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Professional Profile

Dr. Saraf specializes in failure analysis, design, damage assessment and repair design of wood, steel, concrete and composite structures; blast, impact, earthquake and fire loading on structures; and nonlinear finite element analysis. Dr. Saraf's expertise in engineering also extends to evaluation of bridges, buildings and building components, pipelines and other buried structures, storage tanks and silos, shoring systems, cranes and mechanical equipment, and marine structures.

Dr. Saraf has performed extensive research focused on reliability and risk analysis and development of risk-based design codes and has applied these skills to perform probabilistic assessment of systems and products to evaluate both the past and the expected future performance. Dr. Saraf has performed numerous reviews of design and construction/installation procedures to check for code compliance and/or assess available margin of safety in matters relating to structural or process failure, seismic qualification of equipment and structures at nuclear facilities, and disputes arising out of delay in large construction projects.

Dr. Saraf has provided consulting services in matters relating to cement and concrete material performance, including review of mix design, placement procedures, curing, cracking, spalling and exposure to fire/thermal loading; long term wood deterioration; and proper selection of materials for design. Dr. Saraf also specializes in instrumentation and evaluation of in-field performance of structures, building products and large machinery using non-destructive monitoring and testing.

Dr. Saraf has also consulted extensively on analysis, design and failure investigations for the petroleum industry including problems involving nonlinear finite element analysis of pipes and threaded connections, simulations of shear ram operations, oil well cementing design, testing and placement, heat transfer, seismic wave propagation for exploration, and offshore blowout.

Academic Credentials & Professional Honors

Ph.D., Civil Engineering, University of Michigan, Ann Arbor, 1997

M.S., Civil Engineering, University of Cincinnati, 1994

B.Tech., Civil Engineering, Indian Institute of Technology, Kanpur, India, 1992

Rackham Pre-Doctoral Fellow, University of Michigan, Ann Arbor, 1996-1997

Licenses and Certifications

Professional Engineer Civil, Arizona, #82532

Professional Engineer Civil, California, #61004

Professional Engineer Mechanical, California, #38488

Professional Engineer, Colorado, #PE0058954

Professional Engineer Civil, Florida, #84974

Professional Engineer, Georgia, #PE041369

Professional Engineer, Mississippi, #32745

Professional Engineer Civil, Nevada, #025672

Professional Engineer, North Carolina, #047573

Professional Engineer, Ohio, #PE.80392

Professional Engineer, Rhode Island, #PE0013021

Professional Engineer Civil, Texas, #141248

Professional Engineer, Virginia, #0402055990

Professional Affiliations

American Society of Civil Engineers (member)

Member ASC A92.2 subcommittee on Vehicle-Mounted Elevating and Rotating Aerial Devices

American Institute of Steel Construction (member)

Society of Petroleum Engineers (member)

Publications

Ray, R, Zhao, K, Taylor, P, Saraf, V. Evaluation of the Robustness of Statistical Software for Warranty Analysis Reliability and Maintainability Systems (RAMS) Conference, January 2019

Hilbert, LB, Saraf VK, Birbiglia DKJ, Shumilak EE, Schutjens PMTM, Hindriks COH, Klever FJ. Modeling horizontal completion deformations in a deepwater unconsolidated sand reservoir. SPE Journal of Drilling & Completion 2011 Mar; (26)2:68-83.

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Conference on Our World in Concrete and Structures, XXI:57-68, August 29-30, 2002.

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Singh MP, Khaleghi B, Saraf V, Jain SK, Norris G, Goel R, Murty CVR. Bhuj, India Earthquake of January 26, 2001, Reconnaissance Report—Chapter 19: Roads and Bridges. Earthquake Spectra: July 2002, Vol. 18, No. S1, pp. 363-379.

Moncarz P, Eiselstein L, Saraf V. Prestressing wire failures in prestressed concrete pipeline. Proceedings, Awarie Budowlane, 20th Engineering Conference on Construction Failures, Szczecin-Miedzyzdroje, Poland, May 22-26, 2001. (In Polish).

Saraf V, Nowak A. Proof Load Testing of Deteriorated Steel Girder Bridges, Journal of Bridge Engineering, ASCE, Vol. 3, No. 2, pp. 82-89, May 1998.

Saraf V. Evaluation of Existing RC Slab Bridges. Journal of Performance of Constructed Facilities, ASCE, Vol. 12, No. 1, pp. 20-24, February 1998.

Saraf V, Nowak AS. Field Evaluation of Steel Girder Bridge. Transportation Research Record, No. 1594, pp. 140-146, 1997.

Saraf V. Reliability-Based Criteria for Proof Load Testing of Bridges. Ph.D. Dissertation, Department of Civil and Environmental Engineering, University of Michigan, Ann Arbor, MI, August 1997.

Kim S, Nowak AS, Saraf VK. Diagnostic and Proof Load Testing for Bridge Evaluation. Proceedings, Conference on Structural Faults and Repair, Edinburgh, UK, Vol. 1, pp. 571-580, July 1997.

Nowak AS, Saraf V, Kim S. Evaluation of Bridges using Field Testing. Proceedings, International Conference on Rehabilitation and Development of Civil Engineering Infrastructure Systems, Beirut, Lebanon, Vol. 1, pp. 391-402, June 1997.

Nowak AS, Saraf V. Verification of Capacity by Proof Loading. Proceedings, IABSE Workshop on Evaluation of Existing Steel and Composite Bridges, Lausanne, Switzerland, Vol. 76, pp. 121-127, March 1997.

Jain SK, Saraf V, Mehrotra B. Experimental Evaluation of Fundamental Period of R.C. Frame Buildings with Brick Infills. Journal of Structural Engineering, Structural Engineering Research Center, India, Vol. 23, No. 4, pp. 189-196, January 1997.

Saraf V, Sokolik AF, Nowak AS. Proof Load Testing of Highway Bridges, Transportation Research Record: Journal of the Transportation Research Board (TRB), No. 1541-07, pp. 51 57, 1996.

Nowak AS, Saraf V. Reliability Analysis of Plank Decks for Bridges. Proceedings, National Conference on Wooden Transportation Structures, Madison, WI, pp. 225-231, October 1996.

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Saraf VK, Nowak AS, Till R. Proof Load Testing of Bridges. Proceedings, ASCE Seventh Specialty Conference on Probabilistic Mechanics and Structural Reliability, Worcester, MA, pp. 526-529, August 1996.

Saraf VK, Nowak AS. Bridge Evaluation using Proof Load Testing. Recent Advances in Bridge Engineering - Evaluation, Management and Repair, Proceedings, US-Europe Workshop on Bridge

Engineering, Barcelona, Spain, pp. 383-403, July 1996.

Saraf V, Nowak AS, Kim S. Nondestructive Testing of Bridges. Proceedings, Fourth National Workshop on Bridge Research in Progress, NCEER, Buffalo, NY, pp. 47-50, June 1996.

Nowak AS, Park CH, Saraf VK. Reliability Analysis for Buried Structures. IFIP WG 7.5 Working Conference on Reliability and Optimization of Structural Systems, Boulder, CO, pp. 281-288, April 1996.

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Saraf V. Effect of Repair on Behavior of Reinforced Concrete Slab Bridges. M.S. Thesis, Department of Civil and Environmental Engineering, University of Cincinnati, Cincinnati, OH, June 1994.

Presentations

Saraf VS, Hilber LB. Buckling of multiple concentric casings. Presentation, 2007 West Regional ABAQUS User's Conference, Las Vegas, NV, October 2007.

Sire RA, Saraf VK, Moncarz PD. Simulation of hull rupture during ship collision with dock.

ASM Materials Solutions Conference, Failure Analysis and Prevention Symposium, Columbus,

OH, October 2004.

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Saraf V. Case Studies in Failure Analysis. Engineering Seminar Series, Department of Engineering Science and Mechanics, Virginia Tech, Blacksburg, VA, November 7, 2001.

Saraf V, Nowak AS, Sokolik AF, "Proof Load Testing of Steel Girder Bridges," presentation at 1996 meeting of ASCE Committee on Safety of Bridges, ASCE Structures Congress XIV, Chicago, IL, April 1996.

Reports

Carnahan RA, Shekerlian S, Saraf V. Investigation of the Cedar Point Insane Tower collapse. Exponent FaAA Report, June 2002.

Dekermenjian M, Kemal A, Paduano D, Saraf V, Reza A. Investigation of the July 30, 2000 explosion at Advanced Specialty Gases in Dayton, Nevada. Exponent Failure Analysis Associates, November 2000.

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Nowak AS, Park CH, Saraf V. Calibration of Load and Resistance Factors for TTC Structural Design Manual. Research Report submitted to D.S. Lea Associates Ltd., Toronto, Canada, December 1995.

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Shahrooz BM, Miller RA, Saraf V. Strength Continuity of Deteriorated Continuous Slab Bridges. Report No. UC-CII 94/01, Cincinnati Infrastructure Institute, January 1994.