



Kasra Ghahremani, Ph.D., P.E., P.Eng., CWI

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Professional Profile

Dr. Ghahremani is a licensed Professional Engineer in the United States and Canada. His expertise includes structural design, assessment, strengthening, and repair of structures as well as forensic failure investigations of buildings and structures.

Dr. Ghahremani specializes in fatigue and fracture, structural vibration consulting, structural health monitoring, and the use of 3D imaging techniques such as laser scanners to detect structural damage. He has designed and evaluated residential and commercial structures and has assessed structural damage due to wind, fire, ground settlement, water intrusion, and material aging and degradation.

Dr. Ghahremani has conducted hundreds of on-site surveys investigating performance issues for steel, concrete, and wood components of various types of structures from hyperbolic cooling towers and stadiums to historic buildings. He addresses problems associated with design, construction materials, means and methods of construction, construction failures, application of codes and standards, repair methodologies, and cost of repairs. He has performed field surveys of damage caused by Hurricanes Harvey in 2017 and Laura in 2020, both of which affected the U.S. Gulf Coast.

As part of his doctoral research, Dr. Ghahremani investigated the fatigue performance, assessment, and retrofitting of existing steel bridges and structures in the long-life regime. He conducted extensive experimental programs, performed simulation studies, and used analytical approaches to predict fatigue damage in steel bridges.

Academic Credentials & Professional Honors

Ph.D., Civil Engineering, University of Waterloo, 2015

M.S., Civil Engineering, University of Waterloo, 2010

B.S., Civil Engineering, Sharif University of Technology, Iran, 2008

Licenses and Certifications

Professional Engineer Civil, British Columbia, #56865

Professional Engineer, Florida, #94973

Professional Engineer Civil, Louisiana, #PE.0047294

Professional Engineer, Manitoba, #47790

Professional Engineer, Ontario, #100227380

Professional Engineer, Saskatchewan, #75314

Professional Engineer Civil, Texas, #132762

American Welding Society Certified Welding Inspector (CWI)

Prior Experience

Project Manager/ Senior Associate, Walter P Moore, 2016-2022.

Postdoctoral Fellow, Department of Civil, Environmental, and Infrastructure, George Mason University, 2015-2016.

Lecturer and Research Associate, Department of Civil and Environmental Engineering, University of Waterloo, 2008-2015.

Structural Design Engineer-In-Training, ASP Construction Company, 2007-2008

Professional Affiliations

American Society of Civil Engineers (ASCE)

Committee of Forensic Investigation, ASCE Forensic Engineering Division

SAE International Fatigue Design and Evaluation Committee

Publications

K. Ghahremani, A. Khaloo, S. Mohammadi, & D. Lattanzi (2018) "Damage Detection and Finite-Element Model Updating of Structural Components through Point Cloud Analysis", (ASCE) Journal of Aerospace Engineering, Volume 31, Issue 5.

K. Ghahremani, S. Walbridge, & T. Topper (2016) "A Methodology for Variable Amplitude Fatigue Analysis of Structural Welds Based on Fracture Mechanics Analysis and Small-Scale Experiments", Engineering Fracture Mechanics, Volume 163.

R. Ranjan, K. Ghahremani, S. Walbridge, & A. Ince (2016) "Testing and Fracture Mechanics Analysis of Strength Effects on the Fatigue Behaviour of HFMI Treated Welds", Welding in the World, Volume 60, Issue 5.

K. Ghahremani, S. Walbridge, & T. Topper (2015) "High Cycle Fatigue Behaviour of Impact Treated Welds under Variable Amplitude Loading Conditions", International Journal of Fatigue, Volume 81.

M. Safa, A. Sabet, K. Ghahremani, C. Haas, & S. Walbridge (2015) "Rail Corrosion Forensics Using 3D Imaging and Finite Element Analysis", International Journal of Rail Transportation, Volume 3, No. 3.

K. Ghahremani, M. Safa, J. Yeung, S. Walbridge, C. Haas, & S. Dubois (2014), "Quality Assurance for High Frequency Mechanical Impact (HFMI) Treatment of Welds Using 3D Laser Scanning Technology", Welding in the World, Volume 59, Issue 3.

K. Ghahremani, S. Walbridge, & T. Topper (2014), "Inhibiting Distortion-Induced Fatigue Damage in Steel Bridges by Using FRP Angles", (ASCE) Journal of Bridge Engineering, Volume 20, Issue 6.

R. Tehrani Yekta, K. Ghahremani, & S. Walbridge (2013) "Effect of Quality Control Parameter Variations on the Fatigue Performance of Ultrasonic Impact Treated Welds", International Journal of Fatigue, Volume 55.

K. Ghahremani, A. Sadhu, S. Walbridge, & S. Narasimhan (2013), "Fatigue Testing and Structural Health Monitoring of Retrofitted Steel Highway Bridge Web Stiffeners", Transportation Research Record, (2360).

K. Ghahremani, S. Walbridge (2011) "Fatigue Testing and Analysis of Peened Highway Bridge Welds under In-service Variable Amplitude Loading Conditions", International Journal of Fatigue, Volume 33, Issue 3.

Conference Proceedings:

K. Ghahremani (2018) "Impact Treatment of Highway Bridge Welds to Enhance Durability of Steel Bridges: Mechanism, Limitations, and Design", Proceedings of the ASCE's Structures Congress 2018, Fort Worth, TX. pp. 24-34.

K. Ghahremani, A. Khaloo, & D. Lattanzi (2016) "Automated 3D Image-Based Section Loss Detection for Structural Model Updating", 33rd International Symposium on Automation and Robotics in Construction (ISARC 2016), Auburn, AL.

R. Ranjan, K. Ghahremani, S. Walbridge, & A. Ince (2015) "Testing and Fracture Mechanics Analysis of Strength Effects on the Fatigue Behaviour of HFMI Treated Welds", IIW General Assembly (Commission XIII Meeting), Helsinki, Finland.

K. Ghahremani, R. Ranjan, S. Walbridge, A. Ince (2015), "Fatigue Strength Improvement of Aluminum and High Strength Steel Welded Structures using HFMI", 6th Fatigue Design Conference, Senlis, France: Procedia Engineering, Volume 133, pp. 465-476.

K. Ghahremani, S. Walbridge, & T. Topper (2014), "Fatigue Retrofitting of Web Stiffeners in Steel Bridges Using Pultruded FRP Sections", Proceedings of the ASCE's Structures Congress, Boston, MA. pp. 376-385.

K. Ghahremani, S. Walbridge (2012), "Fatigue Testing and Analysis of As-Welded and Retrofitted Web Stiffeners in Steel Highway Bridges", Annual Conference of the Canadian Society of the Canadian Society for Civil Engineering, Edmonton, AB: Leadership in Sustainable Infrastructures, Volume 4, pp. 2567-2576.

K. Ghahremani, S. Walbridge (2012), "Fatigue Testing and Finite Element Analysis of Bridge Welds Retrofitted by Peening under Load", Proceedings of the ASCE's Structures Congress, Chicago, MI. pp. 648-656.

K. Ghahremani, S. Walbridge. (2010), "Predicting the Effect of Post-Weld Treatments Applied under Load on the Fatigue Performance of Welds in Existing Steel Bridges", Proceedings of the 8th International Conference on Short and Medium Span Bridges, Niagara Falls, ON. pp. 1141-1151.

M. Ghahremani, A. Ghalandarzadeh, H. Nowamooz, & K. Ghahremani (2007), "A Comprehensive Study on the Monotonic Behaviour of Sand-Clay mixtures", Proceedings of the 60th Canadian Geotechnical Conference, Ottawa, ON. pp. 1858- 1864.

M. Ghahremani, A. Ghalandarzadeh, & K. Ghahremani (2007), "Laboratory Investigation of the Effect of Plastic Fines on Cyclic Resistance of Sand-Clay Mixtures", Proceedings of the 4th International Conference on Earthquake Geotechnical Engineering, Thessaloniki, Greece. P# 1166.

