

Mr. Erik Bishop, P.E., S.E. associate principal at Reid Middleton visited Purdue University on September 10<sup>th</sup>, 2024. A summary report of his visit is presented below.

## Agenda

Time	Event	Location	Escort/Notes
10:00 - 10:30 am	Meeting with Professor Akanshu Sharma	HAMP 4113	Lissette will meet at the entrance
11:00 - 11:45 am	Bowen Lab + IISL tour	Bowen Lab	Tour with Luis
12:00 - 2:00 pm	Lunch	HAMP 4113	Lunch with students
2:00 - 3:00 pm	Presentations	HAMP 4113	Oscar and Lissette presenting
3:00 - 3:45 pm	Free time	HAMP 4113	
3:45 - 4:15 pm	Meeting with Professor Ayhan Irfanoglu	HAMP 4113	
4:15 - 4:30 pm	Free time	HAMP 4113	
4:30 - 5:20 pm	Seminar	HAMP 1144	Lissette to introduce
6:30 pm	Dinner with students and faculty	Thai Essence, West Lafayette	Meeting at the restaurant

## Bowen Lab + IISL Tour

Professor Akanshu Sharma from the Structures Department provided a tour across Bowen Lab and IISL lab facilities explaining different ongoing research projects in composite materials, anchorages in concrete, and hybrid simulations. The tour was joined by EERI student members Chandan Kanakamedala and Luis Fernandez.

Pictures



Figures 1-2. Bowen Lab tour with Professor Akanshu Sharma and EERI chapter members.



Figure 3-4. Structural Engineering seminar by Mr. Erik Bishop at the Hampton Hall of Civil Engineering.





Figure 5-6. Structural Engineering seminar by Mr. Erik Bishop at the Hampton Hall of Civil Engineering.



Figure 7. Dinner with Mr. Erik Bishop, Professor Ayhan Ifranoglu, and the EERI chapter committee.

### Structural Engineering Seminar

Mr. Bishop gave his lecture as part of the structural engineering seminar program which meets weekly with graduate students to discuss novel topics in academia and successful case studies in the industry. Mr. Bishop presented the seismic retrofitting of a hospital facility using fluid viscous dampers, a topic that gathered +60 students in the room. Professor Ayhan Ifranoglu led the lecture and subsequent panel of questions.

### **EERI Chapter Student Presentations**

PhD students Lissette Iturbure and Oscar Forero introduced Mr. Bishop to different research projects related to structural engineering which aim to explore extraterrestrial habitats and the incorporation of artificial intelligence in structural damage detection and classification.

### **Impact of the Friedman Family Visiting Professional Program**

The visit of Mr. Erik Bishop raised significant interest among students to join EERI resulting in 5 new additional undergraduate memberships, doubling the size of the student chapter.

### **Acknowledgments**

The EERI Purdue University Student Chapter acknowledges the support of the Friedman Family for sponsoring Mr. Erik Bishop's travel through their Friedman Family Visiting Professional Program endowment.

Structural Engineering Seminar Flyer



Lyles School of Civil and  
Construction Engineering



Earthquake Engineering  
Research Institute  
Dedicated to reducing earthquake risk

Structures Graduate Seminar Series

**Seismic Evaluation, Upgrade, and Post-Earthquake  
Response Tools for an Essential Hospital Facility**

*Erik Bishop, P.E., S.E.*

Tuesday, Sep 10th, 2024 @ 4:30 PM  
HAMP 1144



**Abstract**

With more than a million patients each year and a staff of over 6,600 employees, the U.S. Navy sought to upgrade Naval Medical Center San Diego (NMCS) to improve its operational status after an earthquake. The 1.2 million square foot, 5-story steel-framed hospital was built in the 1980s with seismically-deficient (pre-Northridge) moment frame connections. Using nonlinear, dynamic time history analyses, Reid Middleton performed a seismic evaluation of NMCS in accordance with ASCE 41-13 for an Immediate Occupancy objective. In order to improve the seismic performance of the pre-Northridge moment frames and reduce the building drifts that would cause damage to building's nonstructural systems, a seismic upgrade approach was developed using fluid viscous dampers (FVDs). The locations, configurations, and installation phasing of the FVDs were choreographed with hospital operations to minimize construction disruptions and allow the facility to remain operational during construction. Additionally, the facility was instrumented with a seismic monitoring system (SMS), coupled with a customized post-earthquake response program, to empower the on-site facility management team to conduct an expedited, data-based safety assessment of the building following an earthquake.

**Biographical Sketch**



Erik Bishop is an Associate at Reid Middleton, Inc., in Everett, WA. Erik's experience includes new design, seismic evaluation and rehabilitation design for buildings and lifeline utilities, seismic resiliency studies, and the development of seismic instrumentation and earthquake response technologies. He has also had opportunities to participate in post-earthquake reconnaissance efforts following several major events around the world. He was selected as a Housner Fellow in 2017 through the Earthquake Engineering Research Institute (EERI).

**This lecture is provided as part of the Earthquake Engineering Research Institute (EERI) Friedman Family Visiting Professionals Program**