

FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM

Visit to Portland State University: May 10, 2024



This report summarizes the visit of Mr. Rafael Sabelli from Walter P Moore that took place at Portland State University on May 10th, 2024.

ITINERARY OR AGENDA

TIME:	ACTIVITY:
11:00 AM – 12:00 PM	Geotechnical Lab Tour and Student Social
12:00 PM – 12:30 PM	Lunch
12:30 PM – 1:30 PM	Presentation by Visiting Professional and Q&A
1:30 PM – 3:00 PM	Socializing/Coffee with CEE Faculty

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER(S): Andrew Earl Parrott, Chapter President & Treasurer, parrott4@pdx.edu

- Dr. Arash Khosravifar, Faculty Advisor, karash@pdx.edu

VISITING PROFESSIONAL LECTURE OVERVIEW

Lecture Abstract

The recently completed *SoFi Stadium* 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 into several large, but manageable, component tasks. The first task was the 100-foot, 2.4M cubic yard open cut excavation and massive 265,000 square foot mechanically stabilized earth retention system. 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. 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 near the stadium site.

Professional Bio

Rafael Sabelli, S.E. 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.

SUPPLEMENTAL ACTIVITIES

Geotechnical Lab Tour / Student Social

Before his presentation, Mr. Sabelli was led through the Geotechnical Lab spaces by our chapter president to showcase our student body's work and to discuss the challenges faced in research and in professional practice. Several graduate and undergraduate students from our EERI Student Chapter and the Graduate Student Organization were present and available to talk about their research, which included centrifuge modeling, flow-tank analyses, microbially-induced desaturation, and calibration of constitutive modeling using lab testing, among other topics.

Socializing with CEE Faculty

Following the presentation, Mr. Sabelli was accompanied by two (2) Structural Engineering faculty members (Dr. David Yang and Dr. Thomas Schumacher), one (1) Geotechnical Engineering faculty member (Dr. Arash Khosravifar), and the Department Chair (Dr. Peter Dusicka) to a café near the PSU campus. PSU faculty members and Mr. Sabelli exchanged ideas about their shared interest in seismic-related research, recent code developments, and other professional activities.

RESULTS, FEEDBACK AND LESSONS LEARNED

Brief description of challenges during the process, general reception of the program and Visiting Professional. Also, a description of other topics or disciplines the Student Chapter would like to cover in future visits, and related goals.

- Due to travel/scheduling conflicts, a dinner between Mr. Sabelli and students from PSU could not be arranged for this event. Subsequent to his presentation, a more formal sit-down was held at a nearby café, giving our visiting professional and PSU faculty members an opportunity to discuss the current and future states of their fields.
- Unlike previous events, lunch was served prior to the lecture and in the same room, giving our visiting professional and attendees a chance to informally meet and share rapport. This led to an air of camaraderie during the presentation, extending into the lengthy Q&A session.
- PSU has been fortunate to have several guest lecturers in the past eight (8) years of hosting the FFVP program. We hope to continue to benefit from this program in the future.

ACKNOWLEDGEMENTS

The Portland State University EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Mr. Rafael Sabelli, S.E. through their Friedman Family Visiting Professional Program endowment. The PSU EERI Student Chapter also gratefully acknowledges the support of the Portland State University Civil & Environmental Engineering (CEE) Department in helping to advertise and promote this event within and outside the community.

LIST OF ATTACHMENTS

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

- Event Flyer
- Summary Page w/ Itinerary



Friday, May 10, 2024, 12:00 p.m. - 1:00 p.m.
Engineering Building 315 (3rd floor). 1930 SW 4th Ave. Portland OR, 97201

Guest Speaker: Rafael Sabelli, S.E.

“Divide and Conquer: How a Multi-Billion-Dollar Challenge was Met through Careful and Creative Division into Manageable Components”

Organized by PSU Earthquake Engineering Research Institute (EERI) Student Chapter

Abstract

In this seminar, Rafael will share his experiences on the design and construction of the recently built *SoFi Stadium*. 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. 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. 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 near the stadium site.

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, managing interaction between the City and the peer review panel, and constructing geotechnical and structural work separate from the rest of the stadium bowl, all on the critical path.

Biography

Rafael Sabelli, S.E.

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Registration Link: https://docs.google.com/forms/d/e/1FAIpQLSeEWU86ufrEt2iU-j9wJGUR5Ic2MeD64vJXMB5qGQYGgtafAg/viewform?usp=sf_link



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Engineering Building 315 (3rd floor), 1930 SW 4th Ave. Portland OR, 97201

Friedman Family Visiting Professionals: Rafael Sabelli
Organized by PSU Earthquake Engineering Research Institute (EERI) Student Chapter

Summary

Mr. Sabelli joined us at the Engineering Building approximately one hour before his presentation to meet with the Geotechnical Graduate Students and discuss his experience with challenging geotechnical/structural projects, ongoing research and testing conducted by PSU, and the general state of the industry. Lunch was catered to our presentation room on campus, and shortly thereafter Mr. Sabelli presented on the design, construction, and operational challenges of the SoFi Stadium, the new home to The Rams and The Chargers in Los Angeles, CA.

Event Itinerary

- 11-12pm** - Socializing with Grad Students/Geotechnical Lab Tour
- 12-1:30pm** - Presentation with Q&A
- 1:30-3pm** - Socializing with Geotechnical and Structural Faculty



Biography

Rafael Sabelli, S.E.

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