

The Official

# AEG OREGON CHAPTER NEWSLETTER

<http://www.aegoregon.org>

## Meeting Details:

Date: Tuesday, Dec. 17, 2024  
7:00 pm Hybrid

## RSVP

In-Person \$25 Cash or check.  
Cards please use link above.

Old Market Pub  
6959 SW Multnomah Blvd.

## Agenda:

5:30- 6:30 pm social  
6:30-7:00 pm dinner  
7:00 pm presentation

## UPCOMING MEETINGS:

**January 15:** AEG/ASCE joint meeting; OMP: Eric Paslack, Max Gummer, and Joe Zaleski

**February 25:** John Kemeney, Jahns Lecturer

**March (TBD)**

**April:** Erin Dunbar, Geosyntec Consultants

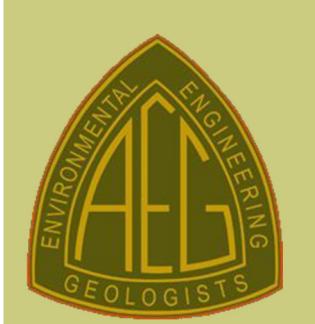
**May:** Student night

## Seismic-Induced Liquefaction and Settlement Case Studies from the 2023 Kahramanmaraş Earthquake and Modeling Approaches

Dr. Ozgun A. Numanoglu

Schnabel Engineering

On February 6, 2023, the Kahramanmaraş earthquake sequence caused significant damage in the southern and southeastern parts of Turkiye. Two subsequent reconnaissance campaigns, in which the presenter participated, revealed evidence of seismic-induced liquefaction in the city of İskenderun. Additionally, widespread damage was observed in terms of seismic-induced settlements and tilting of buildings. The presenter documented observations of liquefaction, settlement and tilting for more than forty buildings, three of which will be shown in detail in this presentation. The three cases involve: (1) larger settlements around a mosque relative to its foundation; (2) settlement of a building surrounded by minor ejecta material; and (3) settlement of a building surrounded by significant ejecta material. All three cases experienced liquefaction. Simplified models were used to calculate the observed settlements, with site-specific soil profiles and properties developed from pre- and post-earthquake standard penetration and cone penetration tests in the affected areas. Input intensity measures for the seismic settlement calculations, such as peak ground accelerations (PGA) and cumulative absolute velocity (CAV), were obtained from ground motion models (GMMs) and site-specific equivalent linear and nonlinear seismic site response analyses (SSRA). For the SSRA analyses, two approaches were used to develop input ground motions: one directly from a nearby recording station and the other using the double convolution method. The calculated settlements were compared with the measured values, and the simplified models provided estimates within a factor of 2. Additionally, the first case history was analyzed using SSRA with excess porewater pressure generation and dissipation in three-dimensional (3-D) stress-strain space. A newly developed 3-D soil constitutive model implemented in LS-DYNA was used together with 3-D shear-beam column approach. Bi-directional ground motions obtained from the nearby recording station were used to estimate liquefaction triggering, with results consistent with field observations. Further studies are ongoing to estimate the seismic-induced liquefaction and settlements using 3-D soil-structure interaction numerical models.



*Geologists have a  
saying - rocks  
remember.*

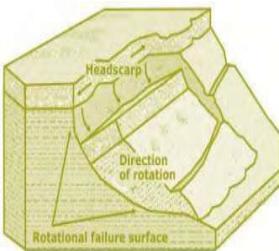
*Neal Armstrong*



### **Dr. Ozgun A. Numanoglu:**

Dr. Numanoglu is a Consultant Project Geotechnical Engineer, in Schnabel Engineering's Seattle office, specializing in geotechnical and earthquake engineering. His expertise encompasses advanced soil constitutive modeling, numerical analysis, soil-structure interaction, and transportation geotechnics.

Dr. Numanoglu's experience includes static and seismic site characterization through field testing, assessment of laboratory test results on the static and seismic response of soils, and analysis of seismic induced deformations in granular materials, including seismic compression settlements/slope displacements of dry/drained granular materials, liquefaction-induced settlements, and lateral spreading. He conducts seismic site response analyses and develops multi-dimensional numerical models of geosystems and soil-structure systems under both static and dynamic loading conditions to investigate the system response to given loading, boundary, and drainage conditions.



## Message from the Chapter Chair

Hello AEG Oregon!

It's almost winter. The light of the new season will be dawning on December 21. I am planning on receiving it during sunrise that morning. It will bring the beginning of winter and the promise of the return of longer days, warmth, and the stirring of spring. Going through these times of uncertainty, the turning of the wheel of the year is one constant I can anchor onto.

Another constant I am depending on is meeting you all at our meeting. Old Market Pub will open their conference room for us on the 17th of December where we will enjoy each other's company over beverages, pizza, and a talk by Dr. Ozgun A. Numanoglu on some of the outcomes of the 2023 Kahramanmaraş Earthquake in Turkiye. Please book your ticket by following the link in this newsletter.

Of course, thanks are due to Dr. Elisabeth Clyne for their informative talk on geophysics and its applications. It warmed my heart to see the interest that the talk stirred in our attendees.



It is time to [renew](#) your membership to AEG, which will include the renewal of your membership to our Oregon chapter. One of the best outcomes of your membership, and high up on my list, is the effect our society can have on students and their professional development. I am so happy to see so many students attending our meetings and I am thankful to our pro/student volunteers who make sure the students are included in our messaging and outreach.

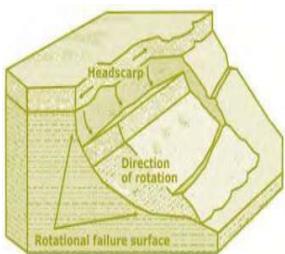
Taking the ASBOG test? Attend the upcoming webinar "Preparing for the ASBOG Fundamentals of Geology Exam" on January 8, 2025, at 16:00-18:00 EST. It is [free](#) for members, [not free](#) for non-members.

Looking ahead, the joint ASCE/AEG meeting is happening this January. Eric Paslack, Max Gummer, and Joe Zaleski will be presenting on the OR 217 Project. You will be hearing more as we approach that time.

I would like to extend to you the board's wishes for a wonderful holiday season. I appreciate all that you do.

Most sincerely,

Nikos Tzetas  
AEG Oregon Chair 2024-2025



PS. Do you need another geology pun? Give me a minute, I'll dig one up.

*Geologists are never at  
a loss for paperweights.*

*Bill Bryson*



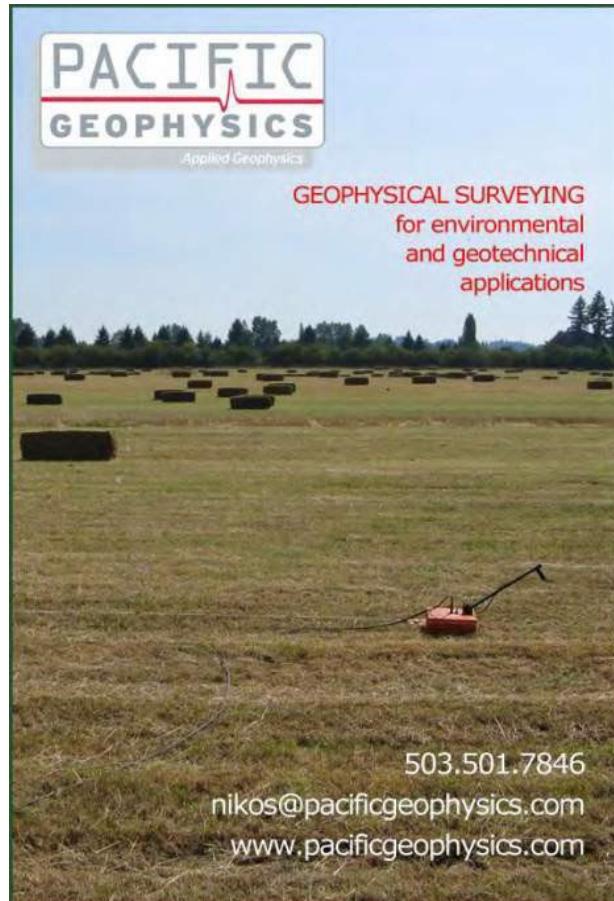
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a loss for paperweights.*

*Bill Bryson*



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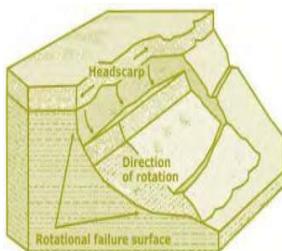
- Seismic Refraction/Reflection
- Shearwave Velocity Studies
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- Marine Geophysics

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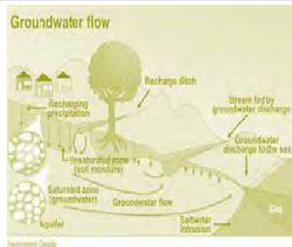
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*We learn geology the morning after the earthquake.*

*Ralph Waldo Emerson*

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## 2024-2025 Chapter Officers & Committee Chairs



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Nikos Tzetas  
Pacific  
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[nikos@pacificgeophysics.com](mailto:nikos@pacificgeophysics.com)



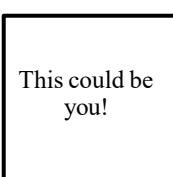
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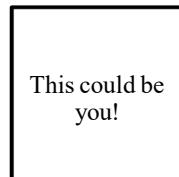
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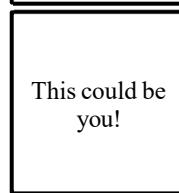
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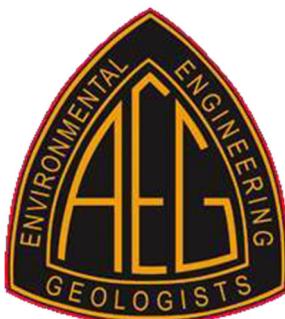
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### The AEG Oregon Chapter Newsletter

The Association of Engineering Geologists (AEG) contributes to its members' professional success and the public's welfare by providing leadership, advocacy, and applied research in environmental and engineering geology. AEG's values are based on the belief that its members have a responsibility to assume stewardship over their fields of expertise. AEG is the acknowledged international leader in environmental and engineering geology and is greatly respected for its stewardship of the profession.

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