

FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM

Visit to Lehigh University: February 26, 2016



This report summarizes the visit of Dr. Sissy Nikolaou from Mueser Rutledge Consulting Engineers that took place at Lehigh University on February 26, 2016.

ITINERARY OR AGENDA

TIME:	ACTIVITY:
9:00 AM – 10:00 AM	Meet with EERI officers and faculty advisor at ATLSS Engineering Research Center.
10:00 AM – 10:45 AM	NHERI presentation by Dr. Ricles at ATLSS.
10:45 AM – 11:45 AM	ATLSS Lab tour.
12:00 PM – 1:00 PM	Lunch at University Center Dining Room.
1:00 PM – 1:30 PM	Seminar preparation.
1:30 PM – 2:30 PM	Seminar on “Rapid Geotechnical Reconnaissance Technologies for Multi Hazards in Neville Hall”.
2:30 PM – 4:00 PM	Meetings with Lehigh Professors

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER(S): Aman Karamlou, president, amk211@lehigh.edu

- Amy Kordosky, vice president, ank615@lehigh.edu
- Xin Chu, secretary, xic411@lehigh.edu
- Michael Gritzmacher, public relations, mbg315@lehigh.edu
- Joshua Core, treasurer, joc315@lehigh.edu
- Georgios Tsampras, member, get211@lehigh.edu
- Prof. James Ricles, advisor, jmr5@lehigh.edu

VISITING PROFESSIONAL LECTURE OVERVIEW

The lecture attracted different participants with different background and education ranging from undergraduate students to full professors. The guest speaker, EERI Student Chapter officers, and the participants were extremely excited about the event and the lecture. Discussions on the topic and the presented materials continued quite a while after the lecture presentation. Also, during the visit, the officers had the chance to discuss and consult with Dr. Nikolaou about the activities of the chapter. Moreover, the visitor was introduced to some of the research facilities of Lehigh University.

Lecture Abstract

Extreme multi-hazards of earthquakes, tsunamis, hurricanes, landslides, floods, or terrorist attacks have generated unfortunate, yet valuable lessons that reveal risks to our built environment and population. These lessons often lead to modification of design codes and offer invaluable case histories that can advance empirical methodologies, especially in geotechnical engineering. Reconnaissance immediately after a disaster, observation and documentation of failures but also successes, and long term monitoring of the recovery and

rebuild are inherently necessary components for engineers to advance the state of practice and benefit the society by creating safer designs.

Instrumentation is an essential tool for all these components, especially in our current, technology-driven times. The way reconnaissance is performed has evolved dramatically in the past few years due to advancements in instrumentation technologies. This presentation will highlight the importance of post-hazard observations with selected historical examples and focus on instrumentation technologies for multi hazards geotechnical reconnaissance through example case studies.



The speaker will share her reconnaissance experience after Hurricane Sandy, 9-11, and several earthquakes and correlate the role of observations to engineering aspects of: (i) understanding the effects of extreme events; (ii) studying the behavior of engineering designs to identify flaws for improvement or successes for replication in the future and proper advancement of design codes; (iii) collecting data to enhance knowledge and prepare for the next event; (iv) disseminate the data to assist response and rescue teams; (v) organize and use the data as case histories that can assist in developing empirical methodologies that are still the core of the geotechnical engineering practice.

Professional Bio



A foundation engineer with over 20 years of experience, Sissy Nikolaou is a Senior Associate with New York City based foundation engineering firm Mueser Rutledge Consulting Engineers (MRCE). She established and directs MRCE's GeoSeismic Services Department, which performs advanced site-specific studies and geophysical testing, and contributes to design guidelines.

An authority in seismic design, particularly in the Eastern U.S., Sissy's technical capabilities include both structural and geotechnical engineering in multihazard environments with emphasis on performance-based engineering, soil-structure interaction, seismic hazard analysis, liquefaction evaluation and mitigation and risk/resiliency assessment of critical facilities. Her global consulting and managing experience includes the retrofit of the Queensboro and RFK bridges, foundation and geoseismic aspects of the new World Trade Center, CitiField Stadium and the new Tappan Zee Bridge in New York; several high-rise buildings in Mexico City; the new waterfront development in Beirut; multi-use developments in the Middle East; security-sensitive projects in Germany; and the rebuild of Christchurch, NZ.

Her leadership is demonstrated by invitations to serve as Director of the Board for Earthquake Engineering Research Institute (EERI) and the American Council of Consulting Engineering Firms of New York (ACECNY), and as Advisory Board Member to the Dean of Engineering at the University at Buffalo. She currently participates in the technical committees of ASCE7-16 (seismic sub-committee) and NYC Building Code (chair for seismic, member for foundations). She has led and been part of teams who responded to disasters such as 9-11, and structural evaluations and reconnaissance missions for Hurricane Sandy and many earthquakes.

Sissy has numerous publications, interviews and citations in AEC magazines, and keynote addresses in ASCE Geo- and Structures Congresses. She was named Outstanding Woman in the Building Industry by the Women Builders Council. Her contributions have been recognized with the Prakash Prize for Excellence in Geotechnical Earthquake Engineering. When she received this prestigious award, she was not only the youngest individual to receive it, but its first female winner. For her contributions, she was just elected Fellow of the American Society of Civil Engineers.

SUPPLEMENTAL ACTIVITIES

Meet with EERI officers

All of the EERI officers (previously listed) met Dr. Nikolaou at ATLSS Engineering Research Center on the morning on February 26, 2016. She shared her knowledge and experience about EERI national and student chapter activities and recommended steps in moving forward to motivate and sustain the Lehigh EERI Student Chapter.

NHERI Presentation

Dr. Ricles, the EERI Student Chapter advisor at Lehigh University, delivered a presentation to Dr. Nikolaou and EERI Student Chapter officers about the National Hazards Engineering Research Infrastructure (NHERI) grant that was presented to Lehigh University in order to help support some of the research projects and experimental studies that take place in ATLSS. Through the presentation, some of the unique numerical capabilities and experimental facilities of ATLSS Center, as well as the past conducted studies were reviewed.

ATLSS Lab Tour

A tour on ATLSS Center was given by Prof. Ricles to Dr. Nikolaou through which different experimental facilities and current ongoing research projects were shown. A number of PhD students and EERI Student Chapter Officers accompanied Dr. Nikolaou during the tour and discussed the projects they are working on.



RESULTS, FEEDBACK AND LESSONS LEARNED

Based on the feedback received from the participants of the event, the program with Dr. Nikolaou was very rewarding for her, the EERI officers, and the students who were able to attend the seminar. She had many ideas on how to further grow within the chapter and knew of activities being done in the northeastern region that Lehigh can be a part of. In moving forward, the Lehigh University EERI chapter would like to host more seminars from professionals that cover multi-hazard mitigation strategies, community resilience, and the transition to performance based design standards. Other goals of the chapter include:

- Increasing undergraduate presence in the club and forming a seismic tower team to compete in the design competition next year.
- Organizing a group to go to New York City for a day or two to meet with some of the top structural engineering firms, tour construction sites, and network with students at other universities.
- Inviting more professionals to come and speak to Lehigh students and professors to continue to increase awareness of the problems facing civil engineers in the future as well as maintain excitement around the Lehigh University EERI student chapter.

ACKNOWLEDGEMENTS

Lehigh University EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Sissy Nikolaou through their Friedman Family Visiting Professional Program endowment.

Also, the additional fund provided by Lehigh University Graduate Student Senate is highly appreciated.

LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information included above. A list of the attachments is included below:

- Item 1, flier for the event
- Item 2, some photos taken during the Visit Dr. Nikolaou's Visit

Flier for the event:



EERI Lehigh University Student Chapter
EERI Friedman Family Visiting Professionals





Sissy Nikolaou, Ph.D, PE, F.ASCE
Senior Associate at
Mueser Rutledge Consulting Engineers (MRCE)
New York

Friday, February 26 at 1:30 p.m.
Room 002, Neville Hall
Lehigh University, Bethlehem



Rapid Geotechnical Reconnaissance Technologies for Multi Hazards

Extreme multi-hazards of earthquakes, tsunamis, hurricanes, landslides, floods, or terrorist attacks have generated unfortunate, yet valuable lessons that reveal risks to our built environment and population. These lessons often lead to modification of design codes and offer invaluable case histories that can advance empirical methodologies, especially in geotechnical engineering. Reconnaissance immediately after a disaster, observation and documentation of failures but also successes, and long term monitoring of the recovery and rebuild are inherently necessary components for engineers to advance the state of practice and benefit the society by creating safer designs.

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Some photos taken during the Visit Dr. Nikolaou's Visit:



