

Fei Wang, Ph.D., P.E.

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EDUCATION

- Doctor of Philosophy in Civil Engineering (Geotechnical)** **02/2016**
University of Kansas, Lawrence, KS
Dissertation title: “Analyzing Field Performance of Steel-Reinforced High-Density Polyethylene (SRHDPE) Pipes during Installation and Under Traffic Loading”
Advisor: Jie Han
- Doctor of Philosophy in Transportation Engineering** **01/2010**
Southeast University, Nanjing, China
Dissertation title: “Mechanism of the Land Subsidence due to Ground Water Withdrawal and the Mitigating Technologies for Transportation Infrastructures”
Advisor: Lin-Chang Miao
- Master of Science in Geotechnical Engineering** **09/2006**
Thesis title: “Load Transfer Mechanism and Long-Term Deformation Behavior of Pile Foundation under High-Rise Building”
Southeast University, Nanjing, China
Advisor: Lin-Chang Miao
- Bachelor of Science in Transportation Engineering** **07/2004**
Hebei University of Technology, Tianjin, China

PROFESSIONAL EXPERIENCE

- Assistant Professor in Civil Engineering** **01/2019-Present**
Tarleton State University
- Senior Geotechnical Engineer** **04/2016- 12/2018**
RTE Technologies, Inc.
- Adjunct Professor** **01/2017-07/2017**
Department of Civil, Environmental and Architectural Engineering, University of Kansas
- Graduate Research Assistant** **01/2014-12/2015**
Department of Civil, Environmental, and Architectural Engineering, University of Kansas
- Lecturer & Associate Professor** **01/2010-12/2015**
Department of Underground Space Engineering, Southeast University

CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS

P.E. in Civil Engineering (Missouri PE-2018000291 and Kansas #26542)

TEACHING EXPERIENCE

- Foundation Engineering (Undergraduate, Tarleton State University)
- Transportation Engineering (Undergraduate, Tarleton State University)
- Construction Planning and Management (Undergraduate, Tarleton State University)
- Engineering Mechanics: Statics and Dynamics (Undergraduate, Tarleton State University)
- Principles of Pavement Design (Graduate, University of Kansas and Tarleton State University)
- Soil Mechanics (Undergraduate, Southeast University, and Tarleton State University)
- Advanced Soil Mechanics (Graduate, Southeast University)

TEACHING INTERESTS

- Soil Mechanics
- Foundation Engineering
- Pavement Design
- Design of Buried Structures
- Design of Geosynthetic Reinforcement
- Numerical Methods in Geomechanics
- Earth Structures

RESEARCH INTERESTS

- Geo-Hazards Monitoring, Evaluation, and Mitigation
- Soil-Structure Interaction
- Performance of Buried Culverts
- Tunneling
- AI-Based Technology for Civil Engineering
- Numerical Modeling in Geomechanics
- Geosynthetic Reinforcement
- Sustainable Material in Civil Engineering

HONORS AND AWARDS

Faculty Development Grant, Tarleton State University	2021
AASHTO Sweet Sixteen Research Award	2019
Faculty Development Grant, Tarleton State University	2019
NSF Travel Grant for CBBG 2019 Meeting	2019
Bert & Dorothy Steves Mem. Fellowship, the University of Kansas	2015
First Prize of Science and Technology, Jiangsu Province, China	2013
Teaching Annual Award, Southeast University, Ranking: 15/120	2012
Excellent Young Instructor Award, Southeast University, Ranking: 3/96	2011

RESEARCH PROJECTS

1. Large-Scale Experimental Study on the Use of Biochar to Treat Oil Contaminated Soils, funded by 2021 Presidential Excellence in Research Scholar's (PERS) grant. Tarleton State University, 2021, Principal Investigator, Budget: \$11,300.
 - Large scale of physical model tests in the laboratory
 - Customize biochar to facilitate the remediation
 - Observe the degradation of oil caused by bacteria generated in biochar
2. Experimental Study on Using Biochar for Remediation of Oil Contaminated Soils, funded by *Tarleton State University*, 2019-2020, **Principal Investigator**, Budget: \$ 5500.
 - Lab tests to verify the effectiveness of using biochar to remedy oil contaminated soils
 - Propose a method to determine the optimum content of biochar
 - Develop procedure to evaluate the oil removal efficiency
3. Physical and Numerical Modeling of Buried High-Pressurized Pipes, funded by *Natural Science Foundation of China (NSFC)*, Award No.513101105030, 2013-2014, **Principal Investigator**, Budget: \$7,000.
 - Lab-scale model test system for buried pipes considering ground movement
 - Effect of high pressure on pipe performance subjected to ground movement
4. Failure Mechanism of Buried Oil and Gas Pipelines Subjected to Land Subsidence in Jiangsu Province, funded by *Natural Science Foundation of Jiangsu Province, China (NSFJS)*, Award No. BK2013294, 2013-2016. **Principal Investigator**, Budget: \$15,600.
 - Mechanism of land subsidence propagation considering existence of pipes
 - Stress and strain analyses of oil and gas pipeline subjected to land subsidence
 - Pipe-soil interaction within the influence zone of land subsidence
5. Mechanical Behaviors and Safety Assessment of Buried Pipes Subjected to Shield Tunneling, funded by *Natural Science Foundation of China (NSFC)*, Award No.51108078, 2011-2014, **Principal Investigator**, Budget: \$41,700.
 - Shield tunneling effect on existing buried pipes
 - Tunneling-induced settlement effect on existing buried pipes
 - Prediction method for deformation and stress of buried pipe caused by tunneling
6. Pipe-Soil Interaction of Buried High-Pressurized Pipes Subjected to Tunneling, funded by *Chinese Ministry of Education*, Award No.KLE-TJGE-B1102, 2011-2013, **Principal Investigator**, Budget: \$6,700.
 - Three-dimensional soil arching around the pipe during tunneling
 - Safety assessment of high-pressurized pipe under tunneling
7. Ground Movement Induced by the Construction of Parallel Tunnels, funded by *Southeast University*, Award No.KYC-201005, 2010-2013, **Principal Investigator**, Budget: \$8,300.

- Tunnel-Soil-Tunnel interaction mechanism during parallel tunneling
 - Ground movement controlling technology for parallel tunneling
- 8. Structural Behaviors of the Shield Tunnel Considering Soil-Tunnel Interaction in Wuxi, China, funded by **Wuxi Subway Group**, 2010-2012, **Co-P.I.**, Budget: \$147,000.
 - Numerical simulation of real shield tunneling process
 - Tunnel-soil-water interaction during tunneling in high groundwater level condition
 - Stress and deformation of tunnel shield under traffic loading
- 9. Controlled Modulus Column (CMC)-Supported and Geosynthetic-Reinforced Embankment in Highway Widening Projects, funded by Jiangsu Department of Transportation, China, 2010-2012, **Co-P.I.**, Budget: \$102,000.
 - Field test of CMC-Supported and Geosynthetic-Reinforced (CMCS-GR) embankment
 - Load transfer mechanism in CMCS-GR widening embankment
 - Settlement prediction method for CMCS-GR widening embankment
 - Traffic loading effect on the performance of CMCS-GR system

PUBLICATIONS

Peer-Reviewed International Journal Publications (*=Corresponding Author, _ = Student)

1. Villarreal, J., and **Wang, F.*** (2021). Feasibility study on biochar-treated expansive soils. *International Journal of Geosynthetics and Ground Engineering*, 7(2): 1-7.
2. **Wang, F.** (2021). Empirical evidence for estimation of subsurface settlement caused by tunneling in sand. *Underground Space*, in press.
3. **Wang, F.***, Dong, D.D., Du, Y.J., and Corey, R. (2021). Estimating maximum bending moment in high-density polyethylene pipes under traffic loading. *ASCE Journal of Pipeline Systems Engineering and Practice*, 12(2): 04021001-1-7.
4. **Wang, F.**, Han, J.*, Parsons, R., and Corey, R. (2020). Long-term field performance of steel-reinforced high-density polyethylene pipes in soil. *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 146(1): 04019122-1-11.
5. **Wang, F.**, Han, J.*, Parsons, R., and Corey, R. (2020). Performance of steel-reinforced high-density polyethylene pipes in soil during installation: A numerical study. *Acta Geotechnica*, 15: 963-974.
6. Zhou, M., **Wang, F.***, Du, Y.J., Corey, R., and Liu, M. (2020). Feasibility study on the use of geosynthetics to reinforce buried HDPE pipes subjected to localized land subsidence. *Transportation Geotechnics*, 22(3): 100303-1-11.
7. Lu, W., Miao, L.*, **Wang, F.**, Zhang, J.H., Zhang Y.X., and Wang, H.B. (2020). A case study on geogrid-reinforced and pile-supported widened highway embankment. *Geosynthetic International*, 27(3): 261-274.
8. Miao, L.*, **Wang, F.***, Li, J., and Shi, S. (2020). Combined method limiting shrinkage- swelling behaviors of huai'an expansive soils. *Environmental Geotechnics*, published online.

9. Han, J.*, **Wang, F.**, Al-Naddaf, M., and Xu, C. (2019). Closure to “Progressive development of two-dimensional soil arching with displacement.” *ASCE International Journal of Geomechanics*, 19(3): 07018022-1.
10. Zhou, M., **Wang, F.***, Du, Y.J., and Liu, M. (2019). Laboratory evaluation of buried HDPE pipes subjected to localized ground subsidence. *Acta Geotechnica*, 14(4): 1081-1099.
11. Miao, L.*, **Wang, F.**, and Lv, W. (2018). A simplified method for stress concentration ratio of a composite foundation with rigid piles. *KSCE Journal of Civil Engineering*, 22: 3263-3270.
12. **Wang, F.**, Han, J.*, Corey, R., Parsons, R., and Sun, X. (2017). Numerical modeling of steel-reinforced high-density polyethylene pipes in soil. *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 143(11):04017084.
13. **Wang, F.**, Han, J.*, Zhang, X., and Guo, J. (2017). Laboratory test to evaluate the effectiveness of wicking fabric in soil moisture reduction. *Geotextiles and Geomembranes*, 45(1), 8-13.
14. Han, J.*, **Wang, F.**, Al-Naddaf, M., and Xu, X. (2017). Progressive development of two-dimensional soil arching with displacement. *ASCE International Journal of Geomechanics*, 17(12):04017112.
15. Zhou, M., **Wang, F.***, Du, Y.J., and Liu, M. (2017). Performance of high-density polyethylene pipe. Part II. Total deflection, *Geosynthetics International*, 24(4), 396-407.
16. Zhou, M., Du, Y.J., **Wang, F.***, and Liu, M. (2017). Performance of high-density polyethylene pipe. Part I. Peaking deflection during initial backfilling process, *Geosynthetics International*, 24(4), 383-395.
17. Zhou, M., Du, Y.J., **Wang, F.***, Arulrajah, A.; Horpibulsuk, S.; and Qin, X.G. (2017). Earth pressures on the buried HDPE pipes during construction phase: Full-scale field trial, finite element modeling. *Transportation Geotechnics*, 12, 56-69.
18. Guo, J., **Wang, F.**, Zhang, X. and Han, J.* (2017). Quantifying water removal rate of a wicking geotextile under controlled temperature and relative humidity. *ASCE Journal of Material in Civil Engineering*, 29(1), 04016181.
19. **Wang, F.**, Han, J.*, Kahatri, D., Parsons, R., Brennan, J. and Guo, J. (2016). Field installation effect on steel-reinforced high-density polyethylene pipes. *ASCE Journal of Pipeline Systems Engineering and Practice*, 7(1), 04015013.
20. **Wang, F.***, Du, Y.J., Zhou, M. and Zhang, Y.J. (2016). Experimental study of the effects produced by backfilling process on full-scale buried corrugated HDPE pipes in fine-grained soils. *ASCE Journal of Pipeline Systems Engineering and Practice*, 7(1), 05015001.
21. **Wang, F. ***, Miao, L., Yang, X.M., and Du, Y.J. (2016). The volume of settlement trough change with depth caused by tunneling in sands. *KSCE Journal of Civil Engineering*, 20(7), 2719-2724.
22. Du, Y.J., Yang, Y.L., Fan, R.D., and **Wang, F.*** (2016). Effects of phosphate dispersants on the liquid limit, sediment volume and apparent viscosity of clayey soil/calcium-bentonite slurry wall backfills. *KSCE Journal of Civil Engineering*, 20(2), 670-678.

23. **Wang, F.***, Du, Y.J., and Yang, X.M. (2015). Physical modeling on ground responses to tunneling in sand considering the existence of HDPE pipes. *ASTM Geotechnical Testing Journal*, 38(1), 85-97.
24. Miao, L.*, **Wang, F.**, Han, J. and LV, W. (2014). Benefits of geosynthetic reinforcement in widening of embankments subjected to foundation differential settlement. *Geosynthetics International*, 21(5), 321-332.
25. **Wang, F.***, Miao, L., and Lv, W. (2013). Sand creep as a factor in land subsidence due to groundwater pumping in the southern Yangtze River Delta, China. *Bulletin of Engineering Geology and the Environment*, 72(3-4), 273-283.
26. Miao, L.*, **Wang, F.**, Han, J., Lv, W., and Li, J. (2013). Properties and applications of cement-treated sand-expanded polystyrene bead lightweight fill. *ASCE Journal of Material in Civil Engineering*, 25 (1), 86-93.
27. **Wang, F.***, Miao, L., and Zhang, Y. (2012). A simplified method to predict creep behavior of the Yangtze River sand, *Bulletin of Engineering Geology and the Environment*, 71(2), 317-324.
28. Han, J.*, Bhandari, A., and **Wang, F.** (2011). DEM analysis of stresses and deformations of geogrid-reinforced embankments over piles, *ASCE International Journal of Geomechanics*, 12(4), 340-350.
29. Miao, L.*, **Wang, F.**, and Wang, X. (2010). One dimensional consolidation of double-layered foundation with multi-level load, *Marine Georesource and Geotechnology*, 28(1), 1-24.
30. **Wang, F.**, Han, J.*, Miao, L. and Bhandari, A. (2009). Numerical analysis of geosynthetic-bridged and drilled shafts-supported embankments over large sinkholes. *Geosynthetic International*, 16(6), 408-419.
31. **Wang, F.***, Miao, L. (2009). A proposed lightweight fill for embankments using cement-treated Yangtze River sand and expanded polystyrene (EPS) beads. *Bulletin of Engineering Geology and the Environment*, 68(4), 517-524.
32. Miao, L.*, Zhang, J., **Wang, F.** and Houston, L. (2008). Time-dependent deformation behavior of Jiangsu marine clay, *Marine Georesource and Geotechnology*, 26(2), 86-100.

International Journal Papers Submitted for Possible Publication

33. **Wang, F.** (2021). A proposed model for the displacement-dependent shear stress in soils. *Geotechnical and Geological Engineering*, revision under review.
34. Cui, F.L., Xiao, C.Z.*, **Wang, F.***, Wang, Z.H., and Tian, W.L. (2021). Evaluating the lateral deformation of geogrids-reinforced soil (GRS) retaining wall considering the creep behavior of geogrids. *International Journal of Civil Engineering*, under review.
35. Cui, F.L., Xiao, C.Z.*, **Wang, F.***, Wang, Z.H., and Tian, W.L. (2021). Physical modeling on the influence of temperature change on the performance of geogrids-reinforced soil (GRS) retaining wall considering the backfill type effect. *Transportation Geotechnics*, under review.

Peer-Reviewed International Conference Publications

36. Zhou, M., **Wang, F.***, and Du, Y.J. (2021). Numerical modeling on the use of Geotextile to reinforce buried HDPE pipes subjected to localized ground subsidence. Proc. of Geosynthetics

- 2021, February 22-25, Kansas City, MO.
37. **Wang, F.***, Miao, L., and Huang, J. (2020). A proposed coupled model for predicting land subsidence in aquifers caused by groundwater withdrawal. Proc. of Geo-Congress 2020, February 25-28, Minneapolis, MN.
 38. Zhou, M., **Wang, F.***, and Du, Y.J. (2018). Numerical modeling on localized ground subsidence induced by the tunneling in the sand. Proc. of Geo-Shanghai 2018, May 27-30, 2018, Shanghai, China.
 39. Zhou, M., **Wang, F.***, and Du, Y.J. (2017). Protecting buried HDPE pipes subjected to ground subsidence using geosynthetics. Proc. of Geotechnical Frontiers, Mar. 13-16, 2017, Orlando, FL, 1435-1441.
 40. Han, J.* , **Wang, F.**, Guo, J. and Zhang, X. (2016). Laboratory evaluation of wickability of the wicking fabric under controlled temperature and relative humidity. Proc. of 3rd Pan-American Conference on Geosynthetics, April 10-13, 2016, Miami Beach, FL.
 41. Han, J.* , **Wang, F.**, Xu, C., and Al-Naddaf, M. (2016). Fully-mobilized soil arching versus partially-mobilized soil arching. Proc. of 1st International Conference on Transportation Infrastructure and Material, Jun 17-20, 2016, Xi'an, China.
 42. **Wang, F.**, Han, J.* , Kahatri, D., Parsons, R., Brennan, J. and Guo, J. (2015). Field installation effect on steel-reinforced high-density polyethylene pipes. Proc. of 94th TRB Annual Meeting, Jan. 11-15, 2015, Washington, D.C.
 43. Zhou, M., Du, Y.J., and **Wang, F.*** (2015). Full-scale field tests on soil arching triggered during construction of shallowly buried HDPE pipes. Geotechnical Engineering, 46(3), 89-93.
 44. **Wang, F.*** and Miao, L. (2013). A physical modeling of ground movement around HDPE pipes subjected to tunneling. Proc. of Design and Practice of Geosynthetic-Reinforced Soil Structures, Ling, H.L., Gottardi, G., Cazzuffi, D, Han, J., and Tatsuoka, F. eds., Oct. 14-16, Bologna, Italy.
 45. **Wang, F.***, Miao, L., Wang, R. R., and Du, Y.J. (2013). A physical model study on the ground settlement caused by tunneling in sand. Proc. of 92nd TRB Annual Meeting, Jan. 13-17, 2013, Washington, D.C.
 46. Wang, Z.X., Miao, L.* , and **Wang, F.** (2012). Theoretical and numerical analysis of jacked pile in sand. Proc. of GeoCongress 2012: State of the Art and Practice in Geotechnical Engineering (GSP 225), Hryciw, R.D., Athanasopoulos-Zekkos, A., and Yesiller, N. eds., Mar. 25-29, Oakland, California, USA, 245-254.
 47. **Wang, F.***, Miao, L., Zhang, Y.J. (2011). Numerical study on the parameter sensitivity of land subsidence caused by groundwater withdrawal. Proc. of Geo-Frontiers: Advanced in Geotechnical Engineering (GSP 211), Han, J., Alzamora, D.E. eds., Mar. 13-16, 2011, Dallas, TX, 1615-1622.
 48. Miao, L.* , Zhang, Y.J., **Wang, F.**, and Yuan, X.J. (2011). Prediction of land subsidence using a proposed consolidation-seepage-creep coupling model. Proc. of Geo-Frontiers: Advanced in Geotechnical Engineering (GSP 211), Han, J., Alzamora, D.E. eds., Mar. 13-16, 2011, Dallas, TX, 1631-1640.

49. Zhang, Y.J., Miao, L.*, and **Wang, F.** (2011). Study on engineering properties of the stabilized mucky clay as backfill material in highway embankment projects. Proc. of Geo-Frontiers: Advanced in Geotechnical Engineering (GSP 211), Han, J., Alzamora, D.E. eds., Mar. 13-16, 2011, Dallas, TX, 1365-1371.
50. Miao, L.*, **Wang, F.**, and Cui, Y. (2011). Improvement and controlling deformation of expansive soil ground. Proc. of the 5th International Conference on Unsaturated Soils, Alonso, E., and Gens, A. eds., Sep. 6-8, Barcelona, Spain, 1321-1324.
51. **Wang, F.***, Miao, L., Lv, W. (2010). Study on the new deformation characteristics of the pumped aquifers. Proc. of GeoShanghai 2010: Geoenvironmental Engineering and Geotechnics-Progress in Modeling and Application (GSP 204), He, Q. and Shen, S.L. eds., Jun. 3-5, 2010, Shanghai, China, 57-62.
52. **Wang, F.***, Miao, L., Lv, W. (2010). Experimental study on the creep behavior of the Yangtze River sand. Proc. of GeoFlorida 2010: Advances in Modeling, Analysis and Design (GSP 199), Fratta, D.O., Puppala, A.J., and Muhunthan, B. eds., Feb. 20-24, 2010, Orlando, FL, 777-782.
53. Miao, L.*, **Wang, F.**, Lv, W.H., and Li, J. (2010). Study on cement-treated Yangtze hydraulic sand mixed with expanded polystyrenes beads as backfill material in highway embankments. Proc. of GeoShanghai 2010: Geoenvironmental Engineering and Geotechnics-Paving Materials and Pavement Analysis (GSP 203), Huang, B.S., Tutumluer, E., Al-Qadi, I., Prozzi, J., and Shu, X. eds., Jun. 3-5, 2010, Shanghai, China, 372-378.
54. Miao, L.*, Cui, Y., and **Wang, F.** (2010). The structural characteristics of unsaturated expansive soils. Proc. of the International Symposium on Geomechanics and Geotechnics: From Micro to Macro, IS-Shanghai 2010, Jiang, M. et al. eds., Oct. 10-12, Shanghai, China, 59-63.
55. Miao, L.*, **Wang, F.**, Zhang, Y., and Zhang, C. (2009). Experimental study on controlled modulus column methods. Proc. of US-China Workshop on Ground Improvement Technologies(GSP 188), Han, J., Zheng, G., Schaefer, V.R., and Huang, M.S. eds., Mar. 14, 2009, Orlando, FL, 112-119.
56. Bhandari, A., Han, J.*, and **Wang, F.** (2009). Micromechanical analysis of soil arching in geosynthetic-reinforced pile-supported embankments. Proc. of GeoHunan: Characterization, Modeling, and Performance of Geomaterials (GSP 211), Zhang, X., Yu, X., Fu, H.Y., and Zhang, J. eds., Aug. 3-6, 2009, Changsha, Hunan, China, 47-52.
57. Han, J.*, **Wang, F.**, and Miao, L. (2008). Numerical analysis of embankments supported by drilled shafts in karst terrains. Proc. of Sinkholes and the Engineering and Environmental Impacts of Karst (GSP 183), Yuhr, L.B., Alexander, E.C., and Beck, B.F. eds., Sep. 22-26, 2008, Tallahassee, FL, 535-544.

SERVICE ACTIVITIES

Journal Reviewer

- Acta Geotechnica
- ASCE International Journal of Geomechanics

- ASCE Journal of Geotechnical and Geoenvironmental Engineering
- ASCE Journal of Material in Civil Engineering
- ASCE Journal of Performance and Constructed Facilities
- ASCE Journal of Pipeline Systems Engineering and Practice
- ASME Journal of Offshore Mechanics and Arctic Engineering
- Bulletin of Engineering Geology and the Environment
- Canadian Geotechnical Journal
- Composites Part B
- Construction and Building Materials
- Geotechnical and Geological Engineering
- Geotextiles and Geomembranes
- ICE Geotechnique Letters
- Journal of Zhejiang University-Science A
- KSCE Journal of Civil Engineering
- Marine Georesource and Geotechnology
- Transportation Research Record

Professional Service

- **Review Editor**, Journal of Frontiers in Built Environment
- **Session Co-Chair**, Load Distribution on Buried Structures, Geotechnical Frontiers 2017 (ASCE Geotechnical Annual Congress), Orlando, FL.
- **Session Co-Chair**, Lightweight Backfills, Geosynthetics 2021, Kansas City, MO.

Professional Memberships

- American Society of Civil Engineers (ASCE)
- ASCE Geotechnical Institute Soil Improvement Committee
- TRB AKB 70 Standing Committee of Culverts, Buried Bridges, and Soil Structure Interaction Subcommittee on Resilient and Sustainable Buried Structures