BENJAMIN TURNER, Ph.D., P.E., G.E.

Senior Engineer

Professional Experience

Joined DBA 2014
Total years of experience: 15
Adjunct Lecturer, Deep Foundations Graduate Course, California Polytechnic State University, SLO, CA (2018 – current)
Graduate Research and Teaching Asst., Dept. of Civil & Environ. Eng., University of California, Los Angeles (2012 – 2016)
Staff Engineer, Shannon & Wilson, Inc., Los Angeles, California (2010-2014)
Graduate Research Assistant, Dept. of Civil and Environ. Eng., Cal Poly Univ., SLO, CA (2009-2010)
Assistant Project Manager, AIS Construction Company, Carpinteria, California (summers 2007-2009)
Engineer's Asst., GeoSolutions, Inc., SLO, CA (2005-2008)

Education

Ph.D., Civil Engineering, University of California, Los Angeles, 2016
M.S., Civil Engineering, California Polytechnic State University, San Luis Obispo, California, 2010
B.S., Civil Engineering, California Polytechnic State University, San Luis Obispo, California, 2009

Professional Licensure and Certifications

Licensed Professional Engineer and Geotechnical Engineer in California

Fields of Expertise

Design, construction, and load testing of foundations for geotechnical and structural limit states
Geotechnical earthquake engineering including soil-structure interaction, seismic hazard analysis, site response, liquefaction triggering analysis and mitigation of liquefaction-induced ground failure
Characterization of structural behavior of reinforced concrete and composite foundations
Site characterization including in situ and laboratory testing of soil and rock; geologic interpretation
Slope stability and excavation stability analyses in soil and/or rock; design of earth retention systems
Nonlinear dynamic and static analyses of complex geostructural systems using numerical simulations (FLAC3D, OpenSees)

Major Projects

I-30 Crossing Bridge – Little Rock, AR (2018-Current) – Design of rock-socketed drilled shaft foundations and approach embankments supported on ground improvement for seismic loading including liquefaction-induced lateral spreading and drag loads for large earthquake potential from New Madrid Seismic Zone.

I-395 Signature Bridge – Miami, FL (2019) – Independent peer review of augercast pile foundation support for signature concrete arch bridge – first major bridge structure in the United States to be supported on ACP. Analyses included rigorous 3D modeling of foundation system using FLAC3D to verify simplified approaches and limit state design methods.

Gordie Howe International Bridge Project – Windsor, Ontario to Detroit, MI (2018-2019) – Peer review of Probabilistic Seismic Hazard Assessment including PSHA, development of site-specific response spectra, selection of appropriate ground motion intensity measures for foundation design and liquefaction analyses, and kinematic pile-soil interaction analyses.

Crenshaw Pump Station, Palos Verdes Peninsula Water Reliability Project – Los Angeles County, CA (2018-2019) – Slope stability investigation, design of soldier pile retaining wall and rockfall barrier system, and structure foundation engineer of record for pump station site.

Drilled Shaft Repairs, Caltrans Bridge Projects – (2019) – Design and construction oversight for repairs of drilled shafts with anomalous concrete on multiple Caltrans/Caltrans-oversight projects. Repair methods range from jetting and grouting to coring center of shafts and replacing with revised structural section on drilled shafts ranging from 4-ft to 11-ft diameter.

Miamisburg Pump Station – Miamisburg, OH (2018) – Design of secant-pile support-of-excavation system to accommodate construction of underground pump station, supported by three-dimensional numerical analysis using FLAC3D.

Oceanwide Center Towers -- San Francisco, CA (2017-2018) – Construction support during installation and load testing of >300-ft rock-socketed drilled shafts to support the 2nd tallest tower (once completed) in San Francisco; rock core logging to characterize shaft-specific rock conditions at 20+ locations; design of repair for drilled shaft anomalies.

Purple Line Light Rail Transit – Greater DC Metro Area, MD (2017-2019) – Design of bridge foundations and anchored/cantilevered earth retention systems to support new light rail line and adjacent trail corridors.

Ground Improvement, Multiple Projects – San Francisco Bay Area, CA (2016-2019) – Design, load testing, and construction support for drilled displacement column ground improvement systems to control settlement, improve bearing capacity, and mitigate effects of liquefaction for several multi-story building projects.

Port of Anchorage Modernization Project – Anchorage, AK (2016) – Expert review of slope stability analyses and retaining system design for $300 million improvements and seismic retrofit of port facilities.

Hathaway Bridge – Panama City, FL (2016) – Expert forensic investigation into cause of longitudinal cracks in driven precast prestressed concrete cylinder piles; resulted in recommendation of modifications to Florida DOT standard specifications.

Professional Memberships

Deep Foundation Institute (DFI)
- Seismic and Lateral Loads Committee and Deep Foundations Committee Member
- President's Award Recipient (2020)

American Society of Civil Engineers (ASCE)
Geo-Institute (GI) of the ASCE
Earthquake Engineering Research Institute (EERI)
Dimitris N. Chorafas Foundation International Prize for Ph.D. Dissertation in Engineering (2015)
Recipient of graduate scholarships from ASCE-GI, ADSC: The International Association of Foundation Drilling, ACEC California, ACEC Los Angeles County Chapter, American Shotcrete Association, Fugro, Inc., and Kiewit

Selected Publications and Presentations

Turner, BJ, Lemnitzer, A., Favaretti, C. (2018). "Nonlinear response of piles with rigid embedment: lessons learned from a reduced-scale experiment," Presented at 43rd Conference on Deep Foundations, 25-27 Oct. 2018, Anaheim, CA.

Turner, B.J. and Turner, J.P. (2016). "Analysis of Structural Capacity and Stiffness of Drilled Shafts with Construction Defects and Repairs", *Proceedings*, *41st Annual Conference on Deep Foundations*, Deep Foundations Institute, New York, NY, Oct 2016, pp. 751-761.

Turner, B. (2016). "Kinematic pile-soil interaction in liquefied and nonliquefied ground," Ph.D. Dissertation, Dept. Civil and Environ. Engineering, University of California, Los Angeles, 457 p. Winner of Dimitris N. Chorafas Foundation Prize.

Turner, B., Brandenberg, SJ and Stewart, JP (2016). "Case study of parallel bridges affected by liquefaction and lateral spreading," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 142, No. 6, https://doi.org/10.1061/(ASCE)GT.1943-5606.0001480

Turner, BJ, and Brandenberg, SJ (2015). "Pile pinning and interaction of adjacent foundations during lateral spreading," DFI Journal – *The Journal of the Deep Foundations Institute*, Deep Foundations Institute, Hawthorne, NJ, Vol. 9, No. 2, pp. 92-102.

Turner, B., Brandenberg, SJ, and Stewart, JP (2015). "Analysis of drilled shaft settlement caused by liquefaction," *Proc. International Foundations Congress and Equipment Expo (IFCEE) 2015*, published as ASCE GSP 256, 17-21 March 2015, San Antonio, TX, pp. 1176-1188.

Turner, BJ, and Turner, JP (2014). "Friction loss in tieback anchors used for landslide stabilization," *Proceedings*, *39th Annual Conference on Deep Foundations*, Deep Foundations Institute, Atlanta, GA, Oct 21-24, 2014.