/1073946512738415/>
- Nebraska Today News
<http://news.unl.edu/newsrooms/today/article/take-an-inch-give-a-mile-higher-roadside-barriers-show-promise/>
- Interview with TV channel 10/11 News
<http://www.1011now.com/video?vid=436847153>
- Interview with NTV News
<http://nebraska.tv/news/local/unl-researchers-find-making-guardrails-taller-could-save-lives-tax-dollars>
- Car Industry News, Road & Track.com
<http://www.roadandtrack.com/car-culture/a10376536/36-inch-guardrails/>

Professional Training

- Training Course - Introduction to LS-DYNA, Midwest Roadside Safety Facility, University of Nebraska- Lincoln, July 2016
- SciComm 2016- Science Communication Symposium and Broader Impacts Workshop, University of Nebraska-Lincoln, Sept. 2016
- ASCE Short Course, Geophysical Methods for Geotechnical Site Characterization, Geocongress February 2014, Atlanta, GA
- COMSOL Multiphysics & Application Builder Workshop, University of Nebraska-Lincoln, April 2016
- NURAMP Workshop Series, Proposal Writing and Research Management Program, Office of Research and Economic Development, University of Nebraska-Lincoln, Fall 2016

Professional Membership

- ASCE – Geo Institute – American Society of Civil Engineers (Associate Member)
- Women in Deep Foundations Committee of Deep Foundations Institute (DFI), Member
- ASHE – American Society of Highway Engineers
- SWE – Society of Women Engineers and WE – Women in Engineering
- ASEE – American Society of Engineering Education
- ISSMGE – International Society for Soil Mechanics and Geotechnical Engineering
- ISI – Institute for Sustainable Infrastructure
- EERI – Earthquake Engineering Research Institute