

## Dr. Aykut Erkal

### Assistant Professor of Civil Engineering

Address : İstanbul Kemerburgaz Üniversitesi, Dilmenler Caddesi, No: 26, School of Engineering and Architecture, Department of Civil Engineering, Mahmutbey/Istanbul  
E-mail : erkala@hotmail.com  
Mobile : +90 532 470 84 12 Work: +90 212 604 01 00 Extention: 4014  
Fax : +90 212 445 92 55

### **EDUCATION**

#### **Post-Doctoral** (2010 – 2012)

Department of Architecture and Civil Engineering,  
University of Bath, United Kingdom

#### **Post-Doctoral** (2007 – 2010)

School of Architecture, Landscape, and Civil Engineering (SALCE),  
University College Dublin (UCD), Ireland

#### **PhD Degree** (2001 – 2007)

Department of Civil Engineering, Boğaziçi University, İstanbul, Turkey  
Infinite Elements in Finite Element Method, Thesis

#### **Master's Degree** (1998 – 2001)

Department of Civil Engineering, Boğaziçi University, İstanbul, Turkey  
A Comparative Study of Passive Control Systems for Structures, Thesis

#### **Bachelor's Degree:** (1994 – 1998)

Department of Civil Engineering, Yıldız Technical University, İstanbul, Turkey

### **WORK EXPERIENCE**

<b>Position</b>	<b>Company</b>	<b>Date</b>	<b>Responsibilities</b>
Visiting Researcher	University College Dublin	2015	Research on reinforced concrete small-scale models and Traffic-induced Vibrations

Assistant Professor	İstanbul Kemerburgaz University	(2012 – current)	<p>~Lecturing PHYS 101 Physics I, CVE 201 Engineering Mechanics I, CVE 335 Structural Analysis, CVE 341 Steel Structures</p> <p>~Conducting scientific research on the protection of cultural heritage</p> <p>~ Principal (&amp; sole) Investigator of the project titled “Hygrothermal Monitoring of the Timber Structures in İstanbul for Conservation (MOTIC)”</p> <p>~ Collaborative Research Partner with University College Dublin, Ireland and University College London, UK</p> <p>~ Coordinator of STS Seminars</p> <p>~ Turkish Coordinator of BRAU2-2nd Biennial of Architectural and Urban Restoration</p>
Research Officer	University of Bath	2010-2012	<p>~Management of the research project <b>PARNASSUS</b> vis-a-vis protection of cultural heritage from wind-driven rain and flooding.</p> <p>~Building Survey on-site</p> <p>~Design of an environmental monitoring system in cooperation with 2 commercial companies for historic buildings in the UK.</p> <p>~Monitoring system installation and data acquisition and its maintenance</p> <p>~Numerical modelling of environmental effects on historic structures.</p> <p>~Design of the web-site for the <b>PARNASSUS</b> project. (<a href="http://www.bath.ac.uk/parnassus/">http://www.bath.ac.uk/parnassus/</a>).</p> <p>~Preparation of journal and conference papers</p> <p>~Co-supervising final year students and PhD Students</p> <p>~Awarded a grant by the European University Centre for Cultural Heritage to attend the meeting on <i>Climate change, cultural heritage and risk. Energy, mobility and access</i>, Ravello, ITALY, 3-7 October 2011</p>

Post-doctoral Researcher	University College Dublin SALCE	2008-10	<p>~ Authored a winning €107,410 research proposal from Enterprise Ireland, a major granting agency geared towards commercialisation of intellectual property</p> <p>~ Authored state-of-the-art review regarding similitude in geotechnical testing, large-scale geotechnical testing, traffic vibrations</p> <p>~ Reviewed technical papers</p> <p>~ Guest Lecturer in Building Construction (2nd year students in Civil Eng.) and Mechanics</p> <p>~ Assisted in coordination and day-to-day administration of a 7 person research group including preparation of grant applications</p> <p>~ Experimental and Numerical Modelling research in traffic-induced vibrations</p> <p>~ Experimental work on historical buildings</p>
Research & Teaching Assistant	Bogazici University, Istanbul, Turkey	2001-07	<p>~ Conducted numerical modelling of buildings, bridges, and cooling towers</p> <p>~ Designed and participated in various small engineering projects (retrofit of campus buildings)</p> <p>~ Taught Finite Element Method, Matrix Methods of Structural Analysis (Graduate students in Civil Eng.) and Engineering Graphics (1<sup>st</sup> year students in Civil Eng.)</p>
Project Engineer Assistant	Turkey's Highway Institution, Izmir, Turkey	1997	~ Planned and supervised daily construction of a 40+km highway between Izmir and Manisa, Turkey
Site Engineer	Altnova Emlak Engineering Company, Turkey	1996	~ Oversaw the construction of a group of 100 villa buildings and apartment buildings

## ***PUBLICATIONS AND INTELLECTUAL PROPERTY***

### **Book**

Tezcan, S. & Erkal A., (2002), “*Seismic Base Isolation and Energy Absorbing Devices*”, Higher Edu. Fndn., Pub/No: KT 005/02, Etiler, İstanbul, <http://www.egitim-arvkfi.org>.

### **Refereed Journal Publications**

Erkal, A., D’Ayala, D., (2015) Laboratory testing of non-standard original historic building materials and related implications for conservation, *Quarterly Journal of Engineering Geology and Hydrogeology*, Vol. 48 pp. 15–28. (SCI)

- Aktas Y. D., D'Ayala D., **Erkal A.**, Stephenson V., (2015) Environmental performance assessment using monitoring and DVS testing, *Engineering History and Heritage ICE*, Vol. 168, Issue EH1, pp. 3-16.
- Parkin S. J., Adderley W. P., Kennedy C. J., Aktas Y. D., D'Ayala D., **Erkal A.**, (2015) Climate threats to the earth-built heritage of Scotland, *Engineering History and Heritage ICE*, Vol. 168, Issue EH1, pp. 17-30.
- Erkal A.**, Tezcan, S. & Laefer D., "Advantages of Infinite Elements over Prespecified Boundary Conditions in Unbounded Problems", ASCE's Journal of Computing in Civil Engineering, DOI: 10.1061/(ASCE)CP.1943-5487.0000391 (SCI).
- Erkal A.** and Ozhan H.O. (2014) Value and Vulnerability Assessment of a Historic Tomb for Conservation, *The Scientific World Journal*.  
<http://www.hindawi.com/journals/tswj/aip/357679/>
- Erkal, A.**, D'Ayala, D., Stephenson, V. (2013) Evaluation of environmental impact on historical stone masonry through on-site monitoring appraisal. *Quarterly Journal of Engineering Geology and Hydrogeology*, 46, pp.449-458. (SCI)
- Erkal, A.**, D'Ayala, D., Sequeira L., "The Effects of Climate Change on Wind-driven Rain and Related Surface Erosion Assessment for Historic Buildings", *Building and Environment*, 57, pp. 336-348. (SCI)
- Laefer, D., Long, J., **Erkal A**, Cording E. & Truong Hong, "Manufacturing, assembly, and testing of scaled, historic masonry for one-gravity, pseudo-static, soil-structure experiments" *Construction and Building Materials*, Vol.25, No.12, pp.4362-4373, December 2011. (SCI)
- Erkal A.**, Tezcan, S. & Laefer D., "Assessment and Code Considerations for the Combined Effect of Seismic Base Isolation and Viscoelastic Dampers" *ISRN Civil Engineering Journal*, Vol.2011, pp.1-10, Article ID 861451, 2011.
- Laefer, D., **Erkal A**, Long, J., Cording E. & Truong Hong, "Theoretical Solutions for Strength-scaled Unreinforced Masonry for Scaled Soil-structure Experimentation", *ASTM, Journal of Testing and Evaluation*, , Vol.38, No.4, pp.449-457, July 2010. (SCI)
- Laefer D., and **Erkal A.**, "Assessment of Geotechnical Testing Issues during Usage of Large Chambers", *ICE International Journal of Physical Modelling in Geotechnics* (Submitted).
- Erkal A.** & Laefer D., "Selection, Production, and Testing of Scaled Reinforced Concrete Models and their Components", *Construction and Building Materials*, Elsevier. (Submitted).
- Erkal A.**, "Transmission of Traffic-induced Vibrations on and around the Minaret of Little Hagia Sophia", *International Journal of Architectural Heritage*, (Submitted).

### **Conference Papers**

- D'Ayala, D. Aktas Y.D., Earl G., **Erkal A.**, Miles J., Richley E., Stephenson V., Strutt K., The Parnassus Project: Archaeology and Engineering Collaboration for 3D Data Collection and Analysis, Traviglia, A. (eds), *Across Space and Time. Papers from the 41st Annual Conference of Computer Applications and Quantitative Methods in Archaeology (CAA)*, Perth, Australia, 25-28 March 2013, Amsterdam University Press.
- Herd G., **Erkal A.**, D'Ayala D. & Jones M. W. "Structural Assessment of Ancient Building Components, the Temple of Artemis at Corfu", the 40th Conference on Computer Applications and Quantitative Methods in Archaeology, University of Southampton, United Kingdom, 26-30 March 2012, Amsterdam University Press, Edited by Graeme

- Earl, Tim Sly, Angeliki Chrysanthi, Patricia Murrieta-Flores, Constantinos Papadopoulos, Iza Romanowska and David Wheatley
- D' Ayala, D., **Erkal, A.**, “*The Role of Environmental Monitoring in Conservation of Cultural Heritage*”, WCCE-ECCE-TCCE Joint Conference 2, Seismic Protection of Cultural Heritage, October 31 - November 1, 2011, Antalya, Turkey
- Erkal, A.**, Laefer D., Fanning, P., Durukal, E., Hancilar, U., Kaya, Y., “*Investigation of the Rail-induced Vibrations on a Masonry Historical Building*” 7th International Conference on Structural Analysis of Historic Constructions (SAHC-2010 Conference), October 6-8, 2010, Vol.: 133-134, pp: 569-574, Shanghai, China.
- Erkal, A.**, Laefer D., Fanning, P., Durukal, E., Hancilar, U., Kaya, Y., “*Factors Affecting Traffic-generated Vibrations on Buildings and a Case Study: Minaret of Little Hagia Sophia Mosque*” Bridge & Infrastructure Research in Ireland 2010 and Concrete Research in Ireland, A joint Symposium co-hosted by UCC and CIT, Cork, September 2-3, 2010.
- Erkal, A.**, Laefer, D., and Fanning, P., “*Analyses and evaluation of building response to traffic-induced vibrations and related human disturbance*” The Transportation Research Board (TRB) 89th Annual Meeting , Washington, D.C., January 10-14, 2010.
- Erkal, A.**, Tezcan, S., (2007), “*Seismic Base Isolation and Energy Absorbing Devices*”, International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Rethymno, Crete, Grece, June 13-16.
- Tezcan, S., Ozdemir, Z., Keceli, A., and **Erkal A.**, (2007), “*Case Studies: A rapid technique to determine allowable bearing pressure*”, Geotechnical Special Publication (GPS 175), p.66, FMGM 2007 – Proceedings of the 7<sup>th</sup> International Symposium on Field Measurements in Geomechanics, Sep 24 – 27, Boston, MA, U.S., p.66-72.
- Tezcan, S., Yazıcı, A., and **Erkal A.**, (2007), “*Soft Storey Criteria in Earthquake Resistant Design*”, 6th National Earthquake Engineering Conference, İstanbul Technical University, Süleyman Demirel Culture Center, 16-20 October 2007, Maslak, İstanbul.
- Tezcan, S., Ozdemir, Z., Keceli, A., and **Erkal A.**, (2007), “*A Rapid Technique to Determine Allowable Bearing Pressure*”, International Earthquake Symposium, Earth and Space Sciences Research Center, Kocaeli University, Kocaeli, 22-26 Oct. 2007, pp.234-241.
- Tezcan, S., Ozdemir, Z., Keceli, A., and **Erkal A.**, (2007), “*Seismic Method To Determine Allowable Bearing Pressure*”, Soil Mechanics and Foundation Engineering 1<sup>st</sup> Symposium (*Soil-structure Interaction*), İstanbul University, 8-9 November 2007, İstanbul.
- Tezcan, S.S., Ozdemir, Z., Keceli, A., and **Erkal, A.**, (2007), "Zemin Emniyet Gerilmesinin Sismik Yöntem ile Belirlenmesi", T.C. Süleyman Demirel Üniversitesi, 15'inci Yil Mühendislik Mimarlik Sempozyumu, 14-16 Kasim 2007, Isparta.
- Tezcan, S. and **Erkal A.**, (2004), “*Earthquake and Wind Design of Hyperbolic Paraboloid Cooling Towers*”, 5<sup>th</sup> Int’1 Symp. on Natural – Draught Cooling Towers, 2004 IASS Mimar Sinan Univ., May 20-22, 2004, İstanbul.

## **Reports**

- D' Ayala, D., **Erkal, A.**, “*The PARNASSUS Project, Risk of Climate Change*”, **care** Conservation Accreditation Register for Engineers newsletter, Institution of Civil Engineers, Autumn/Winter 2011, pp.10-13.
- Tezcan, S. S., Kaya E., and **Erkal A.**, (2005), “*Elif Uğur Sitesi B-Blok Güçlendirme Raporu*”, (Strenghtening Report of B-Block in Elif Uğur Blocks, in Turkish), Dept Civil Eng, Boğaziçi Univ, Aug 2005, Bebek, İstanbul.

- Tezcan, S. S., Kaptan K., and **Erkal A.**, (2005), “*SİSMO Yapı Teknolojisi Değerlendirme Raporu*”, Dept of Civil Eng, Boğaziçi Univ, Aug 2005, Bebek, İstanbul, (in Turkish), <http://www.egitim-arvki.org>.
- Tezcan, S. and **Erkal A.**, (2004), “*Vibration Simulation of 1<sup>st</sup> Bosphorus Suspension Bridge*”, “Tech Life” TV Programme, “Haber Türk” TV Channel, <http://www.haberturk.com>.