

# FRIEDMAN FAMILY VISITING PROFESIONALS PROGRAM

## Visit to Portland State University: April 20, 2023



This report summarizes the visit of Dr. John Thornley from WSP that took place at Portland State University on April 20, 2023.

### ITINERARY OR AGENDA

Provide the itinerary of the visit.

TIME:	ACTIVITY:
9:30 – 10:00 AM	Meet and walk to campus; visit with geotechnical faculty
10:30 – 11:45 AM	Tour of civil engineering labs, including the geotechnical and structural spaces
12:00 – 1:00 PM	Lunch with civil engineering undergraduate and graduate students
1:00 – 2:30 PM	Presentation and questions
2:30 – 3:00 PM	Visit the in-progress undergraduate soil lab; wrap-up

### STUDENT CHAPTER VISIT PLANNING COMMITTEE

**LEAD ORGANIZER(S):** Kayla Sorenson, chapter member, [sorenson@pdx.edu](mailto:sorenson@pdx.edu)

- Dr. Arash Khosravifar, Faculty Advisor, [karash@pdx.edu](mailto:karash@pdx.edu)

### VISITING PROFESSIONAL LECTURE OVERVIEW

Briefly describe the Visiting Professional's presentation, and attendee response. Include photos if applicable.

#### Lecture Abstract

#### **Liquefaction mitigation of loose coral sand beneath tank foundations in the Marshall Islands**

The results of initial CPT work indicated, based on typical liquefaction screening methods, significant potential for seismically induced settlement. However, coral sand differs substantially from quartz and silica sand, which are the majority of case histories used to develop liquefaction screening methods. Bulk samples of the coral sands were collected and a series of CPT cone calibrations, triaxial and cyclic direct simple shear tests were performed to develop a constitutive framework that was used to understand the liquefaction triggering of coral sand. Findings from the study indicate that the Kwajalein coral sand is less susceptible to liquefaction.

## Professional Bio

John Thornley, PhD, PE, D.GE is an Assistant Vice President and Senior Geotechnical Engineer at WSP in Anchorage, Alaska. He has 18 years of geotechnical and earthquake engineering experience. Recently John was a co-lead for the EERI Learning from Earthquakes Reconnaissance effort for the November 30, 2018 M7.1 Anchorage, Alaska Earthquake. John is currently the chair of the Municipality of Anchorage Geotechnical Advisory Commission and is active in several organizations including ASCE, EERI, and SSA. He has served as field manager of geotechnical studies and prepared recommendations for a variety of infrastructure projects including buildings, roads and airports, large liquefied natural gas and water storage tanks, pipelines, wind and cellular towers, and utilities. As part of John's work, he has been involved in seismic hazard studies, seismic site response analyses, studies for large infrastructure buildouts, and cold regions and permafrost engineering. His design work includes ground improvement in liquefiable soils, deep and shallow foundations, slope stabilization, retaining structures, and embankments.

## SUPPLEMENTAL ACTIVITIES

### Visit with Geotechnical Faculty

Dr. Thornley was able to spend a few minutes talking with the geotechnical faculty and PhD students about his work and the various projects he's working on up in Alaska.

### Tour of PSU's Civil Engineering Labs

Dr. Thornley was given a tour of PSU's various engineering labs, including the geotechnical, structural, and fluids labs by PSU's Developmental Engineer and was accompanied by a group of undergrad and grad.

### Lunch with undergraduate and graduate students

Several undergraduate and graduate students joined Dr. Thornley for a catered lunch. Discussions included his past research as a graduate student, and some of the research that is being performed in the labs that he visited earlier.

### Visit an in-progress undergraduate soil lab

Dr. Thornley was able to observe a group of undergraduate students performing PSU's *Field Identification of Soils* lab. Discussion included the older equipment in the lab and how it's used as a visual aid when teaching the more complex laboratory topics.

## 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.

- The turnout this year has been better than previous years, but it's still not up to pre-pandemic levels. Despite the small numbers of the PSU EERI student chapter, several other non-EERI students attended both Dr. Thornley's lecture and the supplemental activities.
- Due to PSU's rooming policies, there was only 2 days between securing the lecture room and being able to advertise the event, and Dr. Thornley's lecture. Coordinating future guest lecturers' later in the term will allow for more time to advertise the event to local practitioners.

- In the past seven years, we have been fortunate to have six guest lecturers as part of the Friedman Family Visiting Professional program. We would like to expand on the topics being presented to include a structural engineering lecture. The EERI chapter at PSU mostly consists of geotechnical students, which makes it difficult to attract students who are structurally focused to group activities.

## ACKNOWLEDGEMENTS

The Portland State University EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Dr. Thornley through their Friedman Family Visiting Professional Program endowment. The PSU EERI Student Chapter also gratefully acknowledges the support of the Portland State University Civil Engineering Department and the ASCE-GI Oregon chapter in helping to communicate this lecture within the community.

## LIST OF ATTACHMENTS

Included at the end of this report is a flyer for Dr. Thornley's lecture to supplement the information included above.

The logo for EERI (Earthquake Engineering Research Institute) consists of the letters 'EERI' stacked on top of 'RI' in a white, serif font, set against a dark red square background.

# EERI Visiting Professional



Friedman Family Lecture Series

Speaker: Dr. John Thornley, PE, D.GE

Thursday, April 20

Engineering Building Room 102

1:00pm – 2:30pm



Title: Liquefaction mitigation of loose coral sand beneath tank foundations in the Marshall Islands

**Summary:** The results of initial CPT work indicated, based on typical liquefaction screening methods, significant potential for seismically induced settlement. However, coral sand differs substantially from quartz and silica sand, which are the majority of case histories used to develop liquefaction screening methods. Bulk samples of the coral sands were collected and a series of CPT cone calibrations, triaxial and cyclic direct simple shear tests were performed to develop a constitutive framework that was used to understand the liquefaction triggering of coral sand. Findings from the study indicate that the Kwajalein coral sand is less susceptible to liquefaction.

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RSVP Here:

<https://forms.gle/sC4mN5Tje43t5Zao9>