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Engineering & Scientific Consulting

## Francisco Humire, Ph.D.

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### Professional Profile

Dr. Humire specializes in geotechnical engineering, soil mechanics, earthquake engineering, soil liquefaction, and geotechnical site investigations. He has experience conducting geotechnical studies in North and South America for the design and construction of multi-story buildings, commercial developments, and ports and coastal facilities, as well as for the evaluation and retrofitting of existing structures. His technical expertise also includes laboratory testing of geomaterials, geophysical seismic methods, numerical modeling, and foundation design.

Dr. Humire has worked for a range of geotechnical projects involving site characterization, numerical modeling, geotechnical engineering design, and construction monitoring services. He has planned and managed numerous geotechnical field investigations and laboratory testing programs, which have included: Standard Penetration Tests (SPT), rock coring, test pits, down-hole seismic tests, surface wave methods, consolidation testing, and triaxial and direct simple shear testing. Dr. Humire also has extensive experience in liquefaction assessments, seismic site response, settlement analyses, slope stability analyses, ground improvement methods, and design of foundations and retaining walls.

At the University of California at Davis (UC Davis), Dr. Humire investigated the effects of soil gradation and sloping ground conditions on the liquefaction behavior of sands and gravels. For his doctoral research, he used advanced dynamic laboratory testing to investigate soil liquefaction at large deformation levels, and numerical simulations to evaluate the capabilities of current constitutive models to capture the effect of soil gradation in liquefaction assessments. In addition to his research, he served as co-chair of the Earthquake Engineering Research Institute (EERI) Student Chapter at UC Davis, and as advisor of the UC Davis team for the 2021 Undergraduate Seismic Design Competition of EERI.

### Academic Credentials & Professional Honors

Ph.D., Civil and Environmental Engineering, University of California, Davis, 2022

M.S., Civil Engineering, Pontifical Catholic University of Chile, 2013

B.S., Civil Engineering, Pontifical Catholic University of Chile, 2011

USSD Student Scholarship Award, United States Society on Dams, 2021

I.M. Idriss Award for Excellence in Geotechnical Engineering, University of California, Davis, 2021

Towards Outstanding Postgraduate Students (TOPS) Award, University of California, Davis, 2017

Professor Javier Pinto Fellowship, Pontifical Catholic University of Chile, 2011

Outstanding Teaching Assistant Award, Pontifical Catholic University of Chile, 2011

## Academic Appointments

Graduate Student Researcher, Department of Civil and Environmental Engineering, University of California, Davis, 2017–2021

Teaching Assistant, Department of Civil and Environmental Engineering, University of California, Davis, 2019–2020

Graduate Student Researcher, Department of Structural and Geotechnical Engineering, Pontifical Catholic University of Chile, 2012–2013

Teaching Assistant, Faculty of Engineering, Pontifical Catholic University of Chile, 2009–2013

## Prior Experience

Project Manager, Intertek PSI, 2016–2017

Geotechnical Project Engineer, Nova Engineering and Environmental, 2016

Project Engineer, PRDW Consulting Port and Coastal Engineers, 2014–2015

Staff Engineer, DICTUC S.A., 2013–2014

## Professional Affiliations

American Society of Civil Engineers (ASCE)

Earthquake Engineering Research Institute (EERI)

United States Society on Dams (USSD)

## Languages

Spanish

## Publications

Humire F, Lee M, Ziotopoulou K, Gomez MG, DeJong JT. Development and evaluation of preconditioning protocols for sand specimens in constant-volume cyclic direct simple shear tests. *Geotechnical Testing Journal*, 2022, 45(3):661–673.

Reardon R, Humire F, Ahmed SS, Ziotopoulou K, Martinez A, DeJong JT. Effect of gradation on the strength and stress-dilatancy of coarse-grained soils: a comparison of monotonic direct simple shear and triaxial tests. *Geo-Congress 2022: Geophysical and Earthquake Engineering and Soil Dynamics*, 2022, 226–236.

Humire F, Ziotopoulou K, DeJong JT. Evaluating shear strain accumulation of sands exhibiting cyclic mobility behavior. *Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering*, 2022, 111–116.

Tasiopoulou P, Ziotopoulou K, Humire F, Giannakou A, Chacko J, Travasarou T. Development and

implementation of a semi-empirical framework for modeling post-liquefaction deformation accumulation in sands. *Journal of Geotechnical and Geoenvironmental Engineering*, 2020, 146(1):04019120.

Pretell R, Humire F, Ziotopoulou K. On the performance of two advanced constitutive models in capturing the element response of tailings. *Proceedings of the 24th International Conference on Tailings and Mine Waste*, 2020, 381–392.

Humire F, Ziotopoulou K, Basson MS, Martinez A. Framework for tracking the accumulation of shear strains during cyclic mobility. *Proceedings of the 7th International Conference on Earthquake Geotechnical Engineering (ICEGE)*, 2019, 2906–2914.

Humire F, Sáez E, Leyton F, Yañez G. Combining active and passive multi-channel analysis of surface waves to improve reliability of Vs30 estimation using standard equipment. *Bulletin of Earthquake Engineering*, 2015, 13(5):1303–1321.