

Fall 2010 Seminar Series



CHALLENGES AND INNOVATION IN CIVIL AND ENVIRONMENTAL ENGINEERING

Haiti Earthquake: Lessons Learned and Hope for the Future

Tracy Kijewski-Correa

Associate Chair and Linbeck Associate Professor, Civil Engineering and Geological Sciences, University of Notre Dame

Alexandros Taflanidis

Assistant Professor, Civil Engineering and Geological Sciences, University of Notre Dame

Thursday, September 2, 2010

138 DeBartolo Hall

3:30pm



On January 12, 2010 a magnitude 7.0 earthquake struck 25 km WSW of Port-au-Prince on or near the Enriquillo Fault, releasing a powerful shock that delivered most of its energy within the first 10 seconds. This event and its series of powerful aftershocks ravaged Port-au-Prince and the town of Leogane, where Notre Dame's Haiti Program has operated for a number of years. While reports vary widely, it is estimated that nearly 250,000 lives were lost and hundreds of thousands more were left injured or homeless. These survivors now grapple with the after effects of a lack of basic human necessities such as shelter, clean water, food and medical treatment in the midst of Haiti's annual rainy and hurricane seasons. Between March 8 and 10, Professors Alexandros Taflanidis and Tracy Kijewski-Correa traveled to Haiti to conduct reconnaissance in these areas to determine the cause of poor performance/collapse of buildings in Haiti, with primary focus on residential housing. They followed that visit with another trip between August 19 and 22, along with graduate student Dustin Mix, to further investigate the trends in native housing systems, the available construction materials, the design principles employed, and the workmanship in Haiti. These factors, as well as cultural preferences, economic constraints, and educational infrastructure, will be essential in their efforts to develop a plan for culturally-appropriate, sustainable, long-term rebuilding of Haiti's residential housing stock to be resilient to both earthquakes and hurricanes that commonly affect this region.

Certainly, this effort in Haiti will be far more daunting than other disaster recoveries, in part because of the poverty, lack of education, and lack of government oversight of civil works – issues well beyond the engineering designs themselves; therefore solutions can only be derived in an interdisciplinary context by addressing the many challenges that existed well before the earthquake as part of Notre Dame's Committed to Haiti Campaign. This presentation and discussion will reflect upon these recent visits to Haiti and give an outlook toward the recovery that needs to follow, as well as the story of resilience and faith that is the Haitian people.



Dr. Tracy Kijewski-Correa is the Linbeck Associate Professor of Structural Engineering at Notre Dame and Associate Chair of the Department of Civil Engineering and Geological Sciences. She received her Bachelor's, Master's and PhD all from Notre Dame in 1997, 2000 and 2003. The research in the DYNAMO Lab focuses on 21st Century Civil Infrastructure Challenges using multi-disciplinary collaborations, advanced technologies and cyber-infrastructure to enhance our ability to design, assess and manage our national infrastructure and enhance its resilience to both manmade and natural hazards. Her previous work in post-disaster assessments included field work following the 2004 Indian Ocean Tsunami, where she led undergraduate students in proposing alternate structural designs, all set within the cultural context of the communities impacted.

Dr. Alexandros Taflanidis is an Assistant Professor of Civil Engineering and Geological Sciences at the University of Notre Dame. He received his Diploma in Civil Engineering with major in Structural Engineering from Aristotle University of Thessaloniki, Greece (2002) and completed the Master's program "Earthquake Resistant Design of Structures" at same school (2003) focusing, among other

topics, on post-seismic assessment and retrofitting. He got his PhD from the Civil Engineering Department at the California Institute of Technology (2008) working on probabilistic methodologies for risk evaluation and optimization. One focus of Dr. Taflanidis' research is seismic risk assessment, and design of earthquake resilient structures. He has prior hands on experience in post seismic assessment from the 2003 Lefkada earthquake in Greece, during his Master's studies, and holds a PE license in Greece.



A reception and an opportunity to meet the speakers will take place at 3:00pm in the CE/GEOS office conference room, Fitzpatrick 156, before the seminar