Exponent®
Engineering & Scientific Consulting

Mirnes Mustafic, Ph.D.

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Professional Profile

Dr. Mustafic works as a forensic engineering consultant in the Civil and Structural Engineering practice at Exponent. He performs site inspections, weather and construction damage assessments, forensic collapse analysis, finite element simulations, and code compliance evaluation. He has experience with large-scale structural testing and numerical modeling to understand the structural behavior of walls used in the construction of modular nuclear structures.

Dr. Mustafic earned his Ph.D. in Civil Engineering at Purdue University, where he performed large-scale structural experiments at Bowen Laboratory. His dissertation topic was on the structural behavior of a novel form of modular construction called steel-plate composite with diaphragm plates (SC-DP). SC-DP is applicable to the nuclear structures industry, where it is being considered for the design of small modular reactors (SMRs). In addition to the experiments, he created a 3D finite element modeling approach capable of accurately predicting SC-DP behavior.

Academic Credentials & Professional Honors

Ph.D., Civil Engineering, Purdue University, 2025

M.S., Civil Engineering, Purdue University, 2021

B.S., Civil Engineering, University of Missouri, Columbia, 2020

Chi Epsilon Civil Engineering Honor Society

McNair Scholar

Tau Beta Pi Engineering Honor Society

Purdue University John E. Goldberg Fellow

Academic Appointments

Graduate Teaching Assistant – Seismic Design of Steel Structures, Civil and Construction Engineering, Purdue University, Fall 2025

Graduate Teaching Assistant – Structural Analysis I, Civil and Construction Engineering, Purdue University, Spring 2021

Graduate Teaching Assistant – Statics, Civil and Construction Engineering, Purdue University, Fall 2020

Professional Affiliations

American Society of Civil Engineers (ASCE)

American Concrete Institute (ACI)

American Institute of Steel Construction (AISC)

Publications

Alkhafaji A, Elzohairy A, Mustafic M, Salim AH. Environmental impact on the behavior of CFRP sheet attached to concrete. Buildings 2022; 12(7):873.

Elemam H, Mustafic M, Elsisi A, Salim AH, Sallam EMH. Fatigue life enhancement of steel girders using ultra-high modulus carbon fiber-reinforced polymer. Proceedings of Structures Congress, Orlando, FL, 2019.

Presentations

Mustafic M, Tseng T, Amhad M, Anwar H, Saleem O, Varma AH, Seo J. Experimental evaluation of a new modular construction technology. Poster presentation, Bowen Laboratory 20th Anniversary, West Lafayette, IN, 2023.

Mustafic M, Mittal N, Seo J, Varma AH, Malushte S. Ultimate shear strength of steel-plate composite panels subjected to combined in-plane and axial loading. Poster presentation at Lawrence Livermore National Laboratory Summer Poster Symposium, Livermore, CA, 2023.

Elemam H, Mustafic M, Elsisi A, Salim AH, Sallam EMH. Fatigue life enhancement of steel girders using ultra-high modulus carbon fiber-reinforced polymer. Presentation at Structures Congress, Orlando, FL, 2019.

Additional Education & Training

Technical Competences: Finite Element Analysis (Abaqus, LS-DYNA, MASTAN2)