FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM

Visit to University at Buffalo: March 2025

This report summarizes the visit of **Rafael Sabelli** from Walter P Moore that took place at the University at Buffalo in March 2025.

ITINERARY OR AGENDA

The visit consisted of a full day of talks, presentations, meetings with various student and faculty groups of the department, visit to the Structural Engineering and Earthquake Simulation (SEESL) lab, and ended with an informal visit to Niagara Falls and dinner.

TIME:	ACTIVITY:
9:00 AM – 9:30 AM	A. Rabideau, Dept Chair meets and welcomes Rafael
9:30 AM – 10:00 AM	Meeting with the structure's faculty
10:00 AM – 10:45 AM	Tour of Structural Engineering and Earthquake Simulation Laboratory
11:00 AM – 12:00 PM	Guest lecture by Rafael Sabelli
12:15 PM – 1:30 PM	Lunch with EERI@UB Graduate Student Leaders
1:30 PM – 2:00 PM	Informal meeting with UB Seismic Design Team
2:00 PM – 3:00 PM	Graduate Student Presentations
3:00 PM – 4:00 PM	Speed Interviews
4:00 PM – 6:30 PM	Visit to the Niagara Falls
7:00 PM – 8:30 PM	Dinner with CSEE faculty

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER(S)

- Rohit Ranjan Singh, UB EERI President, rsingh44@buffalo.edu
- Juan Singaucho Carlos, UB EERI Vice President. jsingaucho@buffalo.edu
- Matt Byrne, Undergrad Sesismic Design Team, mrbyrne@buffalo.edu
- Andreas Stavridis, UB EERI Faculty Advisor, astavridis@buffalo.edu}

VISITING PROFESSIONAL LECTURE OVERVIEW

Rafael gave an hour-long talk on the design and construction of the SoFi stadium, which was completed in 2022. This was followed by research presentations by the graduate students and speed interviews. Brief meetings with various student and faculty groups were scheduled between the main agenda items of the day.

Lecture Abstract

The state-of-the-art SoFi Stadium was showcased in Superbowl LVI in 2022, a fitting nod to several years of design and construction work. This project posed a tremendous structural and geotechnical challenge, including deep excavation, dramatic soil retention, high seismicity, and long spans. To meet this challenge, the design team divided the project to create a small set of large, but manageable, component projects.

The first carve-out was the 100-foot, 2.4M cubic yard open cut excavation and massive 265,000 square foot mechanically stabilized earth retention system. This deep excavation was required in order to keep the overall building height below the clearance needed for aircraft approaching nearby Los Angeles International Airport. The independent retention system permitted structural design without retention forces. To further clarify the structural design, the roof structure was placed on columns separate from the stadium bowl structure.

This project involved design and construction of multiple geotechnical and geostructural elements. In addition to the excavation and retention system, there were: approximately 700 continuous flight auger and cast-in-drilled-hole piles with diameters ranging from 24 in. to 72 in.; mat foundations, plinth columns, butterfly caps, and posttensioned grade strut and anchor blocks; and working platform stability for a 1,600 metric ton crane for roof erection.

Complicating all design scenarios was a highly seismic environment, with the Newport-Inglewood Fault and Compton Blind-Thrust Fault nearby the stadium site. The underlying seismic complication to all geotechnical and structural designs was the need for the free-standing cable-net stadium roof to be completely isolated from the stadium structure and the MSE wall system, the base of which was founded nearly 120 ft below existing ground surface.

This presentation will discuss in detail the specialty design and construction management of all of these systems, the difficulties in having four separate geotechnical consultants/designers on a project, the challenges of formulating an independent peer review panel and obtaining their review consensus on a complex series of designs, managing interaction between the City of Inglewood plan check process and the peer review panel, and constructing geotechnical and structural work separate from the rest of the stadium bowl, all on the critical path.

Photo taken with the graduate students at the end of the lecture

Professional Bio

Rafael Sabelli is a Senior Principal and Director of Seismic Design at Walter P Moore. Rafael has earned a Lifetime Achievement Award and a Special Achievement Award from AISC, as well as the T.R. Higgins Lectureship award. He is a member of the AISC Committee on Specifications, where he is vice-chair of the Technical Committee on the Seismic Provisions, and a member of the AISC Committee on Manuals, where he is chair of the Seismic Design Manual committee.

He is a member of the ASCE 7 Main Committee and the Seismic Task Committee, and the NIST Building Seismic Safety Council's Provisions Update Committee.

Rafael is co-author of Ductile Design of Steel Structures and has written extensively on the design and behavior of steel seismic systems. He has published technical papers on braced frames, connection design, and structural stability. He is the past President of the Structural Engineers Association of California.

Rafael was Structural Engineer of Record of landmark projects including the award-winning San Francisco International Airport Air Traffic Control Tower and of the Los Angeles Rams Sofi Stadium.

SUPPLEMENTAL ACTIVITES

Graduate Student Presentations

Four graduate students in the department gave a 10-minute presentation on the topics they were currently working on. At the end of each presentation, there was a brief discussion on the topic

Speed Interviews

Seven graduate students who were about to graduate appeared in the five-minute speed interviews. Rafael asked them questions related to the career path they would like to choose and provided them with suggestions on how to navigate the professional journey in structural engineering.

Visit to Niagara Falls

This was an informal event planned at the end of the day to wind down and refresh. Andreas Stavridis, CSEE faculty, took Rafel for a tour of Niagara Falls which is only a 30-minute drive from the university.

RESULTS, FEEDBACK AND LESSONS LEARNED

The program was well received by the students. The graduate students had the chance to listen to an industry expert as well as share their own work during the visit. The undergraduate seismic design team also had a fruitful conversation with Rafael. In future we would like to host experts with topics such as:

- Developments in seismic analysis and design of structures
- Seismic Resilience of existing infrastructure in US

ACKNOWLEDGEMENTS

The UB EERI Student Chapter gratefully acknowledges the support of the EERI for sponsoring the travel of Rafael Sabelli through their Friedman Family Visiting Professional Program endowment. The chapter would also like to thank Silvana for coordinating with the speaker and the UB EERI student chapter to make this event possible. Finally, we would also like to thank Rafael for his time and efforts in sharing his experience and insights with the graduate students at the University at Buffalo.

LIST OF ATTACHMENTS

Included at the end of this report is the flyer used for the event promotion.