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Engineering & Scientific Consulting

Hailey-Rae Rose, Ph.D., P.E.

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Professional Profile

Dr. Rose is a civil engineer specializing in failure and damage investigations, analysis of pipeline systems, and risk assessment. She has particular focus in forensic evaluations of watermain line breaks influenced by geotechnical hazards, damage to utility systems, investigations of design and construction defects, and development of utility system hardening strategies for high-risk assets. Dr. Rose's project experience spans a wide range of utility infrastructure, civil, and architectural investigations.

Dr. Rose has experience in reactive failure analysis and litigation consulting, including on-site data collection and preparation of expert reports. On the proactive side, she contributes to studies modeling the soil–structure interaction of buried utilities under extreme and everyday loading conditions to help clients improve the resilience, performance, and reliability of buried utility networks.

Beyond project work, Dr. Rose has an active role in national technical organizations and conferences. She serves as a technical chair for the ASCE's Seismic Design of Water and Wastewater Pipelines Manual of Practice committee and as a technical reviewer for the ASCE's Structural Testing and Evaluation of Pipeline Systems (STEPS) Standard committee. She is also the VERT liaison for EERI's Learning From Earthquakes (LFE) Lifelines Subcommittee, supporting coordinated post-disaster reconnaissance and knowledge transfer for utility systems. 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

Licenses and Certifications

Professional Engineer Civil, California, #98886

Professional Engineer Civil, Colorado, #PE 0068003

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Professional Engineer Civil, West Virginia, #27888

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

Utility Engineering and Surveying Institute: Structural Testing and Evaluation of Pipeline Systems, Committee Member

Earthquake Engineering Research Institute (2022), Student Member

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

Publications

Rose HR, Wham BP. Analytical method for assessing buried pipeline performance under large ground movements. Geo-Extreme 2025; 195–204.

Rose HR, Wham BP. Axial connection force capacity: calculation process for seismic design of pipeline systems. Pipelines 2025; 466–475.

Rose HR, Wham BP, Banushi G. Soil–pipeline interaction of hybrid segmented systems under axial ground movement. Journal of Pipeline Systems Engineering and Practice 2025; 16(1):04024069.

Rose HR, Wham BP, Dashti S, Liel A. Axial resistance of pipelines with enlarged joints. Journal of Geotechnical and Geoenvironmental Engineering 2024; 150(9):04024077.

Rose HR, Wham BP, Liel A, Dashti S. Centrifuge model design for axially loaded structures under large ground movements. Geotechnical Testing Journal 2024; 47(5).

Rose HR. Geotechnical demands for characterizing performance of pipeline systems with enlarged components. Doctoral dissertation, University of Colorado Boulder; 2023.

Rose HR, Wham BP, Dashti S, Liel AB. Seismic resistant pipeline design: parametric study of axial connection force capacity. Lifelines 2022; 500–514.

Rose HR, Wham BP, Liel AB, Dashti S. Centrifuge modeling of frictional resistance along buried pipelines with enlarged joints. Proceedings of the 12th National Conference on Earthquake Engineering 2022.

Berty NW, Wham BP, Ihnotic CR, Ramos JL, Rose HR. Seismic performance classification of hazard resilient iPVC pipeline systems. Pipelines 2022; 232–241.

Fischer E, Wham BP, Dashti S, Javernick Will A, Liel A, Whelton A, … Rose HR. The 2021 Marshall Fire, Boulder County, Colorado. GEER 075 version 1.0; 2022.

Presentations

Rose HR, Wham BP. Analytical method for assessing buried pipeline performance under large ground movements. Presentation, Geo Extreme 2025, Long Beach, CA, 2025.

Rose HR, Wham BP. Axial connection force capacity: calculation process for seismic design of pipeline systems. Presentation, Pipelines 2025, Tampa, FL, 2025.

Rose HR, Wham BP, Liel AB, 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 HR, Wham BP, Liel AB, Dashti D. Design of centrifuge simulations for axially loaded structures under large ground displacements. Poster presentation, 28th Annual HILF Lecture, Boulder, CO, 2022.

Rose HR, Wham BP, Dashti S, Liel AB. Seismic resistant pipeline design: parametric study of axial connection force capacity. Presentation, San Fernando Earthquake Conference, Los Angeles, CA, 2021.

Rose HR, Wham BP, Liel AB, Dashti D. Seismic performance of underground pipelines. Poster presentation, 27th Annual HILF Lecture, Boulder, CO, 2021.

Peer Reviews

Journal of Pipeline Systems