PATRICK C. BASSAL, PhD, PE

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EDUCATION

PhD in Geotechnical Engineering, University of California, Davis, CA (August 2022)
Research Advisor: Dr. Ross W. Boulanger

MS in Geoengineering, University of California, Berkeley, CA (May 2014)

BS in Civil Engineering, Summa Cum Laude with Honors, Cal Poly, San Luis Obispo, CA (December 2012)

PROFESSIONAL HISTORY

Assistant Professor, The Ohio State University, Columbus, OH (Contracted to start January 2023)
Post Doctoral Scholar, The Ohio State University, Columbus, OH (September 2022 – present)
Geotechnical Staff Engineer, WSP / Parsons Brinckerhoff, New York, NY (June 2016 – September 2018)
Geotechnical Staff Engineer, Amec Foster Wheeler, Oakland, CA (June 2014 – May 2016)
Post-Graduate Intern, Earthquake Engineering Research Institute, Oakland, CA (January - May 2013)

AWARDS AND PROFESSIONAL LICENSURE

Professional Engineering License (Civil), California, No. C85593 (2016 – present)
Fugro West Fellowship (2022)
EERI/FEMA NEHRP Graduate Fellowship (2021 – 2022)
ConeTec Graduate Student Award (2021)
UC Davis Graduate Student Association Travel Award (2021)
Richard & Kate Faulkner Fellowship, University of California, Davis (2020 – 2022)
Elizabeth P. Wood Fellowship, University of California, Davis (2020 – 2021)
Graduate Fellowship, University of California, Berkeley (2013 – 2014)
Outstanding Community Service Award, Cal Poly Society of Civil Engineers (2010)
Martini Scholarship, California Polytechnic State University, San Luis Obispo (2009 – 2012)

PROFESSIONAL AFFILIATIONS

Earthquake Engineering Research Institute (EERI)
American Society of Civil Engineers (ASCE)
Geotechnical Extreme Events Reconnaissance (GEER) Association
International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE)

PROFESSIONAL SERVICE

Geotechnical Reconnaissance Field Team Member, funded by GEER to study the effects of the M6.5 Monte Cristo Range Earthquake in Nevada (Summer 2020)

Member, Innovative Technologies and Tools Task Force, ASCE Geo-Institute (2020 – present)

Member, Continuing Education Committee, ASCE Geo-Institute (2019 – present)

Lead Organizer, G-I Student Research Web Series, ASCE Geo-Institute (2021)

Co-President, UC Davis Student Chapter of EERI (2020 – 2021)

Student Design Competition Chair, Student Leadership Council of EERI (2020 – 2021)

Graduate Admissions Ambassador, UC Davis Department of Civil & Environmental Engineering (2020 – 2021)

Outreach Chair, UC Davis Geotechnical Graduate Student Society (2019 – 2020)

Shake Table Operator, Student Leadership Council of EERI (2019 – 2020)

Board Member and Webmaster, New York – Northeast EERI Chapter (2016 – 2018)

Geotechnical Reconnaissance Field Team Member, joined GEER team to study the effects of Hurricane Harvey in Houston, TX (Summer 2017)

Geotechnical Reconnaissance Virtual Team Assistant, assisted GEER field team by compiling data for the Muisne earthquake in Ecuador (2016)

Reconnaissance Field Team Member, funded by the National Science Foundation to learn from the effects and post-recovery efforts of the Canterbury Earthquake Sequence in Christchurch, New Zealand (Spring 2015)

EERI Clearinghouse Lead Geotechnical Curator, led virtual EERI team to document geotechnical failures following the Ghorka Earthquake in Nepal (Spring 2015)

CONSULTING EXPERIENCE (SELECTED PROJECTS)

Living Breakwaters, Staten Island, NY (Client: *New York Governor's Office of Storm Recovery*). Performed static and dynamic (seismic and storm wave) stability assessments. Developed geosynthetic recommendations.

Cross Island Line Eastern Leg Underground MRT, Singapore (Client: *LTA Singapore*). Provided numerical modeling support for segmental tunnel lining design.

B&P Tunnel Replacement, Baltimore, MD (Client: *Amtrak*)**.** Evaluated seismic ovaling and racking deformations, dynamic earth pressures, and liquefaction potential of tunnel and ancillary structures.

Sunnyside Yard Expansion (Phase 1), Queens, NY (Client: *Amtrak***).** Evaluated seepage and slurry trench stability for rail embankments and foundation excavation of rail facilities.

Gulch Pedestrian Bridge, Nashville, TN (Client: *Nashville Metro*). Designed drilled shaft foundations within variable limestone for axial and lateral loads.

Prospect Hills Road Bridge (Reconstruction), Brewster, NY (Client: *Metro-North Railroad*)**.** Assessed stability of modular retaining walls and designed driven pile foundations for design-build reconstruction of railroad overpass.

California High-Speed Rail (CP1), Fresno/Madera County, CA (Client: *CA HSR Authority*). Evaluated embankments and MSE retaining structures for settlement, bearing capacity, liquefaction, and static and seismic slope stability. Performed drilled shaft capacity assessments and seismic site response analyses for viaduct piers.

Robinson Nuclear Plant Seismic Study, Darlington County, SC (Client: *Duke Energy*)**.** Performed randomized site response and liquefaction analyses per EPRI Seismic Evaluation Guidance Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation.

Puddingstone Dam Seismic Study, San Dimas, CA (Client: *County of L.A. Dept. of Public Works*)**.** Performed 2D seismic site response in QUAD4M and Newmark deformation analyses.

Mill Creek Ash Pond Rehabilitation, Louisville, KY (Client: *LG&E-KU*). Assessed liquefaction susceptibility, triggering, and settlement beneath ash pond levees and embankments.

Palisades Nuclear Power Station, Covert Township, MI (Client: *Entergy*). Performed site response and pseudostatic slope stability analyses.

Alameda Point Landfill Remedial Action, Alameda, CA (Client: *US Navy*). Monitored mass grading, and performed nuclear density gauge and sand cone compaction tests for fill placement at former US Navy site.

PUBLICATIONS

Journal Articles

Bassal, P. C., & Boulanger, R. W. (Submitted). "System Response of an Interlayered Deposit with a Localized Graben Deformation in the Northridge Earthquake." Soil Dynamics and Earthquake Engineering.

Bassal, P. C., Boulanger, R. W., & DeJong, J. T. (2022). "System Response of an Interlayered Deposit with Spatially Distributed Ground Deformations in the Chi-Chi Earthquake." Journal of Geotechnical and Geoenvironmental Engineering. ASCE, 148(10). https://doi.org/10.1061/(ASCE)GT.1943-5606.0002869.

Bassal, P. C., and Boulanger, R. W. (2021). "System Response of an Interlayered Deposit with Spatially Preferential Liquefaction Manifestations." ASCE Journal of Geotechnical and Geoenvironmental Engineering. https://doi.org/10.1061/(ASCE)GT.1943-5606.0002684.

Stark, N., Shafii, I., Jafari, N., Ravichandran, N., Figlus, J., Smallegan, S., and Bassal, P. (2020). "Scour at the Seawall in Surfside, Texas, During Hurricane Harvey (2017)" ISSMGE International Journal of Geoengineering Case Histories, Vol. 5, Issue 4, p.62-76. https://doi.org/10.4417/IJGCH-05-04-04.

Wooten, R. L., Kulesza, S., El Mohtar, C., Diaz, B., Ilupeju, O., Rasulo, M., Bassal, P., Hussien, A., Kouchaki, B. M., Little, M. V., Mert, A. A., and Nelsen, C. W. (2020). "Geotechnical Effects of Hurricane Harvey in the Houston, Beaumont, and Port Arthur Areas." ISSMGE International Journal of Geoengineering Case Histories, Vol. 5, Issue 4, p.77-105. https://doi.org/10.4417/IJGCH-05-04-05.

Smallegan, S. M., Figlus, J., Stark, N., Sasanakul, I., Arboleda Monsalve, L. G., Shafii, I., Jafari, N., Ravichandran, N., and Bassal, P. (2020). "Post-2017 Hurricane Season Assessment of Civil Infrastructure Impacts on Beach and Near-Beach Environments." ISSMGE International Journal of Geoengineering Case Histories, Vol. 5, Issue 4, p.47-61. https://doi.org/10.4417/IJGCH-05-04-03.

Conference Proceedings

Bassal, P. C., and Boulanger, R. W. (2022). "Dynamic Analyses of Localized Ground Deformation at Wynne Avenue in the Northridge Earthquake." Proc. 12th National Conference on Earthquake Engineering, Salt Lake City, UT.

Bassal, P. C., Boulanger, R. W., and DeJong, J. T. (2022). "Site-Specific CPT-based Fines Content Correlations using Percentile Matching." Proc. ASCE Geo-Congress 2022, Charlotte, NC. https://doi.org/10.1061/9780784484043.053.

Bassal, P. C., Boulanger, R. W., DeJong, J. T., and K. Ziotopoulou (2021). "Calibration of Post-Liquefaction Shear Deformation for a Fluvial Deposit in the Chi-Chi earthquake." Proc. 17th World Conference on Earthquake Engineering, Sendai, Japan.

Bassal, P. C., Boulanger, R. W., & DeJong, J. T. (2021). "Dynamic analyses of liquefaction and lateral spreading for an interlayered deposit in the Chi-Chi earthquake." Proc. ASCE Geo-Extreme 2021 Conference, Savannah, GA. https://doi.org/10.1061/9780784483695.042.

Motamed, R., Ryan, M., Lambeth, G., Toth, J., Parks, M., Garcia, F. T., Bassal, P., and Pease, J. (2021). "Turning Disaster into Knowledge: Geotechnical Aspects of the 2020 Magnitude 6.5 Monte Cristo Range Earthquake in Nevada." Proc. ASCE Geo-Extreme 2021 Conference, Savannah, GA.

Bassal, P. C., Boulanger, R. W., Cox, B. R., Yost, K. M., and DeJong, J. T. (2020). "Dynamic analyses of liquefaction at Palinurus Road in the Canterbury Earthquake Sequence." Proc., 40th USSD Annual Meeting and Conference, United States Society on Dams, Denver, CO, 1-17.

Data Reports

Bassal, P. C. (2022). "Stochastic NDA Workflow for Ground Deformations at Wynne Avenue in the Northridge Earthquake", in Stochastic Nonlinear Dynamic Analyses for Earthquake Ground Deformations. DesignSafe-CI. https://doi.org/10.17603/ds2-nne2-2s11.

Motamed, R., Ryan, M., Lambeth, G., Toth, J., Parks, M., Garcia, F. T., Bassal, P. C., and Pease, J. (2021). "Preliminary Report on Geotechnical Aspects of the May 15th 2020 Magnitude 6.5 Monte Cristo Range Earthquake in Nevada." Geotechnical Extreme Events Reconnaissance (GEER) Association, Report No. GEER-71, Version 1, 10 March. https://doi.org/10.18118/G67H4F

Stark, N., Wooten, R. L., Jafari, N., Ravichandran, N., Shafii, I., Smallegan, S., Bassal, P., and Figlus, J. (2018). "GEER Hurricane Harvey reconnaissance-initial data collection." NHERI DesignSafe-CI.org. https://doi.org/10.17603/DS2XD4C

Wooten, R. L., Kulesza, S., El Mohtar, C., Diaz, B., Ilupeju, O., Rasulo, M., Bassal, P., Hussien, A., Kouchaki, B. M., Little, M. V., Mert, A. A., and Nelsen, C. W. (2017). "Geotechnical Effects of Hurricane Harvey in the Houston, Beaumont, and Port Arthur Areas." Geotechnical Extreme Events Reconnaissance (GEER) Association, Report No. GEER-054b, Version 1, 07 November. https://doi.org/10.18118/G6TW81

Stark, N., Jafari, N., Ravichandran, N., Shafii, I., Smallegan, S., Bassal, P., and Figlus, J. (2017). "The Geotechnical Aspects of Coastal Impacts during Hurricane Harvey." Geotechnical Extreme Events Reconnaissance (GEER) Association, Report No. GEER-054a, Version 1, 21 September. https://doi.org/10.18118/G6TW81

GEER-ATC (2016). "Engineering reconnaissance of the 16 April 2016 Muisne, Ecuador Earthquake." Geotechnical Extreme Events Reconnaissance (GEER) Association, Report No. GEER-049, Version 1b, 10 October. https://doi.org/10.18118/G6F30N

Bassal, P. (2012). "Experimental Study of Tsunami-Driven Debris Forces." Network for Earthquake Engineering Simulation - Research Experience for Undergraduates, 2012 Student Research Archives.

Trombetta, N., Zupan, J., Bolisetti, C., Puangnak, H., Jones, K., Tran, J., Bassal, P., Bray, J., Hutchinson, T., Fiegel, G., Kutter, B., and Whittaker, A. (2011). Seismic Performance Assessment in Dense Urban Environments: Centrifuge Data Report for NWT01, Report No. UCD/CGMDR-04/11. Center for Geotechnical Modeling, University of California, Davis.

Peer Reviews

- Earthquake Spectra (2022 – present)
- ASCE G-I Continuing Education Webinar Proposals (2019 – present)
- ASCE GeoCongress 2022 Conference Proceedings
- ASCE Geo-Extreme 2021 Conference Proceedings

ORAL PRESENTATIONS

Bassal, P. C. (2022). "Dynamic Analyses of Localized Ground Deformation at Wynne Avenue in the Northridge Earthquake." *Invited Talk,* 12th National Conference on Earthquake Engineering, Salt Lake City, UT, June 30, 2022.

Bassal, P. C. (2022). "System Response of Lateral Spreading at an Interlayered Deposit in the Chi-Chi Earthquake." *Invited Talk (Virtual),* 14th Annual Geotechnical Graduate Student Society (GGSS) Round Table, April 8, 2022.

Bassal, P. C. (2022). "System Response of Lateral Spreading at an Interlayered Deposit in the Chi-Chi Earthquake." *Invited Talk (Virtual),* Younger Members Committee webinar: Earthquake liquefaction hazards – from site- to regional-scale evaluation, Earthquake Engineering Research Institute, March 4, 2022.

Bassal, P. C. (2022). "System-Level Responses of Interlayered Soil Deposits during Earthquakes." *Invited Talk,* Department of Civil and Environmental Engineering, California State University, Fullerton, CA. February 9, 2022.

Bassal, P. C. (2022). "System-Level Responses of Interlayered Soil Deposits during Earthquakes." *Invited Talk,* Department of Civil, Environmental, and Geodetic Engineering, The Ohio State University, Columbus, OH. February 3, 2022.

Bassal, P. C. (2021). "System-Level Responses of Interlayered Soil Deposits during Earthquakes." *Invited Talk,* Department of Civil and Environmental Engineering, Rutgers University, New Brunswick, NJ. December 9, 2021.

Bassal, P. C. (2021). "Calibration of Post-Liquefaction Shear Deformation for a Fluvial Deposit in the Chi-Chi Earthquake." *Flash Talk (Virtual),* 17th World Conf. on Earthquake Eng., Sendai, Japan, September 30, 2021.

Bassal, P. C. (2021). "System Response of an Interlayered Deposit with Spatially Preferential Liquefaction Manifestations." *Invited Talk (Virtual),* 14th Geotechnical Graduate Student Society (GGSS) Round Table, April 8, 2021.

Bassal, P. C. (2021). "Geotechnical Reconnaissance for the 2020 Monte Cristo Range Earthquake." *Invited Talk (Virtual)*, 2021 EERI Annual Meeting, March 25, 2021.

Bassal, P. C. (2020). "System Response of an Interlayered Deposit with Spatially Preferential Liquefaction Manifestations in the Canterbury Earthquake Sequence." *Invited Talk (Virtual),* University of Nebraska – Lincoln EERI Student Chapter, December 2, 2020.

Bassal, P. C. (2020). "Dynamic Analyses of Liquefaction at Palinurus Road in the Canterbury Earthquake Sequence." *Lightning Talk,* 72nd EERI Annual Meeting, San Diego, CA, March 5, 2020.

Bassal, P. C. (2019). "Living Breakwaters: Geotechnical Design Aspects." *Lunchtime Talk,* Geotechnical Graduate Student Society (GGSS) Seminar Series, Davis, CA, June 6, 2019.

Du, M., and Bassal, P. C. (2018). "Living Breakwaters: Geotechnical Design Aspects." *Lunchtime Talk,* WSP Geotechnical and Tunneling Group, Lunch and Learn Presentation, New York City, NY, July 9, 2018.

Bassal, P. C. (2015). "Recovery of the Canterbury Region Four Years after the CES." *Lunchtime Talk,* Amec Foster Wheeler, Lunch and Learn Presentation, Oakland, CA, June 3, 2015.