# KENAN HAZIRBABA, PH.D., P.E.

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## EDUCATION

**The University of Texas at Austin**, Austin, TX
Ph.D. in Civil Engineering

**Bogazici University**, Istanbul, Turkey
Master of Science in Civil Engineering

**Istanbul Technical University**, Istanbul, Turkey
Bachelor of Science in Civil Engineering
(*Summa Cum Laude*)

## TEACHING INTERESTS

Dr. Hazirbaba has a wealth of teaching experience in civil engineering. His primary area of teaching is in geotechnical engineering however he has taught various classes in civil engineering. Dr. Hazirbaba's teaching portfolio includes: statics, mechanics of materials, numerical analysis for engineering applications, soil mechanics/geotechnical engineering, foundation engineering and design, earth retaining structures, soil improvement, advanced foundation design, geotechnical earthquake engineering, fluid mechanics and hydraulics, geomatics, and construction management and economics.

## RESEARCH INTERESTS

As a practicing professional engineer, Dr. Hazirbaba focuses on applied and experimental research that can be deployed in the field and help practitioners. His research has developed in two main areas. These are: (1) the behavior of saturated sand-dominant soils under cyclic loading, and (2) the improvement of marginal soils through employment of non-traditional stabilization. Dr. Hazirbaba's research has been successful in securing funds from both state agencies and non-governmental entities. Dr. Hazirbaba is a strong proponent of engaging undergraduate students in research.

## PUBLICATIONS AND PRESENTATIONS

### *Journal*

**Hazirbaba, K.** (2019). "Effects of freeze-thaw on settlement of fine grained soil subjected to cyclic loading" *Cold Regions Science and Technology*, Elsevier, Vol. 160, 222-229.

**Hazirbaba, K.** (2019). "Stabilization of aeolian sand with combined use of geofiber and synthetic fluid" *Cogent Engineering*, Taylor&Francis, Vol. 6, No. 1, DOI: 10.1080/23311916.2019.1589895

**Hazirbaba, K.**, and Omarow, M. (2019). "Strain-based assessment of liquefaction and seismic settlement of saturated sand," *Cogent Engineering*, Taylor&Francis, Vol. 6, No. 1, DOI: 10.1080/23311916.2019.1573788

**Hazirbaba, K.**, and Mughieda, O. (2019). "A comparative study of targeted ground improvement alternatives during site reclamation," *Jordan Journal of Civil Engineering*, 13 (2).

**Hazirbaba, K.**, Mughieda, O., and Abu-Lebdeh, G. (2019). "A critical review on seismic design of earth retaining structures," *Jordan Journal of Civil Engineering*, 13 (1).

Abu-Lebdeh, G., **Hazirbaba, K.**, Mughieda, O., and Abdelrahman, B. (2018). "Modeling time complexity of micro-genetic algorithms for online traffic control decisions," *International Journal of Information and Decision Sciences* (In-press).

**Hazirbaba, K.** and Omarow, M. (2018). "Excess pore pressure generation and post-cyclic loading settlement of geofiber-reinforced sand," *Gradevinar*, 70 (1), 11-18.

**Hazirbaba, K.** (2018). "Large-scale direct shear and CBR performance of geofiber reinforced sand," *Road Materials and Pavement Engineering*, 19 (6), 1350-1371.

**Hazirbaba, K.** (2017). "Field and laboratory performance of a cold-region sand reinforced with geofiber and synthetic fluid," *Cold Regions Science and Technology*, Elsevier, 135, 16-27.

**Hazirbaba, K.** and Omarow, M. (2015). "Post-cyclic loading settlement of saturated clean sand," *Soil Dynamics and Earthquake Engineering,* Elsevier, Vol. 77, Oct 2015, 337-347.

Cox, B., Wood, C., and **Hazirbaba, K.** (2012). "Frozen and Unfrozen Shear Wave Velocity Seismic Site Classification of Fairbanks, Alaska." *Journal of Cold Regions Engineering*, ASCE, Vol. 26, No.3, 118–145.

**Hazirbaba, K.**, Zhang, Y., and Hulsey. J.L. (2011). "Evaluation of Temperature and Freeze-thaw Effects on Excess Pore Pressure Generation of Fine-Grained Soils," *Soil Dynamics and Earthquake Engineering,* Elsevier, Vol. 31, No. 3, 372-384.

Yang, Z., Dutta, U., Xu, G., **Hazirbaba, K.**, and Marx, E. (2011). "Numerical Analysis of Permafrost Effects on the Seismic Site Response," *Soil Dynamics and Earthquake Engineering,* Elsevier, Vol. 31, No. 3, 282-290.

**Hazirbaba, K.** and Gullu, H. (2010). "California Bearing Ratio Improvement and Freeze-Thaw Performance of Fine-grained Soils Treated with Geofiber and Synthetic Fluid," *Cold Regions Science and Technology,* Elsevier, Vol. 63, No. 1-2, 50-60.

Gullu, H. and **Hazirbaba, K.** (2010). "Unconfined Compressive Strength and Post-Freeze-Thaw Behavior of Fine-grained Soils Treated with Geofiber and Synthetic Fluid," *Cold Regions Science and Technology,* Elsevier, Vol. 63, No. 2-3, 142-150.

**Hazirbaba, K.** and Rathje, E.M. (2009). "Pore pressure generation of silty sands due to induced cyclic shear strain," *Journal of the Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 135, No. 12, 1892-1905.

Derakhshandi, M., Rathje, E.M., **Hazirbaba, K.**, Mirhosseini, S.M. (2008). "The effect of plastic fines on the pore pressure generation characteristics of saturated sands," *Soil Dynamics and Earthquake Engineering*, Elsevier, Vol. 28, No. 5, 376-386.

Chang, W.J., Rathje, E.M., Stokoe II, K.H., and **Hazirbaba, K.** (2007). "In situ pore pressure generation behavior of liquefiable sand," *Journal of the Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 133, No. 8, 921-931.

### *Refereed Conference Articles*

Mughieda, O., **Hazirbaba, K**., Bani-Hani, K., Daoud, W., 2018, "Numerical modeling of dynamic stability of RCC dam," *The 4th International Conference on Rehabilitation and Maintenance in Civil Engineering (ICRMCE 2018), Indonesia, 11-12 July, 2018,* MATEC Web of Conferences 195*,* 03021, DOI: 10.1051/matecconf/201819503021

Mughieda, O., Mehana, M.S., **Hazirbaba, K**., 2017, "Effect of soil subgrade modulus on raft foundation behavior," *The International Conference on Advances in Sustainable Construction Materials and Civil Engineering Systems (ASCMCES-17*), *UAE, 18-20 April, 2017,* MATEC Web of Conferences 120, 06010, DOI: 10.1051/matecconf/201712006010.

Mughieda, O., **Hazirbaba, K**., Bani-Hani, K., Daoud, W., 2017, "Numerical Modeling of Sliding Stability of RCC dam," *The 2nd International Conference on Civil Engineering and Materials Science, South Korea, 26–28 May 2017*, IOP Conf. Ser.: Mater. Sci. Eng. 216 (012023)

Mughieda, O., **Hazirbaba, K**., Mohamed, O., 2017, "Scale Effect on Mode of Failure and Strength of Offset Rock Joints," *2016 International Symposium on Civil and Environmental Engineering (ISCEE 2016, Wuhan, China, 20-21 December,* MATEC Web of Conferences 103, 07008), DOI: 10.1051/matecconf/201710307008

**Hazirbaba, K**., 2015, "Strength and bearing capacity improvement of a poorly graded sand through fiber reinforcement," Proceedings of the *8th International Conference FIBRE CONCRETE 2015, Sept 10-11*. Prague, Czech Republic.

Mughieda, O. and **Hazirbaba, K**., 2015, "Expansive clay soil-structure interaction: A case study," Proc. *The 2015 International Conference on Civil Engineering (CIVILENG 2015), Jul. 16-20*, Zakynthos Island, Greece.

Xu G., Dutta, U., Yang, Z., and **Hazirbaba, K**., 2010, "Frozen soil effects on the observed ground motion characteristics," Proc. *9th US National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders, Jul. 25-29*, Toronto, Canada. Paper No. 1170. Earthquake Engineering Research Institute (EERI).

**Hazirbaba, K**. and Connor, B., 2009, "Utilization of geofibers and synthetic fluid to increase the bearing capacity of marginal soils," Proceedings of the *8th International Conference on the Bearing Capacity of Roads, Railways and Airfields* (BCR2A), Champaign, Illinois, USA, June 29-July 2, 2009.

**Hazirbaba, K**. and Omarow, M., 2009, "Comparison of stress and strain approaches for evaluation of liquefaction potential of sands," Proceedings of the *International Conference on Performance-Based Design in Earthquake Geotechnical Engineering* (IS-TOKYO 2009), 15-18 June 2009. Performance Based Design in Earthquake Geotechnical Engineering, CRC Press.

Dutta, U., Yang, Z., Xu, G., and **Hazirbaba, K**., 2008, "Effect of seasonally frozen soil and permafrost on seismic site response," Proceedings of the 14th *World Conference on Earthquake Engineering* (14 WCEE), October 12-17, CD-ROM.

**Hazirbaba, K**. and Rathje, E.M., 2006, "Strain-based pore water pressure generation in clean sands," Presented and very well received during the *8th US National Conference on Earthquake Engineering* (8NCEE), San Francisco-CA, April 18-22.

**Hazirbaba, K**. and Rathje, E.M., 2004, "A comparison between in situ and laboratory measurements of pore water pressure generation," Proceedings of the *13th World Conference on Earthquake Engineering* (13WCEE), August 1-6, CD-ROM.

***Newsletter***

Hazirbaba, K. and Hulsey, J.L., 2009. "Earthquakes, permafrost, and seasonal frost: What happens?" Alaska University Transportation Center Newsletter, March 2009, Vol 2.,Num., 2.

Hazirbaba, K. and Connor, B., 2008. "Using geofiber and synthetic fluid to stabilize marginal soils," Alaska University Transportation Center Newsletter, February 2008, Vol 1., Num., 2.

***Poster***

Hazirbaba, K., 2004, "Strain controlled, cyclic simple shear testing of silty sands," *Career EXPO 2004*, The University of Texas, September.

Hazirbaba, K. and Rathje, E.M., 2003, "Pore pressure generation characteristics of sands and silty sands under cyclic loading," *Centennial Celebration Program*, The University of Texas at Austin, November.

***Invited Presentation***

Hazirbaba, K. "Trans-Canada Alaska Pipeline project: Seismic hazards along the pipeline corridor," IARC, UAF, Fairbanks, February 2009.

Hazirbaba, K. "Soil stabilization in cold regions," ASCE Fairbanks, Westmark Hotel, June 2008.

Hazirbaba, K. and Connor, B. "The use of geofibers and synthetic fluid as stabilizers for marginal soils," Peak Civil Technologies Co., Anchorage, AK, October 2007.

Hazirbaba, K. "Pore pressure generation due to cyclic loading," University of Alaska Fairbanks, Fairbanks, AK, June 2006.

Hazirbaba, K. "Cyclic behavior of liquefiable soils," University of Missouri-Rolla, Rolla, MO, April 2005.

Hazirbaba, K. "Strain-induced pore pressure generation in non-plastic silts," California Polytechnic State University, San Luis Obispo, CA, April 2005.

Hazirbaba, K. "Cyclic simple shear testing of silty sands," Bogazici University, Istanbul, December 2003.

Hazirbaba, K. "Geotechnical aspects of the Dinar Earthquake: Soil amplification," Michigan Technological University, Houghton, August 2000

Hazirbaba, K. "Clogging of landfill leachate collection and drainage systems," Texas A&M University, College Station, May 2000.