

FRIEDMAN FAMILY VISITING PROFESSIONALS PROGRAM

Visit to University of Michigan: April 17, 2019



This report summarizes the visit of **Ivan G. Wong** from Lettis Consultants International that took place at the University of Michigan on April 17, 2019.

ITINERARY OR AGENDA

TIME:	ACTIVITY:
9:00 AM – 9:30 AM	Student Chapter President meets & welcomes Visiting Professional to campus
9:30 AM – 10:00 AM	Meeting with Faculty member, Dr. Dimitrios Zekkos
10:00 AM – 10:30 AM	Meeting with Faculty member, Dr. Adda Athanasopoulos-Zekkos
10:30 AM – 11:00 AM	Meeting with Chapter Faculty advisor, Dr. Seymour Spence
11:00 AM – 12:00 PM	Informal meeting with department graduate students (soon to be graduating) for career guidance
12:00 PM – 12:30 PM	Lecture preparation
12:30 PM – 1:30 PM	Guest lecture by Visiting Professional
2:00 PM – 3:00 PM	Lunch with student chapter at local restaurant

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER(S): Arthriya Suksuwan, President, arthriya@umich.edu

- Ahmed Abdelhady, Vice President, auhady@umich.edu
- Monica Jambu, Secretary, monicaja@umich.edu

Dr. Seymour Spence assisted in planning.

VISITING PROFESSIONAL LECTURE OVERVIEW

Ivan Wong's presentation was entitled "Learning from Earthquakes: Implications for Seismic Hazard and Seismic Design in the U.S.". A brief introduction to the seismic hazard and seismic risk was presented. Various case studies on major earthquakes around the world were discussed regarding lessons learned from each earthquake and how these lessons impacted the design concepts and methodologies. Seismic hazard and risk in the New Madrid seismic zone was also discussed.

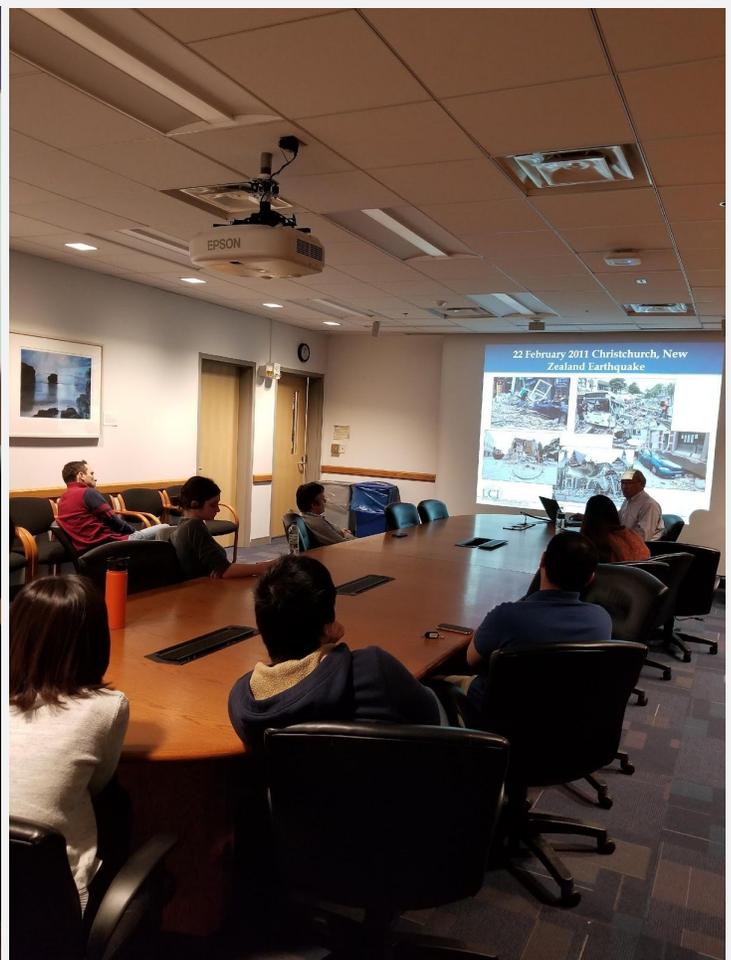
The lecture was attended by students and faculty in geotechnical engineering and structural engineering programs at the University of Michigan, many of whom are members of the EERI student chapter. The audience response was positive. Many interesting questions were raised and they were well addressed by Ivan.

Lecture Abstract

In the past few decades, the fields of engineering seismology as well as seismic engineering have gone through a rapid change based on lessons learned from the past earthquake events that happened worldwide. Every earthquake gave lessons that allowed seismologist and engineers to improve design/retrofit concepts and hazard and risk evaluation strategies to mitigate losses from earthquakes.

Some examples of lessons learned from major earthquake events were presented. The 1989 Loma Prieta earthquake in Northern California provided lessons in terms of reflected seismic waves and their effect on strong shaking during the earthquake. The 1994 Northridge earthquake in the San Fernando Valley region of the County of Los Angeles eliminated former perspective that earthquake ground acceleration could not exceed 1g and highlighted the important of considering vertical acceleration. The 1999 Chi-Chi earthquake in central Taiwan presented near-fault ground motions helped transforming the seismic design of bridge structures. The 2011 Christchurch earthquake in New Zealand illustrated the possibility of the rupture of one fault can trigger the rupture of another fault. The 2011 Tohoku earthquake in Japan presented a tragic consequence of underestimating the hazard intensity for the design.

The seismic hazard and risk in the New Madrid Seismic Zone, a major source of intraplate earthquakes in the southern and Midwestern U.S., was discussed. In particular, the challenges in developing ground motion models in this area is due to the lack of major earthquake records as well as seismological data. Soil and rock in this area do not absorb much energy, hence allowing the earthquake energy to travel in a far distance. Hence, potential hazard and risk due to a serious earthquake in the New Madrid Seismic Zone should not be overlooked.



Professional Bio

Ivan Wong is a senior principal seismologist at Lettis Consultants International, CA. Ivan has more than 40 years of experience in the fields of engineering seismology and seismic geology. A major focus in his career has been earthquake hazard reduction and awareness and public outreach. Ivan has directed the seismic hazard evaluations of more than 500 critical and important facilities worldwide. For FEMA, Ivan has been involved in

the education and implementation of the seismic risk assessment software HAZUS in several areas in the U.S. He has been the recipient of numerous NEHRP external research grants from the USGS that have supported the development of urban probabilistic and scenario hazard maps and other earthquake hazard-related studies. Ivan is a past member of the EERI Board of Directors, past President of the EERI Northern California Chapter, past member of the Editorial Board for EERI's Earthquake Spectra, and currently serves as an Associate Editor for the Bulletin of the Seismological Society of America. Ivan has also been particularly active in serving the U.S. Geological Survey on several review and advisory panels. In 2017, Ivan was appointed to the California Seismic Safety Commission by Governor Jerry Brown. Ivan has authored or coauthored more than 350 professional publications.

SUPPLEMENTAL ACTIVITIES

Student discussion session

Ivan Wong and graduate students from our department had an informal discussion session regarding career guidance. Conversation topics included students industry and academia opportunities, past and future of structural design for earthquake engineering, performance-based design concept, and Ivan Wong career experiences.

Meet with faculty at the University of Michigan

Ivan Wong met with the members of the faculty at the University of Michigan with research/teaching topics in geotechnical engineering, earthquake engineering, and hazard risk mitigation.

Lunch with student chapter

Ivan Wong and graduate students from our student chapter had lunch together at a local restaurant. Conversation topics included the research topics of the graduate students, Ivan Wong career experiences as a professional engineering seismologist, and perspectives on structural design in seismically active regions.

RESULTS, FEEDBACK AND LESSONS LEARNED

Having Ivan Wong as a visiting professional has provided the University of Michigan Civil Engineering community with another perspective from engineering seismologist that fulfills an understanding of earthquake hazard and consequences. The lecture was clear that students with different backgrounds were able to process all the information provided. Various case studies highlighted different lessons learned that are very useful for students. For future visiting professional, we would like to learn about:

- Case studies where cutting-edge technology has been applied in seismic engineering
- Performance-based design in structural engineering practice
- Integration of academic research into earthquake engineering design practice

ACKNOWLEDGEMENTS

The University of Michigan EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Ivan Wong through their Friedman Family Visiting Professional Program endowment. Additionally, the University of Michigan EERI Student Chapter gratefully thanks the help and support of Dr. Seymour Spence.

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:

- Flyer posted to promote the discussion and the lecture.

**EE
RI** Earthquake Engineering Research Institute
University of Michigan Student Chapter

EERI SPEAKER SERIES

by

Seismologist Ivan Wong

12:30-1:30 PM

17TH APR

**VENUE
GGB 2029**

“Learning from Earthquakes: Implications for Seismic Hazard and Seismic Design in the U.S.”

Learn more about seismic risk assessment, hazard reduction and future career prospects in an exclusive student discussion session from 11:00 AM– 12:00 PM