

KHALED M. EL-SAWY

PERSONAL INFORMATION

Name: Khaled Mahmoud El-Sawy
Date of Birth: January 30, 1961
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EDUCATION

Ph.D. (1996) **University of Western Ontario, London, Ontario, Canada**
Thesis: “Non-Linear Analysis of Liners for Rigid Pipe Rehabilitation”

M.Sc. (1992) **University of Western Ontario, London, Ontario, Canada**
Thesis: “Dynamic Response of Shallow Foundations by Direct Boundary Element Method and Finite Element Method”

B.Sc. (1982) **Ain Shams University, Cairo, Egypt**
Civil Engineering Graduated with distinction and honors degree (structural division).

TEACHING EXPERIENCE

Undergraduate Courses Taught during the period “September 1997–present”:

- Introduction to Engineering Design & Ethics (supervised the freshman design project)
- Introduction to Programming (problem solving using Excel and its Visual Basic for Application)
- Differential Equations & Engineering Applications (taught the applications part)
- Linear Algebra & Engineering Applications (taught the applications part)
- Physics & Engineering Applications I (taught the applications part)
- Statics
- Dynamics of Rigid Bodies
- Computer Aided Drawing for Civil Engineers
- Surveying
- Matrix Structural Analysis
- Reinforced Concrete Design I
- Reinforced Concrete Design II
- Structural Steel Design
- Graduation Project

Graduate Courses Taught during the period “September 2007–present”:

- Computer Applications in Civil Engineering
- Finite Element Method: Theory and Applications

RESEARCH INTERESTS

- Stability of Structures
- Rehabilitation of Buried Pipelines using Trenchless Technology
- Nonlinear Analyses of Buried Long-Span Metal Culverts
- Rehabilitation/Strengthening of Structures using CFRP
- Sulfur Concrete and its application in the UAE

RESEARCH GRANTS

- A one-year grant for research entitled “Stability Analysis of Liners for Rigid Pipe Rehabilitation”, Funded by Research Affairs, UAE University, 1999, (amount of 12,000 DHs).
- A one-year grant for research entitled “Three-Dimensional Modeling of Soil-Steel Culverts under the Effect of Live Loads”, Funded by Research Affairs, UAE University, 2001 (amount of 13,000 DHs).
- Co-investigator in a one-year grant for research entitled “Elastic Buckling of Thin Perforated Plates under Uniaxial Compression”, Funded by Research Affairs, UAE University, 2001 (amount of 16,000 DHs).
- Co- investigator in a grant for research entitled “Inelastic Buckling of Thin Perforated Plates Under Uniaxial Compression”, Funded by Research Affairs, UAE University, 2002 (Amount of 26,000).
- A one-year grant for research entitled “Non-linear Three-Dimensional Modeling of Culverts under the Effect of Earth and Truck Loads”, Funded by Research Affairs, UAE University, 2003 (amount of 20,000 DHs).
- A one-year grant for research entitled “Elastic Buckling of Thin Plates with Eccentric Holes when Subjected to Biaxial Loads”, Funded by Research Affairs, UAE University, 2005 (amount of 20,000 DHs)
- A one-year grant for research entitled “Elasto-Plastic Buckling of Square Thin Steel Plates with Eccentric Circular Holes when Subjected to Biaxial Loads”, Funded by Research Affairs, UAE University, 2006 (amount of 17,500 DHs)
- A one-year grant for research entitled “Effect of Web Perforations on the Elastic Buckling of I-Shaped Columns under Axial Loads”, Funded by Research Affairs, UAE University, 2007, (amount of 20,000 DHs)
- A one-year grant for research entitled “Effect of Three-dimensional Local Imperfection on Stability of Circular Liners”, Funded by Research Affairs, UAE University, 2008, (amount of 20,000 DHs)
- A one-year grant for research entitled “Elastic Local Buckling of Thin Perforated Webs of Cellular Columns under Axial Loads”, Funded by Research Affairs, UAE University, 2009, (amount of 30,000 DHs)
- Co-investigator in a one-year grant for research entitled “Identification of the Influence of the Moment-Gradient Factor on the Moment Carrying Capacity of Cellular Beams”, Funded by Research Affairs, UAE University, 2009, (amount of 30,000 DHs)
- Co-investigator in a one-year grant for research entitled “Numerical Investigation of the Static Behaviour of Integrated Steel-CFRP Laminates Beam Systems”, Funded by Research Affairs, UAE University, 2010, (amount of 20,000 DHs)
- A two-year grant for research entitled “Elasto-Plastic Local Buckling of Cellular Steel Members under Linearly Varying End Loads”, Funded by Emirates Foundation for Philanthropy, Science and Technology Program, UAE, November 2010 (amount: 100,000 AED)
- Co-investigator in a one-year grant for research entitled “Development of Design Guidelines for Instability-Induced Failures of Perforated I-Shaped Columns”, Funded by Structural Resources, N.J., U.S.A., 2010, (amount: U.S.\$ 18,000, Project duration June 2010 – June 2011)
- A one-year grant for research entitled “On the Elasto-Plastic Stability of Circular Liners with Local Wavy Imperfection”, Funded by Faculty of Engineering, UAE University, 2011, (amount of 20,000 DHs)
- Principle investigator in a continuation (the PI left the UAE University) of the grant entitled “Application Study of Sulfur Concrete Technology in the UAE, funded by Japan Cooperation Center, Petroleum (JCCP), Japan (original amount: U.S. \$ 5,600,000, started November 2011.
- Principle investigator in a one-year grant for research entitled “Analytical Solution for Deflection of Steel Beams Rehabilitated by Bonding or Mechanically-Fasting Fiber-Reinforced Plastics Strips”, Funded by Research Affairs, UAE University, 2012, (amount of AED 20,000)
- Co-investigator in a one-year grant for research entitled “Non-Linear Behavior of FRP-to-Steel Interface: Numerical Study”, Funded by College of Engineering, UAE University, 2012, (amount of AED 20,000)
- A two-year NRF (3rd Round) grant for research entitled “Preparation and Testing of Modified Sulfur Concrete for use in Sewer Pipelines”, Funded by UAE University, 2013, (amount of AED 280,000)
- Co-investigator in a two-year grant for research entitled “Experimental Investigation of the Response and Interfacial Behavior of Mechanically Fastened Composite-Metal Joints”, UAE University, September 2013 (amount of AED 120,000)

LIST OF PUBLICATIONS

JOURNAL PAPERS:

- **El-Sawy, K.** and Moore, I. D., “A Two-Level Iterative FEM Technique for Rigorous Solution of Non-Linear Interaction Problems Under Large Deformations”, Journal of Computers and Structures, Vol. 61, No. 1, pp.43-54, 1996.
- Moore, I. D. and **El-Sawy, K.**, “Buckling Strength of Polymer Liners Used in Sewer Rehabilitation”, Transportation Research Record No. 1541, pp. 127-132. 1996.
- **El-Sawy, K.** and Moore, I. D., “Stability of Loosely Fitted Liners Used to Rehabilitate Rigid Pipes”, ASCE, Journal of Structural Engineering, Vol. 124, No. 11, pp1350-1357, 1998.
- **El-Sawy, K.**, “Inelastic Stability of Tightly Fitted Cylindrical Liners Subjected to External Uniform Pressure”, Journal of Thin-Walled Structures, Vol. 39, No. 9, pp. 731-744, 2001.
- **El-Sawy, K.** and Nazmy, A., “Effect of Aspect Ratio on the Elastic Buckling of Uniaxially Loaded Plates with Eccentric Holes”, Journal of Thin-Walled Structures, Vol. 39, No. 12, pp.983-998, 2001.
- **El-Sawy, K.**, “Inelastic Stability of Loosely Fitted Cylindrical Liners”, Journal of Structural Engineering, Vol. 128, No. 7, pp. 934-941, 2002.
- **El-Sawy, K.**, “Elastic Buckling of Loosely Fitted Cylindrical Liners: Evaluation of Existing Solutions and Proposal for New Formulae”, Emirates Journal for Engineering Research, Vol. 7, No. 1, pp. 75-85, 2002.
- **El-Sawy, K.**, “Three-Dimensional Modeling of Soil-Steel Culverts under the Effect of Truckloads”, Journal of Thin-Walled Structures, Vol. 41, No. 8, pp.747-768, 2003.
- **El-Sawy, K.** and Elshafei, A., “Neural Network for the Estimation of the Inelastic Buckling Pressure of Loosely Fitted Liners Used for Rigid Pipe Rehabilitation”, Journal of Thin-Walled Structures, Vol. 41, No. 8, pp.785-800, 2003.
- **El-Sawy, K.**, Nazmy, A. & Martini, M., “Elasto-Plastic Buckling of Perforated Plates under Uniaxial Compression”, Journal of Thin-Walled Structures Vol. 42, pp. 1083–1101, 2004.
- **El-Sawy, K.** & Martini, M., “Elastic stability of bi-axially loaded rectangular plates with a single circular hole”, Journal of Thin-Walled Structures 45 (1), pp. 122-133, 2007.
- Hussein, M.I., Al-Muhtaseb, S., **El-Sawy, K.**, Haggag, M. & Shahin, T., “Evaluation of IT-Based Active Learning Project at the UAE University: College of Engineering Case Study”, Emirates Journal of Engineering Research, Issue 1, Volume 12, April 2007.
- Sweedan, A.M.I., **El-Sawy, K.M.**, and Martini, M.I. “Identification of the Buckling Capacity of Axially Loaded Cellular Columns”, Journal of Thin-Walled Structures, Vol. 47, No. 4, pp. 442-454, 2009.
- **El-Sawy, K. M.**, Sweedan, A.M.I., and Martini, M.I. “Major-axis Elastic Buckling of Axially Loaded Castellated Steel Columns”, Journal of Thin-Walled Structures, Vol. 47, No. 11, pp. 1295-1304, 2009.
- **El-Sawy, K.M.** and Sweedan, A.M.I. “Innovative use of Computer Tools in Teaching Structural Engineering Applications”, Australasian Journal of Engineering Education, Institution of Engineers Australia, Vol. 16, No. 1, 2010.
- Sweedan, A.M.I. and **El-Sawy, K.M.** “Characterization of Elastic Buckling of Cylindrical Liners using Finite Element Approach”, Alhosn University Journal of Engineering and Applied Sciences, AHUJEAS, Vol 3, No 1, pp. 17-30, July 2010.

- **El-Sawy, K.M.** and Arwani, A.H. “Optimized 3D Mesh for the Finite Element Analysis of Laminated Composite Plate with Central Hole, Alhosn University Journal of Engineering and Applied Sciences (AHUJEAS), Vol. 3, No.1, pp. 31-49, July 2010.
- **El-Sawy, K. M.** and Martini, M.I. “Stability of Biaxially Loaded Square Plates with Single Central Holes”, Ships and Offshore Structures, Vol. 5, No. 4, pp. 283-293, Dec. 2010.
- **El-Sawy, K.M.** and Sweedan, A.M.I., “Elastic stability analysis of loosely fitted thin liners – A proposed simplified procedure and evaluation of existing solutions”, Journal of Tunneling and Underground Space Technology, Vol. 25, No. 6, pp 689-701, Dec. 2010.
- **El-Sawy, K.M.** and Sweedan, A.M.I., “Effect of Local Wavy Imperfections on the Elastic Stability of Cylindrical Liners Subjected to External Uniform Pressure”, Journal of Tunneling and Underground Space Technology, Vol. 25, No. 6, pp 702-713, Dec. 2010.
- Sweedan, A.M.I. & **El-Sawy, K.M.** “Elastic local buckling of perforated webs of steel cellular beam-column elements”, Journal of Constructional Steel Research, Vol. 67, pp 1115–1127, 2011.
- **El-Sawy, K.M.**, “Inelastic stability of liners of cylindrical conduits with local imperfection under external pressure”, Journal of Tunneling and Underground Space Technology, Vol. 33, pp 98-110, Jan. 2013.
- Sweedan, A.M.I., **El-Sawy, K.M.**, and Alhadid, M.M.A., “Interfacial behavior of mechanically anchored FRP laminates for strengthening steel beams”, Journal of Constructional Steel Research, Vol. 80, pp. 332-345, Jan. 2013.
- **KM El-Sawy**, AMI Sweedan, MI Martini, “Moment gradient factor of cellular steel beams under inelastic flexure”, Journal of Constructional Steel Research, Vol. 98, pp. 20-34, July 2014.
- Sweedan, A.M.I., Rogob, H.N. and **El-Sawy, K.M.**, “Mechanically-Fastened Hybrid Composites for Flexural Strengthening of Steel Beams”, Journal of Thin-Walled Structures, Vol. 85, pp. 250–261, December 2014.

CONFERENCE PAPERS:

- **El-Sawy, K.** and Novak, M., “Effect of Soil Replacement on the Response of Shallow Foundations under Harmonic Loads”, Proceedings of the 45th Canadian Geotechnical Conference, University of Toronto, pp. 63/1 to 63/4, October 26-28, 1992.
- Corless, R. and **El-Sawy, K.**, “Solution of Banded Linear System of Equations in MAPLE Using LU Factorization”, Maple V: Mathematics and Its Application, Proceedings of the Maple Summer Workshop and Symposium, Rensselaer Polytechnic Institute, Troy, New York, August 9-13, 1994, pp. 219-227.
- Moore, I. D. and **El-Sawy, K.**, “Buckling Strength of Polymer Liners Used in Sewer Rehabilitation”, the 75th Annual Meeting, Transportation Research Board, Washington, D.C., Preprint Paper No. 96-0813, January 1996.
- **El-Sawy, K.** and Moore, I. D., “Parametric Study for Buckling of Liners: Effect of Liner Geometry and Imperfections”, Proceedings of the International Conference: Trenchless Pipeline Projects Practical Applications, ASCE, Boston, Massachusetts, pp. 416-423, June 8-11, 1997.
- **El-Sawy, K.**, Moore, I. D. and Taleb, B., “Analysis of Stability Limit States for Long Span Culverts”, Proc. 50th Canadian Geotechnical Conference, Ottawa, pp. 178-184, 1997.
- **El-Sawy, K.**, “New Design Method of Polymer Liners Subjected to External Pressure for Rigid Pipe Rehabilitation”, The First Geotechnical, Geoenvironmental Engineering and Management in Arid Lands, UAEU, 4-7 November 2000.

- **El-Sawy, K.** and Elshafei, A., “A New Design Method for Loosely Fitted Liners using Neural Networks”, 2nd Canadian Specialty Conference on Computer Applications in Geotechnique, Winnipeg, Canada, April 28-30, 2002.
- Sabouni, R.A.; Sabouni, A.R.; **El-Sawy, K.M.**, “Development of structural design tools for practical CAD applications”, Proceedings - 33rd Canadian Society for Civil Engineering Annual Conference, pp. GC-127-1 to GC-127-10, 2005.
- **El-Sawy, K.M.**, Sweedan, A.M.I. “Teaching Structural and Stress Analysis Using Excel and Visual Basic for Application”, Proceedings of the International Conference on Education and New Learning technologies: EDULEARN09, Barcelona, Spain, 6–8 June 2009.
- Ashur, S., **El-Sawy, K.** and Zanelidin E., “A Framework for Substantial ABET Accreditation of an International Civil Engineering Program”, ASEE 115th Annual Conference & Exposition, Pittsburgh, USA, June 22 – 25, 2008.
- **El-Sawy, K.** and Martini, M., “Elasto-Plastic Stability of Square Plates with a Circular Cutout under Biaxial Loading”, Fifth International Conference on Thin-Walled Structures, Brisbane, Australia, June 2008.
- El-Ariss, B., Sweedan, A.M.I. and **El-Sawy, K.M.** “Proposed Methodology for Assessment of Educational Outcomes of Engineering Courses”, Proceedings of the International Symposium on Engineering Education and Educational Technologies: EEET 2009, Orlando, Florida, U.S.A., 10–13 July 2009.
- Walid Elshorbagy, Mohsen Sherif, Amr Sweedan and **Khaled El-Sawy**, “Evolution of the Assessment of Educational Objectives of the Civil Engineering Program, United Arab Emirates University”, Proceedings of the International Symposium on Engineering Education and Educational Technologies: Orlando, Florida, U.S.A., EEET 2009, 10–13 July 2009.
- Elshorbagy, W., Sweedan, A.M.I., El-Mowafy, A., **El-Sawy, K.M.** and Sherif, M. “Development of the Assessment Process for the Civil Engineering Program of the United Arab Emirates University”, Proceedings of the Symposium on Engineering Education, SEE09, UAE University, Al-Ain, United Arab Emirates, 2009.
- Mohamed Y. E. Selim, **K. El-Sawy**, and Y. Haik, “On The Use of Electronic Academic Advising Tools to Promote Higher Quality Engineering Education”, Proceedings of the Symposium on Engineering Education, SEE09, UAE University, Al-Ain, United Arab Emirates, 2009.
- Biddah, A., **El-Sawy, K.**, Raynor, S., and Sheikhou, T. “Strengthening of Pultruded Glass FRP Section Combined with Concrete Slab Using CFRP Plates”, Thirteenth International Conference on Structural and Geotechnical Engineering, Cairo, Egypt, 27-29 Dec. 2009.
- Sweedan, A.M.I. and **El-Sawy, K.M.**, “Evaluation of the Stability of Locally Imperfect Liners under External Uniform Pressure”, Proceedings of the 20th North American Society for Trenchless Technology (NASTT) Conference, NO-DIG 2010, Paper F-4-01, Chicago, Illinois, U.S.A., 2–7 May 2010.
- **El-Sawy, K.M.**, Sweedan, A.M.I. “On the Elastic Local Buckling of the Webs of Steel Cellular Columns”, The Sixth International Structural Engineering and Construction Conference, ISEC-6, Zürich, June 21–26, 2011.
- **El-Sawy, K.M.**, “Inelastic stability of steel liners with local imperfections”, ASEA-SEC1, 1st Australasia and South East Asia Conference in Structural Engineering and Construction, Research and Development and Practice in Structural Engineering and Construction, ASEA-SEC-1, Paper I-6-0105, Perth, Australia, Nov. 28 - Dec. 2, 2012.
- Alhadid, M.M.A., Sweedan, A.M.I. and **El-Sawy, K.M.**, “A simplified load-slip model for composite CFRP-GFRP laminates bolted to steel plates“, ASEA-SEC1, 1st Australasia and South East Asia Conference in Structural Engineering and Construction, Research and Development and Practice in

Structural Engineering and Construction, ASEA-SEC-1, Paper St-44-0135, Perth, Australia, Nov. 28 - Dec. 2, 2012.

- Mwafy, A.M., Hussain, N. and **El-Sawy, K.M.**, “Seismic Assessment and Cost-Effectiveness of High-Rise Buildings with Increasing Concrete Strengths”, Proceedings of the 15th World Conference on Earthquake Engineering, September 24 to 28, Lisbon, Portugal, 2012.
- Alhadid, M.M.A., Sweedan, A.M.I, and **El-Sawy, K.M.**, “Testing of Steel Beams Externally reinforced using Anchored Hybrid FRP Composites”, 2nd Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures, Istanbul, Sept. 9-11, 2013.
- Mwafy, A.M., Hussain, N. and **El-Sawy, K.**, “Impact of high-strength material on seismic design response factors and economics of multi-story buildings”, 2nd Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Structures, Istanbul, Sept. 9-11, 2013

OTHER PUBLICATIONS:

- **El-Sawy, K. M.**, “Dynamic Response of Shallow Foundations by Direct Boundary Element Method and Finite Element Method”, M.Sc. Thesis, University of Western Ontario, 1992.
- Novak M, Sheta M, El-Hifnawi L, El Marsafawi H, El Naggar H, Ramadan O, **El-Sawy K** (1995) Dyna5 for Windows 95, Geotechnical Research Centre, University of Western Ontario
- **El-Sawy, K.**, “Non-Linear Analysis of Liners for Rigid Pipe Rehabilitation”, Ph.D. Thesis, University of Western Ontario, 1996.
- Tall Buildings: “Architectural and Structural Advances”, Editors: Sabouni, A. & **El-Sawy, K.**, ACI- UAE Chapter, SP071, 2007.
- Mohamed, A.M.O., **El-Sawy, K.**, and Muftah, N., “Proceedings of the 10th Annual UAEU Research Conference”, UAE University Press, 2009.

PRESENTATIONS (No Manuscript):

- **El-Sawy, K.** and Moore, I. D., “Stability Analysis of Metal Culverts in Kettle Creek, Elgin County, Ontario”, presented in the 75th Annual Meeting, Transportation Research Board, Washington, D.C., January 1996.
- **El-Sawy, K.M.**, Elshorbagy, W., “Efficient Development and Administration of Exit Exams for the Engineering Programs”, Presented in the Symposium on Engineering Education, SEE09, UAE University, Al-Ain, United Arab Emirates, 2009.

SUPERVISION OF GRADUATE STUDENTS

- Co-supervisor, “Experimental Investigation and Numerical Modeling of Hybrid Glass/Carbon FRP Section Combined with Concrete Slab”, M.Sc. in Material Sciences, 2007.
- Co-supervisor, “Inelastic Lateral Torsional Buckling of Cellular Steel Beams”, M.Sc. in Civil Engineering, June 2011.
- Co-supervisor, “Structural Performance and Economics of High-rise Buildings under Seismic and Wind Loads”, M.Sc. in Civil Engineering, September 2012.
- Co-supervisor, “Strengthening of Steel Beams Using Mechanically Anchored Carbon Fiber Reinforced Polymers Laminates”, M.Sc. in Civil Engineering, February, 2012.
- Principle supervisor, “Investigation of the Mechanical Behavior of I-Shaped Steel Beams Strengthened by Mechanically-Fastened FRP Laminates”, M.Sc. in Civil Engineering, January 2013.