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Abstract: Selection, Design and Specification of Ground Modification for Mitigation of Earthquake-Induced Liquefaction & A Briefing of Observed Earthquake Performance

The evaluation of earthquake-induced liquefaction has become a routine part of geotechnical engineering design. For a given project, if an analysis identifies a potential for liquefaction and the consequences of liquefaction are deemed unacceptable, then some form of hazard mitigation is required. Mitigation efforts may consist of removing the liquefiable soils, bypassing the liquefiable soils with deep foundations, structurally accommodating the deformations or strength loss caused by liquefaction, or preventing the onset of liquefaction through ground improvement. The fundamental ground improvement mechanisms for liquefaction mitigation include densification, drainage, and reinforcement. When evaluating, recommending and specifying various ground improvement methods for liquefaction mitigation, practitioners should understand the fundamental mechanics involved and applicability limitations of the various methods. This presentation offers a review of the above topics and highlights observations and lessons learned from a number of strong earthquakes (Niigata '64, Loma Prieta '89, Kobe '95, Kocaeli '99, Christchurch '11, and Tohoku '11) case histories.

Biography: Dr. Baez obtained a Civil Engineering degree in Construction Management (1986) and Master's degree in Geotechnical Engineering (1988) from NC State University; after some years of industry experience he obtained a PhD in Geotechnical Engineering, under the advising committee of Professors Geoff Martin and Jim Mitchell, from the University of Southern California (1995)

Dr. Baez has over 30 years of experience as contractor, designer, and consultant in geotechnical construction and Ground Improvement Technologies. He is president and founder of Advanced Geosolutions Inc (AGI), a geotechnical contractor specializing in Design-Build ground improvement and specialty piles. In Canada, AGI operates as Design-Build contractor under its subsidiary, AGI Foundation Contractors.

Juan has directly managed or supervised over 250 significant geotechnical construction projects in the US as well as Canada, Central and South America. Dr. Baez is author/co-author of more than 35 publications on seismic related ground improvement mitigation and geotechnical construction. Juan is also a registered professional engineer in California, Oregon, Washington, Utah, as well as the Province of British Columbia.