# MOHAMMED SAKR, Ph, P. Eng.

## EDUCATION

- **Ph.D.**, Geotechnical Engineering, University of Western Ontario, London, Ontario, Canada, (Dec 2003)
  Thesis Title: *Construction and Performance of FRP-Concrete Composite Piles*

- **Master of Engineering Science**, Geotechnical Engineering, University of Western Ontario, London, Ontario, Canada, (December 1999)
  Thesis Title: *Centrifuge Modeling of Tapered Piles in Sand*

- **Bachelor of Engineering Science**, Civil Engineering, Alexandria University, Alexandria, Egypt, (June 1992)

## PROFESSIONAL AFFILIATIONS

- Registered Professional Engineer in Ontario, British Columbia, Manitoba and Alberta
- Deep Foundation Institute (DFI)
- American Society of Civil Engineers
- Canadian Society for Civil Engineering
- Edmonton Society of Geotechnical Engineers
- Canadian Geotechnical Society
- Egyptian Engineers Syndicate

## INDUSTRIAL EXPERIENCE

**Geotechnical Core Service Manager,** Worley Parsons., Edmonton, Alberta, Canada (Feb 2011 – present)

**Senior Geotechnical Manager**, Almita Manufacturing Ltd., Edmonton, Alberta, Canada (March 2009 – Jan 2011)

- Played a key role in growing the company and opening new markets
- Led the research and development department at the company.
- Provided senior mentorship for junior/intermediate geotechnical and civil engineers
- Managed delivery of screw pile projects for several projects such as:
  - ConcoPhilips Surmont 2 Project - Central Plant Facility and wide Field Facilities
  - Imperial Oil Kearl Lake 240 kV Transmission Line, north of Fort McKay, Alberta
  - Enbridge Power Stations in Alberta (Hardisty), Manitoba (Gretna, Glenavon, Glenboro) and Saskatchewan (Milden, Kerrobert, Craik, Rowat)
  - Aroura Transmission Line at Syncrude north of Fort McMurray, Alberta
  - Albian Sand Power Transmission Line north of Fort MaKay, Alberta
  - Suncor 260 kV Power Transmission Line
  - CreeBurn Camp, north of Fort McMurrray, Alberta
- Assisted Imperial Oil in developing specifications for fabrication, design and installations for helical piles.
- Carried out a series of presentations and short courses to educate the engineering community about the development and recent advancement of design and use of screw piles

**Lead Geotechnical Engineer**, Almita Manufacturing Ltd., Edmonton, Alberta, Canada (Feb 2007 - March 2009)

- Managed geotechnical investigations/projects and wrote geotechnical reports for various facilities, structures and developments;
- Designed screw piles for a variety of telecommunication towers, power transmission lines, substations, industrial facilities, oil facilities, residential camps and houses.
- Solved installation problems and assured that installation and pile performance met design criteria

**Project Engineer**, Thurber Engineering Ltd., Edmonton, Alberta, Canada (March 2004 – Feb 2007)

- Performed geotechnical design for several oil facilities and industrial plants.
- Assessed landslides for several sites and analyzed stability of slopes using Geoslope Office.
- Designed geogrid reinforced slopes for several projects
- Performed risk assessment for several sites for Alberta transportation
- Designed several bridge sites and highways
- Estimated the dynamic response of machine foundations for several projects for CNRL
- Prepared a variety of geotechnical reports and foundation recommendations
- Managed geotechnical Investigations for Tank farms such as Keyspan Energy of Edmonton
- Estimated deep foundations performance including evaluating their lateral deflection using Lpile

**Construction Director**, AL-Sagri Group, Riyadh, Saudi Arabia (January 1994 – September 1996)

- Managed and coordinated design and construction of several residential and industrial facilities such as paper production factory, mosque extension in Riyadh, Saudi Arabia
- Ensured construction plans and specifications met building code and municipalities requirements
- Prepared schedules and conducted cost analyses
- Represented company at standard organizations and professional associations (you mentioned in your cover letter pulp and paper and other projects not listed here, which make it questionable)

**Structural Design Engineer,** Consulting Centre, Tanta University, Egypt (July 1992 – December 1993)

- Designed several multi-storey buildings including structural design, construction details and foundation design
  - Involved in planning and coordinating structural design of National Tanta University Hospital (1000 beds on 37800 $m^2$
- Reviewed designs, calculations and cost estimates of construction projects
- Monitored construction work schedules
- Conducted technical analysis of structural projects and compiled soil mechanics investigations
- Investigated deterioration problems of high-rise buildings and developed an efficient rehabilitation system

## RESEARCH EXPERIENCE

**Research and Development Director,** Almita Manufacturing Ltd., Edmonton, Alberta, Canada (Feb. 2007 – Jan 2011)

- Developed short- and long-term research objectives and plans and managed their execution on time
- Prepared research proposals and industrial grant applications for NSERC and IRAP
- Co-supervised PhD students to investigate the performance of helical piles subjected to dynamic loads and investigating the performance of helical piles in warm permafrost

- Developed a software for the design of screw piles in sand and clay and for estimating their axial compression, uplift and lateral capacities
- Managed large pile load test projects in several provinces in Canada, including Manitoba, Saskatchewan, Ontario and Alberta, including:
  - Imperial Oil Kearl 240 kV Transmission Line, north of Fort McKay, Alberta
  - Arnprior Solar Farm Pile Load Testing Program, Ontario
  - Imperial Oil Kearl Lake Helical Pile Load Testing Program
  - Enbridge Pile Load testing Program (Gretna, Milden and Glenavon)
  - Alberco Conforce Stressing Bed Project
- Managed field testing of screw piles for several projects such as Cree Burn Camp, Harditsy, Daven Jackfish site, and Alaska pile load tests
- Led extensive research in deep foundation systems to improve the performance of deep foundations and to provide alterative foundation options
- Presented the results of the research in several conferences and short courses.

## PUBLICATIONS

### Articles Published

Sakr, M. (2010) "Installation and Performance Characteristics of High Capacity Helical Piles in Cohessionless Soils", *Deep Foundation Journal (DFI)*. Accepted for Publication.

Sakr, M. (2009) "Lateral Performance of Two-Section Helical Piles in Soft Soils", Deep Foundation Institute (DFI) Journal. Vol 3, No. 2, November 2009, pp. 37-48.

Sakr, M. (2009) "Axial and Lateral Behaviour of Helical Piles in Oil Sand", *Canadian Geotechnical Journal*. Vol. 46, No. 9, pp. 1046-1061.

Nehdi, M., Sakr, M.and El Naggar, M-H. (2008) "Toe-Driven Tapered FRP-SCC Composite Piles: New High-Performance Technology for Deep Foundations", Geotechnical Testing Journal, ASTM, Volume 31, No. 3.

Sakr, M., El Nagger, M.H., and Nehdi, M. (2007) "Wave Equation Analyses of Tapered FRP-Concrete Piles in Dense Sand". *Soil Dynamics and Earthquake Engineering Journal*, Volume 27, No. 2, pp. 166 - 182.

Nehdi, M., Sakr, M., and El Naggar, M.H. (2006) "From Head to Toe: FRP-SCC Composite Piles Offer New Direction for Deep Foundations". *Concrete International*, American Concrete Institute, Vol. 28, No. 6, pp. 43-47.

Sakr, M., El Nagger, M.H., and Nehdi, M. (2005) "Interface Characteristics and Constructability of Novel FRP/Concrete Hybrid Piles". *ASCE, Journal of Composites for Construction*, Volume 9, No. 3, pp. 274-283.

Sakr, M., El Naggar, M.H., and Nehdi, M. (2005) "Lateral Behaviour of FRP-SCC Composite Tapered Piles in Dense Sand". *Journal of Geotechnical Engineering*, Institution of Civil Engineers, London, Vol. 158, No. GE3, 145-157.

Sakr, M., El Naggar, M.H., and Nehdi, M. (2005) "Uplift Performance of FRP Tapered Piles in Dense Sand". *IJPMG-International Journal of Physical Modeling in Geotechnics.* Vol. 5, No. 2 (June 2005, pp.1-16.

Sakr, M., El Nagger, M.H., and Nehdi, M. (2004) "Toe Driving Technique for Pipe Piles Installation and Performance of FRP Pile Segments". *Canadian Geotechnical Journal*. Vol. 41, No. 2, pp. 313-325.

Sakr, M., El Naggar, M.H., and Nehdi, M. (2004) "Load Transfer of Fibre-Reinforced Polymer (FRP) Composite Tapered Piles in Dense Sand". *Canadian Geotechnical Journal*. Vol. 41, No. 1, pp. 70-88.

Sakr, M., and El Naggar, M.H. (2003) "Centrifuge Modeling of Tapered Piles in Sand". *Geotechnical Testing Journal*, ASTM, Vol. 26, No. 1, pp. 22-35.

El Naggar, M.H., and Sakr, M. (2002) "Cyclic Response of Axially Loaded Tapered Piles". *IJPMG-International Journal of Physical Modeling in Geotechnics*, Vol. 2, No. 4, pp.1-12.

El Naggar, M.H., and Sakr, M. (2000) "Evaluation of Axial Performance of Tapered Piles from Centrifuge Tests". *Canadian Geotechnical Journal*. Vol. 37, No. 6, pp. 1295-1308.

**Other Refereed Contributions**

Sakr, M. (2010) "Lateral Resistance of High Capacity Helical Piles – Case Study", 63rd Canadian geotechnical and 6th Canadian Permafrost Conference, Calgary, Alberta, September 12 – 16, 2010, pp. 402 -412.

Elkasabgy, M., El Nagger, M.H. and Sakr, M. (2010) "Full-Scale Vertical and Horizontal Dynamic Testing of a Double Helix Screw Pile", 63rd Canadian geotechnical and 6th Canadian Permafrost Conference, Calgary, Alberta, September 12 – 16, 2010, pp. 352 - 359.

Sakr, M. (2010) "High Capacity Helical Piles – A New Dimension for Bridge Foundations", 8th International Conference on Short and Medium Span Bridges, Niagara Falls, Canada, Aug 3 -6, 2010, pp. 142-1 - 142-10.

Sakr, M., Mitchells R., and Kenzie J. (2009) "Pile Load Testing of Helical Piles and Driven Steel Pipes in Anchorage, Alaska", 34th Annual Deep Foundation Conference, DFI, Kansas City, MO, October 20-23, 2009.

Sakr, M. (2009) "Lateral Resistance Of Helical Monopole Bases", 62nd Canadian geotechnical and 10th Joint CGS/ IAH-CNC Groundwater Specialty Conference, Halifax, Nova Scotia, September 21 – 24, 2009, pp 260 - 267.

Sakr, M. (2009) "Lateral Resistance of Helical Piles in Oil Sands" In Proceedings of the 2009 International Foundation Congress and Equipment Expo, Orlando, Florida, ASCE, Geotechnical Special Publication No. 185, pp. 464-471.

Sakr, M. (2008) "Performance of Helical Piles in Oil Sand", 61st Canadian geotechnical Conference and 9th Joint CNL Groundwater Conference, Edmonton, Alberta, September 21 – 24, 2008, pp.55- 62.

Sakr, M. (2008) "Helical Piles for Power Transmission Lines: Case Study in Northern Manitoba, Canada", Ninth International Conference on Permafrost, the University of Alaska, Fairbanks, June 29 – July 3, 2008, Extended Abstracts, pp. 261-262.

Sakr, M., and El Nagger, M.H. (2006) "Centrifuge Modelling of Uplift Behaviour of Tapered Piles". 59th Canadian Geotechnical Conference, Vancouver, British Colimbia, Canada, October 1-4, 2006, pp 73- 80.

Sakr, M., Tweedie, R., and Park, C. (2005) "Slope Stability of Anthony Henday Drive-Whitemud Creek Crossing". In Proceedings of K.Y. Lo Symposium, London, Ontario, Canada, July 7-8, 2005, pp. 274-284.

Sakr, M., El Naggar, M.H., and Nehdi, M. (2003) "Interface and Performance Characterisitcs of FRP/Concrete Piles". 56th Canadian Geotechnical Conference, Winnipeg, Manitoba, Canada, September 29-October 1, 2003.

El Naggar, M.H., Sakr, M., and Nehdi, M. (2003) "Toe Driving for Efficient Installation of Thin-Walled Piles". 56th Canadian Geotechnical Conference, Winnipeg, Manitoba, Canada, September 29-October 1, 2003.

Sakr, M., Nehdi, M., and El Naggar, H. (2003) "Composite FRP-Concrete Piles for Deep Foundation Applications". *ICPCM – A New Era of Building*, Cairo, Egypt., Feb. 18-20, 2003.

Sakr, M., Nehdi, M., and El Naggar, H. (2002) "Construction and Performance of Self-Consolidating Concrete Piles Confined in FRP Tubes". *Chicago*, USA., November. 18-20, 2002.

Allouche, E.N., Devaux, M., Sakr, M. and El Naggar, M. H. (2001) "Development and Testing of a Soil Classification Chart for a Miniature Cone Penetrometer". *Underground Infrastructure Research Conference*, Kitcheners, On., June 10 – 13, 2001, pp. 155-160.

Sakr, M., and El Naggar, M. H. (2000). "Design Charts for Tapered Piles". *53rd Canadian Geotechnical Conference*, Montreal, Vol. 2, pp. 967-974.

El Naggar, M. H. and Sakr, M. (1999). "Centrifuge Testing of Tapered Piles, Axial Behaviour". *52nd Canadian Geotechnical Conference*, Regina, pp. 143-140.