

Ibrahim Erdem, Ph.D., P.E.
Engineer

Professional Profile

Dr. Ibrahim Erdem is an Engineer in Exponent's Building and Structures practice, specializing in structural analysis and performance of structures. He has experience in behavior of reinforced concrete and has investigated and developed repair/strengthening techniques, including masonry infilled structures. Dr. Erdem's structural investigations have included evaluation of the capacities of various timber members, structural and light gage steel components and connections, reinforced concrete beams and slabs, and analysis of composite steel girders that are common in bridge decks and other long span structures. He has investigated of several structural collapses that have included cranes, roofs, masonry walls, scaffoldings, pools, and retaining walls. Dr. Erdem visited an earthquake-hit region (Bingol/Turkey) in May 2003 and collected data from damaged or collapsed buildings (structural characteristics of the structure, nature and extent of the damage) to assist in a damage assessment project. He assisted in evaluation of the documents and reports on numerous collapsed structures due to 1999 Marmara Earthquake. As part of his investigations, Dr. Erdem often utilizes both linear and nonlinear finite element modeling and stress analysis of complex structural systems. He has done extensive code analyses to determine the conformance of building components to applicable building codes and standards.

Prior to joining Exponent, Dr. Erdem was a research assistant at Cornell University, where he conducted nondestructive testing (impact echo) on graphite rods and developed a new finite element of the human thoracolumbar spine. Besides being a teaching assistant for several classes, he was the instructor for a graduate level course on concrete structures for two semesters.

Academic Credentials and Professional Honors

Ph.D., Civil and Environmental Engineering, Cornell University, 2008
M.S., Civil Engineering, Middle East Technical University, Turkey, 2003
B.S., Civil Engineering, Middle East Technical University, Turkey, 2001

License

Licensed Professional Engineer, Connecticut, #PEN 28105

Professional Committees

American Society of Civil Engineers, Metropolitan Section, Forensic Engineering Committee

Languages

Turkish

Publications

Erdem I, Akyuz U. Analytical investigation of lateral strength of masonry infilled RC frames retrofitted with CFRP. *ASCE Journal of Performance of Constructed Facilities* 2010; 24(4):302–310.

Ratakonda R, Erdem I. Traditional analytical methods underestimate the stresses at beam copes. *Proceedings, ASCE Structures Congress, Orlando, FL, May 12–15, 2010.*

Erdem I. Noninvasive evaluations of slender graphite rods and human thoracolumbar spine. Ph.D. Dissertation, Civil and Environmental Engineering, Cornell University, January 2008.

Erdem I. Transient elastic impact response of slender graphite rods. *Journal of Nondestructive Evaluation* 2007; 26(2–4):89–96.

Aquino W, Erdem I. Implementation of the modified compression field theory in a tangent stiffness-based finite element formulation. *Journal of Steel and Composite Structures* 2007; 7(4):263–278.

Erdem I, Akyuz U, Ersoy U, Ozcebe G. An experimental study on two different strengthening techniques for RC frames. *Engineering Structures* 2006; 28(3):1843–1851.

Erdem I. Strengthening of existing reinforced concrete frames. M.S. Thesis, Civil Engineering, Middle East Technical University, Ankara, Turkey, August 2003.

Book Chapter

Erdem I, Akyuz U, Ersoy U, Ozcebe G. A comparative study on the strengthening of RC frames. *Seismic Assessment and Rehabilitation of Existing Buildings*, S.T. Wasti and G. Ozcebe (eds.), Vol. IV/29, pp. 407–432, Kluwer Academic Publishers, Netherlands, 2003.

Presentations

Erdem I, Truumees E, van der Meulen M. Stresses in the L2 vertebra under different loading conditions. *American Society of Biomechanics 2007 Annual Conference, Stanford University, 2007.*

Erdem I, Akyuz U. Nonlinear analyses of two strengthened infilled RC frames. 6th International Congress on Advances in Civil Engineering, Istanbul, Turkey, 2004.

Erdem I, Akyuz U, Ersoy U, Ozcebe G. Experimental and analytical studies on the strengthening of RC frames. 13th World Conference on Earthquake Engineering, Paper No. 673, Vancouver, Canada, 2004.

Peer Reviewer

- *Engineering Structures*
- ASCE Journal of Performance of Constructed Facilities
- Journal of Steel and Composite Structures

Professional Affiliations

- American Society of Civil Engineers
- American Concrete Institute