



ADEL E. ABD EL-NABI, Ph.D., S.E., P.E.
SENIOR CONSULTANT

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Dr. Adel E. Abd El-Nabi has more than fifteen years of experience in the field of failure analysis of buildings and bridges. He serves as a senior consultant for projects related to building enclosure, forensic analysis, litigation support, restoration, and renovation work. He is proficient in performing experimental and numerical simulations utilizing state-of-the-art laboratory testing equipment and advanced finite element methods to investigate the failure behavior of highly complex structural systems. He has assessed, repaired, and designed high-profile structures in the US and overseas, including 3,000+ years old large historical buildings in Egypt, where he conducted non-destructing testing that helped in provide repair and retrofit plans to limit further deterioration of structural components and prevent possible structural failure.

Dr. Abd El-Nabi is also a frequent guest speaker at failure analysis related symposiums. He spoke to national and international audiences on multiple structural engineering topics and has authored numerous technical articles related to structural engineering. In addition, Adel has extensive knowledge of current structural engineering design and assessment codes and standards, including the International Residential and Building Codes, ASCE 7-16, ACI 318-14, AISC Manual and Specifications, NDS 2018, TMS 402/602, and AASHTO.

Dr. Abd El-Nabi is currently an associate professor at the University of Memphis and enjoys teaching structural engineering courses related to the design of structures using steel, concrete, wood, and masonry materials. He also teaches topics related to advanced finite element methods, earthquake engineering, and nonlinear analysis of structures for graduate-level students.

Areas of Specialization

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| Architectural Investigations | Damage Investigation and Assessment |
| Commercial Structures | Historical Buildings |
| Construction Defects | Non-Destructive Testing |
| Dams & Embankments | Experimental Testing of Structural Components |
| Earth Movement Investigations | Structural Failure Analysis |
| Infrastructure | Finite Element Analysis and Failure Simulation |
| Residential Structures | Seismic Repair and Retrofit |
| Fire Induced Damage | Seismic Design and Assessment |
| Blast Loading and Effects on Structures | |

August 2022

Education

Ph.D., Civil and Environmental Engineering University of Illinois at Urbana-Champaign. 2012
M.S., Structural Engineering, Cairo University. 2007
B.S., Civil and Environmental Engineering, Cairo University. 2005

Licensed Structural Engineer (S.E.)

State of Illinois..... License No. 081008183
State of Oklahoma.....License No. 30591

Licensed Professional Engineer (P.E.)

State of Tennessee.....License No. 121882
State of Arkansas..... License No. 19225
State of Mississippi.....License No. 30393

Professional Associations and Affiliations

Structural Engineering Institute

Member, Committee of Retrofit of Structures of Dynamic Loads

National Council of Structural Engineering Association

Member, Committee of Basic Education

Tennessee Structural Engineering Association

Board Member

Egyptian Code for Loads

Member and Reviewer, Seismic Load Committee

American Society of Civil Engineers

Member

American Institute of Steel Construction

Member

American Concrete Institute

Member

Journal of Earthquake Engineering

Reviewer

Positions Held

Engineering Systems Inc., Norcross, Georgia

Senior Consultant, 2020 – Present

University of Memphis, Tennessee

Associate Professor, 2018 – Present

Assistant Professor, 2012 – 2018

University of Illinois at Urbana-Champaign, Illinois

Research and Teaching Assistant, 2008 – 2012

Multiple Design Firms

Structural Engineer, 2005 – 2020

Additional Training and Certification Courses

Intensive Course on Ground Penetrating Radar

Geophysical Survey Systems, Inc., 2016

C Level 1, “Authorized Person”

Roof Specific Access Training, 2020

Wind and Hail Damage to Roof Covering

HAAG Education, 2019

Publications/Presentations

Abd El-Nabi, A., Elnashai, A. "Integrity Assessment of the Pharos of Alexandria during the AD 1303 Earthquake," Engineering Failure Analysis, Vol. 33c, pp. 119-138. October 2013. **Featured and interviewed on Science Channel, Unearthed Episodes, Series Four, Title: Lost Lighthouse of Alexandria, URL: <http://www.windfallfilms.com/show/18270/lost-lighthouse-of-alexandria.aspx>**

Movaghati, S.; **Abd El-Nabi, A.** “Experimental study on the nonlinear behavior of bearing-type semi-rigid connections.” Engineering Structures. November 2019.

Ismail, A.; **Abd El-Nabi, A.**; Brand, P. “Why are the foundations of the Egyptian Temple of Karnak crumbling into sand? An integrated archaeological, geophysical and engineering study.” Application of geophysics to engineering and environmental problems. March 2019.

Omranian, E.; **Abd El-Nabi, A.**; Abdollahzadeh, G. “Seismic vulnerability assessment of RC skew bridges subjected to mainshock-aftershock sequences.” Soil dynamics and earthquake engineering. November 2018.

Abd El-Nabi, A. “Fragility curves for RC frames subjected to Tohoku mainshock-aftershocks sequences.” Earthquake Engineering. May 2018.

Abd El-Nabi, A.; Camp, C.; Baker, C.; Hosseinpour, F. “Structural evaluation of low volume roads using ground penetrating radar (GPR).” Tennessee Department of Transportation. May 2018.

- Oygus, R., Toros, C., **Abd El-Nabi, A.** "Seismic Behavior of Irregular Reinforced-Concrete Structures under Multiple Earthquake Excitations," *Soil Dynamics and Earthquake Engineering*, Vol. 104, pp. 15-32. 2018.
- Ismail, A., **Abd El-Nabi, A.**, Larson, T. "High-resolution P- and S-wave Seismic Reflection Followed by Engineering Modeling for Geotechnical Site Characterization in Southern Illinois," *Journal of Environmental and Engineering Geophysics*, Vol. 22(4), pp. 375-384. 2018.
- Hosseinpour, F., Abd El-Nabi, A. "Fragility Curves for RC Frames under Multiple Earthquakes," *Journal of Soil Dynamics and Earthquake Engineering*, Vol. 98, pp. 222-234. 2017.
- Hosseinpour, F., **Abd El-Nabi, A.** "Effect of different aspects of multiple earthquakes on the nonlinear behavior of RC structures," *Soil Dynamic and Earthquake Engineering*, Vol. 92C, pp. 706-725. (DOI: 10.1016/j.soildyn.2016.11.006). 2017.
- Movaghati, S., **Abd El-Nabi, A.** "Advancements in Fragility Analysis using Numerical Calibration Methods for a Horizontally Curved RC Bridge," *Engineering Structures*, Vol. 125C, pp. 236-243. (DOI: 10.1016/j.engstruct.2016.07.017). 2016.
- Abd El-Nabi, A.**, Elnashai, A. "Numerical Modeling and Analysis of RC Frames Subjected to Multiple Earthquakes," *Earthquakes and Structures, An International Journal* Vol. 9, No. 5 pp. 957-981. (DOI: <http://dx.doi.org/10.12989/eas.2015.9.5.957>). 2015.
- Hosseinpour, F., **Abd El-Nabi, A.** "Statistical Evaluation of the Monotonic Models for FRP Confined Concrete Prisms," *Advances in Concrete Construction, An International Journal* Vol. 3, No. 3 pp. 161-185. (DOI: 10.12989/acc.2015.3.3.161). 2015.
- Abd El-Nabi, A.**, Frankie, T., Spencer, B. "Numerical and Hybrid Analysis of a Curved Bridge and Methods of Numerical Model Calibration," *Engineering Structures*, Vol. 70C pp. 234-245 (D.O.I. 10.1016/j.engstruct.2014.04.009). 2014.
- Abd El-Nabi, A.**, Elnashai, A. "Performance of Degrading Reinforced Concrete Frame Systems under Tohoku and Christchurch Earthquake Sequences," *Journal of Earthquake Engineering*, Vol. 18(7) pp. 1009-1036 (DOI:10.1080/13632469.2014.923796). 2014.
- Spencer, B., Chang, C., Frankie, T., Kuchma, D., Silva, P., **Abd El-Nabi, A.** "A Phased Approach to Enable Hybrid Simulation of Complex Structures," *Earthquake Engineering and Engineering Vibration*, Vol. 13 pp. 63-77 (D.O.I. 10.1007/s11803-014-0240-2). 2014.
- Abd El-Nabi, A.**, Frankie, T., Spencer, B. "Numerical Hybrid Simulation Modeling Verification for a 3-Pier Bridge," *Journal of Systemics, Cybernetics and Informatics*, Vol. 11(5), pp. 48-51. 2013.
- Abd El-Nabi, A.**, Machaly, E.S., Safar, S., "Parametric Analysis of Plate Girder Web Panels Subjected to Pure Shear", *Journal of Engineering and Applied Science*, Vol. 54, December 2007.
- Abd El-Nabi, A.**, Machaly, E.S., Safar, S., "New Design Rules for Plate Girder Web Panels Subjected to Pure Shear", *Journal of Engineering and Applied Science*, Vol. 55, February 2008.
- Abd El-Nabi, A.**, University of Illinois at Urbana-Champaign, PhD Dissertation (2012): Multiple Earthquake Effects on Degrading Reinforced Concrete Structures.
- Abd El-Nabi, A.**, and Elnashai, A. (2010) "Response of RC Buildings under Multiple Earthquakes", the 7th International Conference on Urban Earthquake Engineering & 5th International Conference on Earthquake Engineering, Tokyo, March 2010.
- Abd El-Nabi, A.**, Frankie, T., and Spencer, B. (2012) "Hybrid Simulation Modeling of a Curved Bridge", *Design and Modeling in Science, Education, and Technology*, Orlando, FL.

- Abd El-Nabi, A.** (2012) "Performance of RC buildings under the March 11 Earthquakes in Japan," Earthquake Engineering Research Institute, Memphis, TN.
- Abd El-Nabi, A.,** and Amr Elnashai (2012) "Response of Degrading RC Frames Under Replicate Motions", the 15th World Conference in Earthquake Engineering, Lisbon, Portugal, September 2012. view article online
- Frankie, T., **Abd El-Nabi, A.,** Silva, P. (2013) "Hybrid Simulation of Curved Four-Span Bridge: Comparison of Numerical and Hybrid Experimental/Analytical Results and Methods of Numerical Model Calibration," Structures Congress, Pittsburg, PA, pp. 721-732. view article online
- Abd El-Nabi, A.** (2013) "Methods of Bridge Numerical Model Calibration Using Hybrid Simulation," Quake summit, Nevada, Reno. 1
- Assadollahi, A., **Abd El-Nabi, A.** (2014) "Improved Student Understanding of Materials and Structures through Non-Traditional Laboratory Project," American Society of Engineering Education (Southeastern Section), Macon, GA. view article online
- Abd El-Nabi, A.,** Raji, F., Yohannes, A., Naimi, A., Mishra, S., Golias, M. (2014) "Impacts of the 1811-1812 Earthquakes on Existing Transportation Networks in Memphis Area." Tenth U.S. National Conference on Earthquake Engineering, Anchorage, AK. view article online
- Hosseinpour, F., **Abd El-Nabi, A.** (2015) "Statistical Investigation of the Behavior of FRP Confined Concrete Prisms Based on Experimental Data," Structures Congress, Portland, OR, pp. 2260-2271.
- Movaghati, S., **Abd El-Nabi, A.** (2015) "Semi-rigid Steel Connection with Self-centering System," Structures Congress, Portland, OR.
- Hosseinpour, F., **Abd El-Nabi, A.** (2015) "Statistical Evaluation of the Compressive Strength Models for FRP Confined Concrete Rectangular Prisms using Experimental Data," Earthquake Engineering Research Institute, Boston, MA.
- Movaghati, S., **Abd El-Nabi, A.** (2015) "Experimental and Numerical Analysis of Semi-rigid Connections with and without Self-centering Devices," Earthquake Engineering Research Institute, Boston, MA.
- Ghaffari, Y., Pezeshk, S., **Abd El-Nabi, A.** (2015) "Improved Value for Load Increase Factor in Disproportionate Collapse," Structures Congress, Portland, OR.
- Movaghati, S., **Abd El-Nabi, A.** (2016) "Use of self-centering system to retrofit steel flexible moment connections," Geo-Structures Congress, Phoenix, AZ.
- Hosseinpur, F., **Abd El-Nabi, A.** (2016) "Inelastic behavior of structures under multiple earthquakes," Geo-Structures Congress, Phoenix, AZ.
- Rostamiam, M., **Abd El-Nabi, A.** (2016) "Reliability analysis of steel frames under earthquake loading using Meta-models," Joint Engineering Mechanics Institute and Probabilistic Mechanics & Reliability Conference, Vanderbilt, TN.
- Abd El-Nabi, A.** (2010) "Material Model Implementation in Zeus-NL", Mid America Earthquake Center, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, <http://code.google.com/p/zeus-nl/wiki/06MaterialModelImplementation>
- Abd El-Nabi, A.** (October 2011) "Earthquake Magnitude and Energy Release", AAAEA Newsletter, Chicago, IL.