

**Babak Alavi, Ph.D., P.E.**  
**Senior Engineer**

**Professional Profile**

Dr. Babak Alavi is a Senior Engineer in Exponent's Buildings and Structures practice. He specializes in structural engineering with an emphasis on failure investigation and performance evaluation of steel, reinforced concrete and wood frame structures. His experience includes investigating the nature and extent of damage caused by natural and man-made hazards such as wind, rain, snow, hail, earthquakes, fires, and explosions, and determining root causation mechanisms and remedial measures. Dr. Alavi also has experience in evaluating problems related to construction or design defects. His background includes design review and performance-based design and evaluation of structural behavior for residential buildings, commercial facilities, industrial structures, and bridges using state-of-the-art nonlinear static and dynamic analysis techniques. Dr. Alavi has performed extensive studies on the structural effects of ground motions with the objective of structural retrofit, damage mitigation, performance enhancement, and development of improved design guidelines.

Prior to joining Exponent, Dr. Alavi was a research assistant at Stanford University. He has held several structural engineering positions specializing in the design of commercial and residential steel and reinforced concrete structures. His past experience also includes design of oil and gas offshore platforms in the Persian Gulf.

**Academic Credentials and Professional Honors**

Ph.D., Structural Engineering, Stanford University, 2001  
M.S., Structural Engineering, Sharif University of Technology, Tehran, Iran, 1995  
B.S., Civil Engineering, Sharif University of Technology, Tehran, Iran, 1992

**Licenses and Registrations**

Registered Professional Civil Engineer, California, #66375  
Registered Professional Engineer, Illinois, #062.060587

Structural Engineering Certification Board # 2043-1106

## **Publications**

Alavi B. Large-scale hydraulic testing of a 10-inch roof drain. Plumbing Systems and Design. American Society of Plumbing Engineers, January/February 2010.

Alavi B, Gupta A. Performance-based seismic design of an industrial storage rack system. Proceedings, 2008 Structures Congress, American Society of Civil Engineers, Vancouver, BC, Canada, April 2008.

McDonald B, Gupta A, Alavi B, Osteraas J. Rational seismic evaluation and retrofit design of a multistory RC shear wall structure. Proceedings, 8<sup>th</sup> U.S. National Conference on Earthquake Engineering, San Francisco, CA, April 18–22, 2006.

Krawinkler H, Alavi B, Zareian F. Impact of near-fault pulses on engineering design. International Workshop on Future Directions in Instrumentation for Strong Motion and Engineering Seismology, NATO Science Series, Vol. 58, Kluwer Academic Pub, Kusadasi, Turkey, May 2004.

Alavi B, Krawinkler H. Behavior of moment-resisting frame structures subjected to near-fault ground motions. Earthquake Engineering and Structural Dynamics 2004 May; 33(6).

Alavi B, Krawinkler H. Strengthening of moment-resisting frame structures against near-fault ground motion effects. Earthquake Engineering and Structural Dynamics 2004; 33(6), May.

Krawinkler H, Alavi B. Use of pulses for modeling near-fault ground motions and predicting the response of MDOF systems. Proceedings, 2003 Structures Congress and Exposition, American Society of Civil Engineers, Seattle, WA, May 2003.

Krawinkler H, Medina R, Alavi B. Seismic drift and ductility demands and their dependence on ground motions. Engineering Structures 2003 Apr; 25(5).

Alavi B, Krawinkler H. Strengthening of frame structures subjected to near-fault ground motions. Proceedings, 12<sup>th</sup> European Conference on Earthquake Engineering, London, UK, September 2002.

Alavi B, Krawinkler H. Effects of near-fault ground motions on frame structures. Report No. 138, John A Blume Earthquake Engineering Center, Department of Civil and Environmental Engineering, Stanford University, February 2001.

Alavi B, Krawinkler H. Consideration of near-fault ground motion effects in seismic design. Proceedings, 12<sup>th</sup> World Conference on Earthquake Engineering, Auckland, New Zealand, February 2000.

Alavi B, Krawinkler H. Structural design implications of near-field ground motion—Effects of near-field ground motion on building structures. Kajima-CUREe Joint Research Program Phase III, Research Report, December 1999.

Alavi B, Krawinkler H. Effect of near-fault ground motions on the response of frame structures. Proceedings, 1999 Structures Congress, American Society of Civil Engineers, New Orleans, LA, April 1999.

Krawinkler H, Alavi B. Development of improved design procedures for near fault ground motions. Proceedings, SMIP98 Seminar on Utilization of Strong-Motion Data, Oakland, CA, September 1998.

### **Professional Affiliations**

- American Society of Civil Engineers (member)
- Structural Engineers Association of Illinois (associate member)
- American Institute of Steel Construction (professional member)
- Chicago Building Congress (member)