

XI LUO

College Station, TX 77845
814-777-6192, xiluorossie@tamu.edu

EDUCATION

- Texas A&M University**, College Station, TX **Dec/2022**
Ph.D., Geotechnical Engineering
Concentration: Constitutive model development; Numerical simulations; Coupled hydro-mechanical (HM) problem; Fluid transport in porous media.
- Pennsylvania State University**, State College, PA **Aug/2015**
M.S., Geotechnical Engineering
- South China University of Technology**, Guangzhou, GD, China **June/2013**
M.S., Engineering Mechanics
- Central South University**, Changsha, HN, China **June/2009**
B.S., Civil Engineering

RESEARCH EXPERIENCE

Expansive Soil Embankment Behavior Due to Environmental Effect **June/2017-Present**

- Simulated the uneven settlements and corresponding moisture content distribution in two sections as unsaturated fluid transport in a deformed porous media problem, with local failure and moisture contents matching the results of long-term in-situ tests
- Turned improved soil constitutive model into MATLAB code by using an explicit strain to stress scheme
- Improved expansive soil constitutive model considering the macro and micro scales of soil pores based on previous model BBM, BExM, and DS model, as well as experimental evidence summarized from existing publications and current research
- Analyzed in-situ and lab test results and made engineering judgments.

Texas A&M Transportation Institute Project 0-7006, "Design, Construction, and Performance Monitoring of Stabilization of Expansive Soils and Cement" **July/2019-Aug/2019**

- Analyzed results of unconfined compression tests on different kinds of cement-treated sandstone or soils reinforced with fibers
- Figured out influence of fiber type, content, and length on material toughness
- Prepared literature reviews part of project report, it reached conclusion fiber-reinforced base materials improve behavior of pavement built on expansive soils with more ductility and less sulfate problem.

Texas A&M Transportation Institute Project 5-6622-01, "Field Implementation of the Texas Mechanistic-Empirical Pavement Design Process in Six TxDOT Districts" **June/2017-May/2018**

- Conducted asphalt mixture lab tests, including fatigue, repeated load, and dynamic modulus tests
- Analyzed tests data with LabVIEW and other software
- Proposed a new semi-analytical solution to revised indirect tensile test on asphalt mix and verified with FEM numerical solutions by ABAQUS.

Nuclear Waste Disposal

Sep/2015-May/2017

- Studied FEM numerical modeling of Thermo-hydro-mechanical problem on porous media
- Conducted simulation of existing infiltration test and compared simulation and experimental results.

Unbonded Overlay Response under Moving Vehicle

Sep/2014-08/2015

- Developed a new semi-analytical solution to unbounded overlay pavement under different moving vehicle loads, i. e., two-axis and three-axis loads, by applying elasticity theory to the plate
- Obtained shapes and magnitudes of simulation results numerically by applying integral transform, it was concluded they were consistent with full-scale test results.

Dynamic Response of Saturated Soil Foundation

Nov/2011-Feb/2013

- Proposed a new semi-analytical solution of saturated poroelastic half space under various semi-permeable boundary conditions, with a harmonic load on surface, and embedded into foundation.

PUBLICATION

- Luo, X., Hu, S., Zhou, F., Crockford, W., & Karki, P. (2022). Simple Asphalt Mixture Shear Rutting Test and Mechanical Analysis. *Journal of Materials in Civil Engineering*, 34(9), 04022220.
- Luo, X., Zeng, X. W., & Tang, L. Q. (2012). Dynamic response of a poroelastic half-space with semi-permeable surface subjected to time-harmonic vertical load. In *Advanced Materials Research* (Vol. 594, pp. 2757-2762). Trans Tech Publications Ltd.
- Zeng, X., Deng, J., & Luo, X. (2012). Deflection of a cantilever rectangular plate induced by surface stress with applications to surface stress measurement. *Journal of Applied Physics*, 111(8), 083531.
- Zeng, X. W., & Luo, X. (2011). Analysis of crack-inclusion interaction in an anisotropic medium by Eshelby equivalent inclusion method. In *Advanced Materials Research* (Vol. 268, pp. 72-75). Trans Tech Publications Ltd.

INTERNSHIP AND LEADERSHIP

Langan Engineering and Environmental Services, Inc.

Sep/2019- Jan/2020

- Supervised and collaborated with contractors on in-situ SPT, CPT, and vertical and horizontal pile loading tests on several individual projects
- Collected SPT samples and test data.
- Made minor decisions on project progress
- Wrote boring logs and technical reports
- Calculated related problems of expansive soil.

China Railway 12TH Group Co., Ltd

July/2010-Aug/2010

- Organized group work, assigned each member things to do every day
- Checked the in-situ documents of engineering survey and recalculated raw data
- Drew abutments details with AutoCAD.

OTHER EXPERIENCE

- *Teaching Assistant* of CVEN 221 Statics, TAMU Jan/2021-May/2022
- *Teaching Assistant* of CVEN 365 Introduction to Geotech Eng., TAMU Sep/2018-May/2019
- *Research Assistant*, TAMU&TTI June/2017-May/2018

- *Grader*, TAMU July/2019-Aug/2019
- *Research Assistant & Teaching Assistant*, SCUT Sep/2016-May/2017
Assisted professor with mentoring undergraduate student thesis. Sep/2010-June/2013

COMPUTER SKILLS

- GiD, MATLAB, ABAQUS, Auto CAD, Knowledge and proficiency using MS Office Applications and web-based applications.
- Computer language: C & Fortran.

AWARDS

- Dr Don Murff '70 End Fell, TAMU 2022
- Janet and Jean-Louis Briaud Fellowship, TAMU 2020
- Willy F. Bohlmann, Jr. '50 Family Fellowship, TAMU 2019
- First-class scholarship, SCUT 2011-2012
- Paper Award, SCUT 2012
- Alumni Scholarship, ranking 2/21 SCUT 2011
- Third-class scholarship, CSU 2006-2009