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Hailey-Rae Rose, Ph.D.

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Professional Profile

Dr. Rose specializes in geotechnical and structural engineering. She has particular expertise in centrifuge model design and testing, analyzing the behavior of utility systems in granular soils, and developing frameworks for quantifying geotechnical demands on buried pipelines aimed towards industry-use. Dr. Rose has experience with experimental modeling and testing, data acquisition and processing, structural mechanics, analysis, dynamics, and design, soil mechanics and analysis, analytical methods, and disaster reconnaissance.

During her PhD at the University of Colorado Boulder, Dr. Rose designed and tested centrifuge pipe-pull experiments to simulate buried pipelines subject to axial displacements. Her PhD evaluated the influence of boundary conditions in centrifuge test design, quantified the passive resistance accumulated at individual pipeline connections, and established an analytical method for calculating system-level geotechnical demands along pipelines. During her graduate studies, she was a teaching assistant for undergraduate engineering courses including structural analysis and statistics where she led office hours and course lectures. She was an invited technical speaker at the UESI Pipelines 2022 Conference for the Seismic Design of Water and Waster Pipelines Committee and has presented her experimental work for the American Society of Civil Engineers (ASCE) and Earthquake Engineering Research Institute (EERI).

Dr. Rose has also worked as a structural intern for multiple design firms in Colorado and California. She conducted field reconnaissance following the 2021 Marshall Fires, where she utilized LiDAR sensing and visual inspection techniques, and miniature cone-penetrometer testing (CPT) in a geotechnical centrifuge. She also has numerous years of experience teaching martial arts and other fitness-related individual and group classes.

Academic Credentials & Professional Honors

Ph.D., Civil Engineering, University of Colorado, Boulder, 2023

M.S., Civil Engineering, University of Colorado, Boulder, 2020

B.S., Architectural Engineering, California Polytechnic State University, SLO, 2018

2023 Civil Engineering Dissertation Fellowship, University of Colorado Boulder

2021-2022 EERI/FEMA NEHRP Graduate Fellows (Honorable Mention

2019 Graduate Assistance in Areas of National Need (GAANN) 5-year Fellowship

Prior Experience

Research Assistant, University of Colorado Boulder, 2019 – 2023

Teaching Assistant, University of Colorado Boulder, 2020 – 2021 (CVEN 3525 Structural Analysis; CVEN 3227 Probability, Statistics and Decision)

Design Engineer, Apex Engineers, Inc., 2018 – 2019

Structural Intern, C.W. Howe and Partners, Inc., 2017

Foreman, Ripon High Stadium Revitalization, 2011 – 2014

Professional Affiliations

American Society of Civil Engineers (2023), Member

Utility Engineering and Surveying Institute: Seismic Design of Water and Wastewater Pipelines (2023), Committee Member

Earthquake Engineering Research Institute (2022), Student Member

North American Society for Trenchless Technology (2022), Student Member

Publications

Rose, H. R., Wham, B. P., & Banushi, G. (2025). Soil–Pipeline Interaction of Hybrid-Segmented Systems under Axial Ground Movement. Journal of Pipeline Systems Engineering and Practice, 16(1), 04024069.

Rose, H. R., Wham, B. P., Dashti, S., & Liel, A. (2024). Axial Resistance of Pipelines with Enlarged Joints. Journal of Geotechnical and Geoenvironmental Engineering, 150(9), 04024077.

Rose, H. R., Wham, B. P., Liel, A., & Dashti, S. (2024). Centrifuge Model Design for Axially Loaded Structures under Large Ground Movements. Geotechnical Testing Journal, 47(5).

Rose, H.R., Wham, B.P., Dashti, S., & Liel, A.B. (2022). Seismic-Resistant Pipeline Design: Parametric Study of Axial Connection Force Capacity. In Lifelines 2022 (pp. 500–514). Reston, VA: American Society of Civil Engineers.

Rose, H.R., Wham, B.P., Liel, A.B., & Dashti, S. (2022). Centrifuge Modeling of Frictional Resistance Along Buried Pipelines with Enlarged Joints. Proceedings of the 12th National Conference on Earthquake Engineering. 27 June - 1 July. Salt Lake City, UT: Earthquake Engineering Research Institute.

Berty, N. W., Wham, B. P., Ihnotic, C. R., Ramos, J. L., & Rose, H. R. Seismic Performance Classification of Hazard Resilient iPVC Pipeline Systems. In Pipelines 2022 (pp. 232-241).

Fischer, E., Wham, B.P., Dashti, S., Javernick-Will, A., Liel, A., Whelton, A., … & Rose, H.R. (2022). The 2021 Marshall Fire, Boulder County, Colorado, GEER-075 version 1.0.

Presentations

Rose, H.R., Wham, B.P., Liel, A.B., & Dashti, S. Centrifuge Modeling of Frictional Resistance Along Buried Pipelines with Enlarged Joints. Presentation, 12th National Conference on Earthquake Engineering, Salt Lake City, UT, 2022.

Rose, H.R., Wham, B.P., Liel, A.B., & Dashti, D. Design of Centrifuge Simulations for Axially Loaded

Structures Under Large Ground Displacements. Poster presentation, 28th Annual HILF Lecture, Boulder, CO, 2022.

Rose, H.R., Wham, B.P., Dashti, S., & Liel, A.B. Seismic-Resistant Pipeline Design: Parametric Study of Axial Connection Force Capacity. Presentation, San Fernando Earthquake Conference, Los Angeles, CA, 2021.

Rose, H.R., Wham, B.P., Liel, A.B., & Dashti, D. Seismic Performance of Underground Pipelines. Poster presentation, 27th Annual HILF Lecture, Boulder, CO, 2021.