## **Curriculum Vitae**

Name	: Amr Abdel Salam Shaat
Date of Birth	: November 13 <sup>th</sup> , 1973
Place of Birth	: Cairo - Egypt
Nationality	: Egyptian
Position	: Vice Dean for Postgraduate Studies
	and Research
	Faculty of Engineering
	Ain Shams University
E-mail	: <u>amr.shaat@eng.asu.edu.eg</u>
	<u>amrshaat@gmail.com</u>
Telephone	: +2012 8652 6644

## 1- Personal Information



## 2- Education

- 1. Ph.D. (2007) "Structural Behaviour of Steel Columns and Steel-Concrete Composite Girders Retrofitted using CFRP." Civil Engineering, Queen's University, Kingston, Ontario, Canada.
- 2. M.Sc. (2002) "Joint Strength of Cold-Formed Steel Trusses" Department of Structural Engineering, Ain Shams University, Cairo, Egypt.
- 3. B.Sc. (1995), Department of Structural Engineering, Ain Shams University, Cairo, Egypt. Honour degree.

## 3- Academic Experience (Details: Appendix I)

- 1. Vice Dean for Postgraduate Studies and Research Faculty of Engineering Ain Shams University, Cairo, Egypt. (Feb. 2021 ~ present).
- 2. Professor (Steel Structures and Bridges) Ain Shams University, Structural Engineering Department, Cairo, Egypt. (Jan. 2008 ~ present).
- 3. Adjunct Professor German University in Cairo (GUC), Civil Engineering Department, New Cairo, Egypt. (Sep. 2012 ~ Jun. 2017).
- 4. Post-Doctoral Fellow Queen's University, Department of Civil Engineering, Kingston, Ontario, Canada. (Jul. 2009 ~ Oct. 2009).
- 5. Teaching and Research Assistant Queen's University, Department of Civil Engineering, Kingston, Ontario, Canada. (Jan. 2003 ~ Nov. 2007).
- 6. Teaching Assistant Ain Shams University, Structural Engineering Department, Cairo, Egypt. (Sep. 1998 ~ Dec. 2002).

## 4- Consulting Experience (Details: Appendix II)

- 1. Consultant Engineer. (since 2014).
- 2. Senior Structural Engineer and Group Leader, Structures Department, Section of Steel Structures in *Dar Al-Handasah Shair and Partners* (Mar. 2008 ~ Aug. 2012).
- 3. Design Engineer in Alpha Metal for Steel Construction, Cairo, Egypt. (Mar. 1997 ~ Nov. 1997, Full Time).
- 4. Design Engineer in *Hassan Engineering Consulting Office, Cairo, Egypt,* (Aug. 1995 ~ Feb.1996, Full time, and Dec. 1997 ~ Oct.1999, Part Time).

## 5- Affiliations

- 1. Deputy Minister of Transport *Egyptian Ministry of Transport*. (Feb. 2017 ~ Mar. 2019).
- 2. Acting Chairman for the *National Authority for Tunnels*, NAT. (Sep. 2018 Dec. 2018).
- 3. Member of the International Universities Ranking Assembly Ain Shams University (May 2021 ~ present).
- 4. Board Member for the Integrated Urbanism & Sustainable Design Program, Ain Shams University. (Feb. 2021 present).
- 5. Member of the General Assembly of *Cairo Metro Company for Operation and Maintenance*. (Dec. 2017 ~ Mar. 2019).
- 6. Board Member for the Egyptian National Railways, ENR. (Sep. 2017 Mar. 2019).
- 7. Board Member for the *Holding Company for Roads and Bridges*. (Jun. 2018 Mar. 2019).
- 8. Member of the Egyptian Code Committee for the design of steel structures (2019).
- 9. Member of the Egyptian *Code Committee for the Repair and Strengthening of Steel Structures* (2016).
- 10. Consultant Engineer at *the Egyptian Engineering Syndicate* Egypt (From 2014 Certificate no. 6412/1).
- 11. Member of the Society of Engineers UAE. (From 2011- membership no.: 22929).
- 12. Certified Professional Engineer for the design of high rise buildings (unlimited licence) at Dubai municipality UAE. (From 2011- Licence no.: 122536).
- 13. Member of *the ESE Egyptian Society of Engineers (Civil Engineering Chapter) -* Egypt. (From 2008).
- 14. Member of the CSCE Canadian Society for Civil Engineering Canada. (2004-2008).
- 15. Member of the Egyptian Engineering Syndicate Egypt (From 1995).

## 6- Recognition & Awards

- 1. **Ahmed Moharam Award** in Structural Engineering from the Academy of Scientific Research and Technology (2019).
- 2. Listed Biographical Profile in Marquis Who's Who in the World, 33<sup>rd</sup> Edition (2016).
- 3. NSERC-Industrial R&D Fellowship (IRDF) (2008).
- 4. R.S. McLaughlin Fellowship, Queens University (2005 ~ 2007).
- 5. Queen's Graduate Award (2002 ~ 2006).
- 6. **Travel Award**, Queens University (2004 ~ 2006).
- 7. Excellence Award for Undergraduate Students from the Egyptian Ministry of Higher Education (1990 ~ 1994).

## 7- Publications

Books (Co-Editor)	2
Journal Publications	22
Keynote and Conference Publications	25
Total Publications	49
Invited Talks/ Keynote Lectures/Short Courses	23

* Publication no. 23 has received the highest citation in Canadian Journal of Civil Engineering (February 2014)	the history of	Appendix III
h-index (Google Scholar) based on 1079 citations	15	Appendix III
h-index (Scopus) based on 541 citations	10	Appendix III

## Books:

- 1. Elhosseiny, O., Shaat, A., Sabry, H., Kamel, D., Said, N. and Al (2023) "Smart Cities: Vision for the Future"
- 2. Abdelrahman, A. Shaat, A and El-Aghoury, I (2015) "Sustainable Infrastructure: From Research to Practice", ISBN 978-977-237-407-6. 309 pp.
- 3. Hosny, A., Abdelrahman, A., Shaat, A. and Youssef, T. (2014) "Sustainable Structures and Smart Materials". 94 pp.

## **Refereed Journal Publications:**

- 4. Shaat, A. and Graciano, C. and Kurtoglu, A. (October 2022) "Machine learning prediction model for the axial strength of longitudinal branch plate-to-CHS T-connections" submitted for possible publications in Ain Shams Engineering Journal (ASEJ-D-22-01575).
- 5. Abdallah, E., El Aghoury, I. M., Ibrahim, S. and Shaat, A. (2023) "Numerical investigation of branch plate-to-CHS connection under eccentric shear loading" accepted for publications in Ain Shams Engineering Journal.
- 6. Shaat, A., Ibrahim, A., Matloub, A. and Dessouki, A. (2022) "Effect of Web Stiffeners on the Lateral Distorsional Buckling of Channel Section with Hollow Flanges" Ain Shams Engineering Journal, V. 13: 101517.
- Kamar, A., Lasheen, M., Shaat, A., Zaher, A. and Khalil, A. (2021) "Factors Affecting Slip and Stress Distribution of Concrete Slabs in Composite Beams" Engineering Structures Journal, V. 245(15):112880.
- 8. Zapata, L. M., El Aghoury, I. M., Shaat, A. and Graciano, C. (2019) "Plastic collapse of longitudinal T-type branch plate-to-CHS connections under compression" Journal of Thin-Walled Structures V. 141: 73-84.
- Khalifa, M., Shaat, A. and Ibrahim, S. (2019) "Optimum Concrete Filling Ratio for Partially Filled Noncompact Steel Tubes" Journal of Thin-Walled Structures. V. 134: 159-173.
- Lasheen, M., Shaat, A. and Khalil, A. (2018) "Numerical Evaluation for the Effective Slab Width of Steel-Concrete Composite Beams" Journal of Constructional Steel Research V. 148: 124-137.
- 11. Sayed-Ahmed, E., Shaat, A. and Abdallah, E. (2018) "CFRP-Strengthened HSS Columns Subject to Eccentric Loading" Journal of Composites for Construction, (ASCE), 22(4): 1-14.
- 12. Attiah, W., Shaat, A. and Sayed-Ahmed, E. (2017) "Strengthening of Eccentrically Loaded HSS Columns using CFRP Plates" Al-Azhar University-Civil Engineering Journal.
- 13. Iskander, M., Shaat, A., Sayed-Ahmed, E. and Soliman, I. (2017) "Strengthening CHS T-Joints subjected to Brace Axial Compression using Through-Bolts" Journal of Constructional Steel Research V. 128: 555-566.

- Lasheen, M., Shaat, A. and Khalil, A. (2016) "Behaviour of Lightweight Concrete Slabs Acting Compositely with Steel I-Sections" Journal of Construction and Building Materials V. 124: 967-981.
- Shaat, A. (2014) "Numerical study and design of longitudinal branch plate-tocircular hollow section T-joints" Al-Azhar University- Civil Engineering Journal V. 36(1): 307-320.
- Salem, A., Shaat, A. and Soliman A. (2014) "Behavior of Four-Bolt Extended End-Plate Connection" Al-Azhar University- Civil Engineering Journal V. 36(1): 375-391.
- Aguilera, J., Shaat, A. and Fam, A. (2012) "Strengthening T-Joints of Rectangular Hollow Steel Sections against Web Buckling under Brace Axial Compression using Through-Wall Bolts" Journal of Thin-Walled Structures V. 56(7): 71-78.
- Fam, A., Shaat, A., MacDougall, C. and Chidiac, S. E. (2010) "Out-of-Plane Bending of Masonry Walls with Near-Surface Mounted and Externally Bonded Reinforcement" Australian Journal of Structural Engineering (AJSE), 11(2):141-153.
- Fam, A., MacDougall, C. and Shaat, A. (2009) "Upgrading Steel-Concrete Composite Girders and Repair of Damaged Steel Beams using Bonded CFRP Laminates." Journal of Thin-Walled Structures (Special Issue – FRP Strengthened Metallic Structures) V. 47(10): 1122-1135.
- 20. Shaat, A. and Fam, A. (2009) "Slender Steel Columns Strengthened using High Modulus CFRP Plates for Overall Buckling Control." Journal of Composites for Construction, ASCE, V. 13(1): 2-12.
- 21. Shaat, A. and Fam, A. (2008) "Repair of Cracked Steel Girders Connected to Concrete Slabs using Carbon Fiber Reinforced Polymer Sheets." Journal of Composites for Construction, ASCE, V. 12(6): 650-659.
- 22. Shaat, A. and Fam, A. (2007) "Finite Element Analysis of Slender HSS Columns Strengthened with High Modulus Composites." Journal of Steel & Composite Structures. V. 7(1): 19-34.
- 23. Shaat, A. and Fam, A. (2007) "Fiber-Element Model for Slender HSS Columns Retrofitted with Bonded High Modulus Composites." Journal of Structural Engineering, ASCE, V. 133(1): 85-95.
- 24. \* Shaat, A. and Fam, A. (2006): "Axial Loading Tests on Short and Long Hollow Structural Steel Columns Retrofitted using Carbon Fibre Reinforced Polymers." Canadian Journal of Civil Engineering, (Special Issue on Steel Research), V. 33(4): 458-470.
- 25. Hassan, K., El Aghoury, M. A., Hassan, S. and Shaat, A. (2004): "Behaviour of Strengthened K-Joints in Cold-Formed Steel Trusses." Scientific Bulletin of Ain Shams University, Faculty of Engineering, V. 39(4): 223-250.

## **Refereed Conference Publications:**

- Hassan, A., Hanafy, T. Shaat, A. (2023) "CHS Column Joints in Modern Membrane Construction" International Conference on Smart Cities ICSC2023, Feb. 27<sup>th</sup> – March 1<sup>st</sup>, 2023, Cairo, Egypt.
- Adel, A., Lasheen, M., Shaat A. and Khalil, A. (2023) "Design optimization of steel-concrete box girder bridges" International Conference on Smart Cities ICSC2023, Feb. 27<sup>th</sup> – March 1<sup>st</sup>, 2023, Cairo, Egypt.
- 28. Khalifa, M., Shaat, A. and Ibrahim, S. (2018) "CHS Steel Tubes Partially Filled with Concrete under Different Loading Patterns" 15th International Conference

on Structural and Geotechnical Engineering ICSGE15, December 20-22, 2018, Cairo, Egypt: 82-83.

- 29. Attiah, W., Shaat, A. and Sayed-Ahmed, E. (2017) "Numerical Investigation into the Behaviour of HSS Beam-Columns Strengthened using CFRP Plates" 16<sup>th</sup> International Symposium on Tubular Structures (ISTS 16), Dec. 4-6, 2017, Melbourne, Australia.
- Abdallah, E., Shaat, A. and Sayed-Ahmed, E. (2016) "CFRP-Strengthening of Eccentrically Loaded HSS Steel Columns" The Second International Conference on Infrastructure Management, Assessment and Rehabilitation Techniques (ICIMART'16), Sharja, UAE, March 8-10, 2016.
- 31. Lasheen, M., Shaat, A., Khalil, A. (2016) "Efficiency of using Lightweight Concrete Slabs Steel-Concrete Composite Beams" The XVI International Scientific Conference (VSU'2016), Sofia, Bulgaria, June 9-10, 2016: 181-186.
- 32. Shaat, A., Fam, A., Abdallah, E. and Sayed-Ahmed, E. (2015) "Experimental Testing of CFRP-Retrofitted Steel Girders and Columns" The 14th International Conference on Structural and Geotechnical Engineering ICSGE14, December 20-22, 2015, Cairo, Egypt: 46-55.
- 33. Iskander, M., Shaat, A., Sayed-Ahmed, E. and Soliman, I. (2015) "Experimental Investigation into Circular Hollow Section T-Joints Strengthened using Through-Bolts" 14th International Conference on Structural and Geotechnical Engineering ICSGE14, December 20-22, 2015, Cairo, Egypt.
- 34. Mohamed M., Shaat A. and Sayed-Ahmed E. (2015) "Through-bolts to Control Ovalization of CHS T-joints under Brace Compressive Loads" 15th International Symposium on Tubular Structures (ISTS 15), May 27-29, 2015, Rio de Janeiro, Brazil: 497-504.
- 35. Shaat, A. (2014). "Design of CFRP–Strengthened Steel Columns in Accordance with the Egyptian Codes of Practice" International Workshop on Advanced Composites for Engineering Applications Sustainable Structures and Smart Materials, German University in Cairo, Egypt, May 5-6, 2014: 78-79.
- Mohamed, M., Shaat, A., Sayed-Ahmed, E. (2013) "Finite Element Modelling of CHS T-Joints Strengthened using Through-bolts" The Fifth International Conference on Structural Engineering, Mechanics and Computation. September 2-4, Cape Town, South Africa: 1335-1340.
- 37. Shaat, A. (2013) "Axial Capacity of Transverse Branch Plate-to-CHS T-Joints" The Fifth International Conference on Structural Engineering, Mechanics and Computation. September 2-4, Cape Town, South Africa: 1365-1370.
- Ibrahim, A., Shaat, A., Matloub, A., Dessouki, A. (2012) "Effect of cross sectional configurations on the bending strength of hollow flange beams" 14th International Symposium on Tubular Structures (ISTS 14), September 15-17, 2012, London, England: 697-703.
- 39. Shaat, A., Aguilera, J. and Fam, A. (2010) "Strengthening T-Joints in Thin-Walled Tubular Structures" 13th International Symposium on Tubular Structures (ISTS 13), December 15-17, 2010, Hong Kong: 109-114.
- 40. Shaat, A. and Fam, A. (2008) "Effect of CFRP Bond Length on Repair of Composite Steel Girders with Cracked Flange" 4th International Conference on FRP Composites in Civil Engineering (CICE 2008), July/ 22-24, 2008, Zurich, Switzerland.
- 41. Shaat, A. and Fam, A. (2008) "Analysis of Steel bridge Girders Repaired using CFRP Sheets" 5th International Conference on FRP Composites in Civil Engineering (MESC5), May 23-25, 2008, Hurghada, Egypt.

- 42. Shaat, A. and Fam, A. (2007) "Control of Overall Buckling of HSS Slender Steel Columns using CFRP Plates" The First Asia-Pacific Conference on FRP in Structures (APFIS 2007). December 12-14, 2007, Hong Kong, China: 993- 998.
- 43. Shaat, A. and Fam, A. (2006) "Effectiveness of Different Composite Materials for Repair of Steel Bridge Girders" 3rd International Conference on FRP composites in Civil Engineering (CICE 2006). December 13-15, 2006, Miami, Florida, USA: 721-724.
- 44. Shaat, A. and Fam, A. (2006) "Numerical Modeling of FRP-Strengthened Long HSS Columns" 11th International Symposium and IIW International Conference on Tubular Structures (ISTS11). August 31- September 2, 2006, Quebec City, Quebec, Canada: 375-381.
- 45. Shaat, A. and Fam, A. (2006) "Rehabilitation of Damaged Steel-Concrete Composite Beams using High Modulus CFRP Sheets" 7th International Conference on Short and Medium Span Bridges. August 23-25, 2006, Montreal, Quebec, Canada. RR-004(1-11).
- 46. Shaat, A., Fahmy, W. S., and Fam, A. (2006) "Modeling of Axially Loaded HSS Slender Steel Columns Strengthened with CFRP sheets." International Conference on Advances in Engineering Structures, Mechanics & Construction. May 14-17, 2006, Waterloo, Ontario, Canada: 227-238.
- 47. Shaat, A. and Fam, A. (2005). "Long HSS Columns Strengthened using CFRP Sheets" Third International Conference on Construction Materials: Performance, Innovations and Structural Implications (ConMat'05), August 22-24, Vancouver, Canada. CD ROM.
- Shaat, A. and Fam, A. (2004): "Strengthening of Short HSS Steel Columns using FRP sheets" 4th International Conference on Advanced Composite Materials in Bridges and Structures. July 20-23, Calgary, Alberta, Canada. CD ROM (ACM-093).
- 49. Shaat, A., Schnerch, D., Fam, A. and Rizkalla S. (2004) "Retrofit of Steel Structures Using Fiber Reinforced Polymers (FRP): State-of-the-Art", Transportation Research Board (TRB) 83rd Annual Meeting, January, Washington, D.C., CD ROM (04-4063).
- 50. Hassan, K., El Aghoury, M. A., Hassan, S. and Shaat, A. (2003) "Ultimate Capacity of Gapped K-Joints Composed of Thin-Walled Members". Proceedings of the Tenth International Colloquium on Structural and Geotechnical Engineering April 22-24, Cairo, Egypt. E03ST53: 1-23.

## **Technical Presentations/Invited Talks:**

- 1. "Research Indicators" Industry/Research Forum, Faculty of Engineering, Ain Shams University, (60 minutes presentation), December 2022.
- 2. "Women in Engineering Education" Empowering Diversity in Science, Global Women's Breakfast 2022, International Union for Pure and Applied Chemistry (IUPAC), (30 minutes presentation), February 2022.
- 3. "Evaluation Criteria for State Awards" Industry/Research Forum, Faculty of Engineering, Ain Shams University, (60 minutes presentation), October 2021.
- 4. "Universities Competition from the Research Point of View" International Conference on Advances In Structural and Geotechnical Engineering (ICASGE'21) (45 minutes keynote lecture), March 2021.
- 5. "International University Ranking with Emphasis on Research Contribution" Research Forum, Faculty of Engineering, Ain Shams University, (60 minutes presentation), December 2020.

- 6. "Impact of Research Publications on International University Ranking" Civil Engineering Annual Conference, Al-Azhar University, (30 minutes presentation), February 2020.
- "Freight Sector of the Egyptian National Railways" Middle East Rail 2019, Dubai, UAE, Feb. 26<sup>th</sup>, 2019 (30 minutes' discussion panel).
- 8. "Underground Metro Projects in Egypt" French African Railway Meeting, Tunis,(90 minutes presentation), Nov. 7<sup>th</sup>, 2018.
- 9. "Egyptian National Railways Infrastructure & Projects" 12<sup>th</sup> International Railway Infrastructure Exhibition "INFRARAIL" London, UK (30 minutes presentation), May. 1<sup>st</sup> to May. 3<sup>rd</sup>, 2018.
- "Infrastructure Projects in Egypt" IRF Middle East & North Africa Regional Congress & Exhibition – Dubai, UAE (30 minutes presentation), Oct. 29<sup>th</sup> to Oct. 31<sup>st</sup>, 2017.
- 11. "Egyptian National Railway (ENR)" (GSRC 2017) Global Smart Rail Conference 2017– Korea (30 minutes presentation), Jun. 10<sup>th</sup> to Jun. 17<sup>th</sup>, 2017.
- "Design of Steel Structures according to the Load and Resistance Factor Design (LRFD) philosophy" Egyptian Society of Engineers – Cairo, Egypt (3 days short course), Oct. 23<sup>th</sup> to Oct. 25<sup>th</sup>, 2016.
- 13. "Steel Bridges: Design, Fabrication and Construction Supervision" Engineering Organization for Armed Forces, January 13-14, 2016, Cairo, Egypt. (2 days short course)
- 14. "Experimental Testing of CFRP-Retrofitted Steel Girders and Columns" The 14th International Conference on Structural and Geotechnical Engineering ICSGE14, December 20-22, 2015, Cairo, Egypt. (45 minutes Keynote Lecture)
- 15. "Important Factors for International Publications" Civil Engineering Seminars German University in Cairo, (60 minutes presentation), June 14<sup>th</sup>, 2015.
- "Design of Steel Structures- Basic" Abu Dhabi Marine Operating Company (ADMA-OPCO), Abu Dhabi, UAE (5 days short course), May 10<sup>th</sup> to May 14<sup>th</sup>, 2015.
- "Recent Updates in Retrofit of Steel Structures using FRP Composite Materials" (30 minutes presentation), Repair and Strengthening Structures using Fiber Reinforced Polymers, Organized by the Egyptian Engineering Syndicate and The Union of Arab Engineers, April 18<sup>th</sup> to April 19<sup>th</sup>, 2015.
- 18. "Design of Steel Structures to Eurocode EC3" First Workshop on The Eurocodes for Building Design, German University in Cairo, (120 minutes presentation), April 6<sup>th</sup>, 2015.
- 19. "Design of Steel Structures using the Load and Resistance Factor Design (LRFD) according to the Egyptian Code of Practice" Egyptian Society of Engineers Cairo, Egypt (3 days short course), Dec. 28<sup>th</sup> to Dec. 30<sup>th</sup>, 2014.
- 20. "Structural Behavior of Hollow Flange Beams" Civil Engineering Seminars German University in Cairo, (60 minutes presentation), October 2012.
- 21. "Retrofit of Steel Structures using FRP Composite Materials" General Authority for Roads, Bridges and Land Transport (GARBLT), Egyptian Ministry of Transportation (Full day session), August, 30<sup>th</sup>, 2012.
- 22. "Innovative Strengthening Techniques for Steel Structures" German University in Cairo, (45 minutes presentation), June 2012.
- 23. "High Rise Buildings Overview of Burj Khalifa Structural System" Faculty of Engineering, Ain Shams University (90 minutes presentation), April 2011.

## 8 – Professional Activities:

## Supervision of Graduate Students (Ph.D. and M.Sc.)

Doctor of Philosophy (Ph.D.) Theses	5
Master of Science (M.Sc.) Theses	16
Total Supervised Theses	21

### Ph.D. Students:

- Ahmed Mohamed Safy (October 2021 On going) "Behavior of continuous Steel Beams Compositely Connected to Reinforced Concrete Slabs with Profiled Steel Sheeting" Ph.D. – Ain Shams University, in collaboration with Prof. Nahla Kamal Hassan and Dr. Mahmoud Ramzy Lasheen.
- 2. Ahmed Hassan Abdalla (March 2021 On going) "Strength of CHS Joints Supporting Tensile Membrane Structures" Ph.D. Ain Shams University, in collaboration with Dr. Tamer Radwan.
- 3. Eid Abdelaziz Ibraheem Abdallah (June 2019 On going) "Branch Plate-to-CHS Joints Subjected to Axial, Moment and Shear Forces" Ph.D. Ain Shams University, in collaboration with Prof. Sherif Ibrahim and Dr. Ihab El-Aghoury.
- 4. Ahmed Kamar Eldawla Elshinawy (August 2017 October 2021) "Effective Width of Reinforced Concrete Slab In Mono-Symmetric Steel-Concrete Composite Beam" Ph.D. Ain Shams University, in collaboration with Prof. Amr Hussein Zaher, Prof. Ayman Hussain Khalil and Dr. Mahmoud Ramzy Lasheen. (*Degree Awarded*)
- Mohamed Ramzy Lasheen (April 2014 March 2017) "Effective Width for Steel– Light Weight Concrete Composite Girders" Ph.D. – Ain Shams University, in collaboration with Prof. Ayman Hussain Khalil. (*Degree Awarded*)

## M.Sc. Students:

- 6. Mohammed Youssef Rabie (November 2022 On going) "Design Optimization of Network Arch Bridges" M.Sc. Ain Shams University, in collaboration with Prof. Amr Abdelrahman and Dr. Eslam Mousa.
- Amr Ahmed Mohammed Youssef (January 2022 On going) "Strengthening of CHS K-joints Subjected to Axial Forces using Through Bolts" M.Sc. – Ain Shams University, in collaboration with Dr. Ali Mohammed Hammad.
- Ahmed Adel Mohamed (November 2021 On going) "Effective Slab Width in Composite Steel Box Girders" M.Sc. – Ain Shams University, in collaboration with Prof. Ayman Hussain Khalil and Dr. Mahmoud Ramzy Lasheen.
- 9. Ahmed Hani Sabri (May 2021 On going) "Finite Element Analysis of T-joints strengthening using through bolts" M.Sc. German University in Cairo, in collaboration with Dr. Ahmed Maher Eltair.
- Ahmed Tolba Kotaem (November 2016 July 2019) "Modelling the Mechanical Behaviour of Timber Elements Strengthened with FRP" M.Sc. – German University in Cairo, in collaboration with Dr. Tarik Youssef. (*Degree Awarded*)
- Moamen Ahmed Fahmy Emara (October 2015 September 2018) "Behavior and Design of Bolted Circular Hollow Section (CHS) Moment Connections" M.Sc. – Ain Shams University, in collaboration with Prof. Emam Soliman and Prof. Ezzeldin Yazeed Sayed-Ahmed. (*Degree Awarded*)
- Silvia Moawad Guindy (October 2015 September 2018) "Beam-to-rectangular hollow section column connections using long bolts: A numerical investigation" M.Sc. – Ain Shams University, in collaboration with Prof. Emam Soliman and Prof. Ezzeldin Yazeed Sayed-Ahmed. (*Degree Awarded*)

- Hosny Fathallah Alqattan (June 2015 Oct 2018) "Composite Steel Concrete Beams with Corrugated Steel Web" M.Sc. – Ain Shams University, in collaboration with Prof. Ezzeldin Yazeed Sayed-Ahmed and Prof. Ahmed Elserwi. (*Degree Awarded*)
- 14. Momen Ahmed Khalifa Salem (November 2014 January 2018) "Behavior of steel tubular poles partially filled with concrete" M.Sc. Ain Shams University, in collaboration with Dr. Sherif Mohamed Ibrahim. (*Degree Awarded*)
- Eid Abdelaziz Ibraheem Abdallah (February 2013 September 2017) "Effect of Load Eccentricity on the Capacity of CFRP-Strengthened HSS Beam-Columns" M.Sc. – Ain Shams University, in collaboration with Prof. Ezzeldin Yazeed Sayed-Ahmed. (*Degree Awarded*)
- 16. Wael Mohammed Saad Attiah (February 2013 September 2017) "Capacity of Eccentrically Loaded HSS Columns Strengthened with CFRP Laminates" M.Sc. – Ain Shams University, in collaboration with Prof. Ezzeldin Yazeed Sayed-Ahmed. (*Degree Awarded*)
- Mostafa Ahmed Atteya Mohamed (February 2013 September 2017) "Capacity of Axially Loaded HSS Columns Strengthened with CFRP Laminates" M.Sc. – Ain Shams University, in collaboration with Prof. Ezzeldin Yazeed Sayed-Ahmed. (Degree Awarded)
- Mina Aziz Samaan Iskander (March 2014 December 2015) "Strengthening of CHS T-joints Subjected to Brace Axial Compression Forces using Through Bolts" M.Sc. – Ain Shams University, in collaboration with Prof. Emam Soliman and Prof. Ezzeldin Yazeed Sayed-Ahmed. (*Degree Awarded*)
- Mohamed Abdel Hamid Abdel Wahab Mohamed (March 2012 October 2014) "Strengthening of T-Joints Composed of CHS using Through Bolts" M.Sc. – Ain Shams University, in collaboration with Prof. Ezzeldin Yazeed Sayed-Ahmed. (Degree Awarded)
- 20. Ahmed Emam Abdel Moteleb Soliman (April 2010 February 2014) "Behavior of Four-Bolt-Wide Extended End-Plate Connections" M.Sc. Ain Shams University, in collaboration with Prof. Adel Helmy Salem. (*Degree Awarded*)
- 21. Ahmed Mostafa Mohamed Ibrahim (October 2010 August 2013) "Behavior of Hollow Flange C-section Beams" M.Sc. – Ain Shams University, in collaboration with Prof. Abdelrahim Dessouki and Dr. Ahmed Matloub. (*Degree Awarded*)

## Book Reviewer

1. Xiao-Ling Zhao (2013) "FRP-Strengthened Metallic Structures". 289 Pages, ISBN 9780415468213.

## **Editorial Board of Journals**

- 1. Chief Editor Ain Shams Engineering Journal, ASEJ. Egypt. (Since March 2021).
- 2. Associate Editor Ain Shams Engineering Journal, ASEJ. Egypt. (Since May 2016).
- 3. Associate Editor Al-Azhar University, Engineering Sector. Egypt. (Since June 2020).

## Journals Reviewer

- 1. Journal of Bridge Engineering, ASCE. USA.
- 2. Journal of Composites for Construction, ASCE. USA.
- 3. Engineering Structures Journal, United Kingdom.
- 4. Advances in Structural Engineering Journal, United Kingdom.

- 5. Journal of Construction and Building Materials , United Kingdom.
- 6. Journal of Composite Structures, The Netherlands.
- 7. Korean Society of Civil Engineers Journal, South Korea.
- 8. Ain Shams Engineering Journal, Egypt.
- 9. Journal of Engineering and Applied Science, Egypt.
- 10. Fibers, Switzerland.

### Organizing International Conferences/Workshops:

- 1. International Conference on Smart Cities, Egypt, Feb 27<sup>th</sup> March 1<sup>st</sup>, 2023. *Conference General Secretary*.
- 2. 14<sup>th</sup> International Conference on Structural and Geotechnical Engineering, ICSGE-14, Egypt, December 21-22, 2015. *Conference General Secretary*.
- 3. First Workshop on "The Eurocodes for Building Design" German University in Cairo, Egypt, April 5-7, 2015. Member of the Workshop *Organizing Committee*.
- 4. International Workshop "Advanced Composites for Engineering Applications -Sustainable Structures and Smart Materials" German University in Cairo, Egypt, May 5-6, 2014. Member of the Workshop *Organizing and Scientific Committees*.

## Appendix I: (Academic Experience):

2008 -Professor: Ain Shams University, Faculty of Engineering, Structural Engineering<br/>presentDepartment.

#### Instructor / Co-instructor:

- Steel Structures Design (1) CES 331: 3<sup>rd</sup> Year Civil.
- Steel Structures CES 322: 3<sup>rd</sup> Year Architecture.
- Steel Bridges CEI 442: 4<sup>th</sup> Year Civil Water and Hydraulic Structures Major.
- Behavior of Steel Structures (I) CES 552: Diploma in Structural Engineering.
- Behavior of Steel Structures (II) CES 654: MSc. and PhD. in Structural Engineering.
- Stability of Steel Structures (II) CES 650: MSc. and PhD. in Structural Engineering.

#### Supervisor:

- Steel Graduation Project CES 499: 4<sup>th</sup> Year Civil Structural Engineering Major.
- Ph.D. Degree: One student (Degree awarded) + One student (On going).
- Master of Science Degree: Eleven students (Degree awarded) + One Student (On going).

#### Administration Activities:

• Structural Department Delegate for the Quality Assurance Unit (2008)

# 2012 – 2017 Associate Professor: German University in Cairo (GUC), Faculty of Engineering and Material Science, Civil Engineering Department.

#### Instructor:

- Bridge Engineering Design CIS 705: 7<sup>th</sup> Semester- Civil Students Structural Engineering Major.
- Steel Structures Design I CIS 504: 5<sup>th</sup> Semester- Civil Students.
- Steel Structures Design II CIS 601: 6<sup>th</sup> Semester- Civil Students.
- Steel Structures Design III CIS 904: 9<sup>th</sup> Semester- Civil Students -Structural Engineering Major.
- Design of Structures to the Eurocodes CIS 1016: 10<sup>th</sup> Semester- Civil Students - Structural Engineering Major.
- Steel Structures Design ARCH 502: 5<sup>th</sup> Semester- Architectural Students.
- Civil Engineering Drawing CIG 201: 2<sup>nd</sup> Semester- Civil Students.

#### Administration Activities:

- Head of Students Advising Program (2013-2014), German University in Cairo.
- Coordinator of Civil Engineering Seminar (2012-2013), German University in Cairo.
- Civil Engineering Curriculum Review Committee (2012-2014), German University in Cairo.
- Member of GUC-Mentoring Program (2012-2013), German University in Cairo.

#### Extra Curricula Activities:

Academic Coordinator for Insider-GUC newsletter club.

2003 – 2007 Teaching Assistant: Queens University, Department of Civil Engineering.

#### Instructor:

• Structural Design in Steel - CIVL 434: 4<sup>th</sup> Year Civil.

#### Tutorial Instructor:

- Solid Mechanics CIVL 228: 2<sup>nd</sup> Year Civil.
- Infrastructure Rehabilitation CIVL 320: 3<sup>rd</sup> Year Civil.
- Concrete Design CIVL 337: 3<sup>rd</sup> Year Civil.
- Structural Design in Steel CIVL 434: 4<sup>th</sup> Year Civil.
- Prestressed Concrete CIVL 436: 4<sup>th</sup> Year Civil.

#### Extra Curricula Activities:

• Vice President for Graduate Students Club.

# 1998 – 2003 Teaching Assistant and Assistant Lecturer: Ain Shams University, Faculty of Engineering, Structural Engineering Department.

#### Tutorial Instructor:

- Steel Structures Design (1) CES 331: 3<sup>rd</sup> Year Civil.
- Steel Structures Design (2) CES 431: 4<sup>th</sup> Year Civil.
- Steel Structures CES 322: 3<sup>rd</sup> Year Architecture.

## Appendix II: (Consulting and Industrial Experience):

#### Since 2013 Consultant Engineer

Responsible for the analysis, design, evaluation and rehabilitation of both steel and reinforced concrete structures. Expert in static, seismic and vibration analysis. Familiar with various design codes such as the American, British, and Saudi codes. The following is a sample of the consultancy services delivered under direct supervision/co-supervision:

- ENR Locomotives Maintenance Depot in Mahmasha, Cairo, Egypt: Design review of 1700 m<sup>2</sup> steel depot building. Design of admin and ancillary buildings.
- Flagpole, New Administrative Capital, Egypt: Design and construction supervision of the world-record highest steel pole, 200 m long, (AACE Consultant).
- King Khaled Airport, Riyadh, KSA: Design supervision and consultancy services (Zuhair Fayez Partnership Consultants).
- Gurayat Domestic Airport, KSA: Design supervision and consultancy services (Zuhair Fayez Partnership Consultants).
- Yanbu International Airport, KSA: Design supervision and consultancy services (Zuhair Fayez Partnership Consultants).
- Cairo Festival City, Egypt: Sports Complex: Two steel buildings,  $BUA = 2,170 \text{ m}^2$  and  $1,050 \text{ m}^2$ .
- Textile Egypt, Rubaiky, Egypt: Design of the New textile factory.  $BUA = 4,312 \text{ m}^2$ .
- Cairo Egypt: Design of steel storage building (1500 m<sup>2</sup>) for the General Authority for Investments and Free Zones. (International Consultant Engineers, ICE).
- Al-Duwaihy Gold Mine, KSA: Inspection of steel structures (Crusher, Milling and Tailing structures. (AACE Consultant).
- Green Berry Cold Stores, Nubaria, Egypt: Supervising the fabrication and erection of steel frames,  $BUA = 2,100 \text{ m}^2$ .
- Al Rafha University, KSA: Inspection and Load Testing of University Stadium Steel Bleachers.
- Radisson Blu Convention Hotel, Riyadh, KSA: Design proposal for AACE Consultants.
- EDITA Factory-Polaris, 6th of October, Giza, Egypt: Design check report for steel frames over an area of 31,040 m<sup>2</sup> (Arabia for Design and Engineering Consulting).
- Sallman Bridge Dammam, KSA: Investigation and rehabilitation for excessive dynamic vibration. (AACE Consultant).
- Ihsa Bridge, KSA: Rehabilitation of 10 m long concrete wing walls. (AACE Consultant).
- Tabuk NWAFH King Abdulaziz Hospital, KSA: Rehabilitation of reinforced concrete waffle slabs. (AACE Consultant).
- Residential building, KSA: Design of a three-floor reinforced concrete residential building, Area = 900 m<sup>2</sup>. (Hilal Consultant).
- National Bank, Capital Building, Jeddah, KSA: Renovation works, Steel Canopy (10 m cantilever).
- Kafr Elsheikh Egypt: Design of reinforced concrete administrative buildings for the governorate of Kafr Elsheikh. (Hilal Consultants).

# 2008 - 2012 Senior Structural Engineer with Dar Al-Handasah – Shair and Partners, Structural Engineering Dept.

Expert in the structural analysis, design, and design review of steel structures. The following is a sample of the projects designed/reviewed under direct supervision/co-supervision:

- National Guard Health Affairs / New Healthcare Projects in Saudi Arabia. Schematic design for five new hospitals in the cities of Jeddah, Riyadh, Taif, and Qassim.
- Haramain High Speed Rail (HHR) Stations Design Review, Saudi Arabia. Design review for the preliminary and detailed design package of the 4 railway stations located in Makkah (127,480 m<sup>2</sup>), Jeddah (110,337 m<sup>2</sup>), King Abdullah Economic City (70,784 m<sup>2</sup>) and Madinah (60,001 m<sup>2</sup>). Each station comprises arrival and departure concourses, retail areas, platforms and all infrastructures, landscaping, electromechanical and service facilities. The concourse roof of each station consists of multiple 27 m wide x 27 m long x 27 m high steel trees.
- Blaise Diagne International Airport in Dakar, Senegal. Detailed design for the new airport's buildings, including a main terminal building, presidential pavilion, hajj terminal, air traffic control tower, cargo building, main fire station, central utilities complex building, warehouse, and maintenance building.
- Ogun State Cargo Airport Project, Nigeria. Design for the establishment of an Agricultural Cargo Airport catering with limited passenger services. The design of steel structure of both the passenger terminal and control tower.
- Lekki Expressway Pedestrian Bridge in Lagos, Nigeria. The bridge consists of two spans, namely, 45 m spanning over the expressway and 30 m spanning over a water canal. Both bridges are constructed using steel trusses supported on either reinforced concrete walls or steel frames.
- New Exhibition Halls at Dubai World Trade Centre, United Arab Emirates. Design and construction for the new Dubai World Trade Centre (DWTC) Exhibition and Hospitality Facility located at Dubai World Central, comprising 3 standard exhibition halls and a multi-purpose hall (72 m free span each), administration offices and services ancillary buildings. Structural steel trusses are adopted in the structural system of the roof up to 12 m spacing and spanning 72 m, supported on reinforced concrete service blocks from one side and on main trussed frame (Spine) on the other side.
- King Saud University for Health Sciences, Saudi Arabia. Detailed design for the sports and recreation center in the university campus in Hasa. Structural steel trusses are adopted in the structural system of the roof up to 9 m spacing and spanning 33 m.

- Tunnels for the Central Utility Plant at Makkah Haram, Saudi Arabia. Design for 2 twin-tube pedestrian tunnels, 16 m wide, 8.7 m high and 1 km long each with a number of 11.4 m wide cross passages; a number of 70 m long toilet tunnels connected to the pedestrian tunnels; 2 emergency tunnels, 11.4 m wide and 6.8 m high each with lengths of 7 km and 0.47 km, connected to the pedestrian tunnels; and a 16 m wide, 8.7 m high and 1,350 m long horseshoe-shaped utility tunnel (of which 320 m are utility culverts) accommodating all pipes and electrical cables related to the garbage vacuum system, chilled water, water supply, raw and treated gray water, fire-fighting, Zamzam water, and tunnel drainage.
- Design Review for King Abdullah Financial District, Saudi Arabia.
- Oshodi to Obalende (via Mile 2) Bus Rapid Transit System, Nigeria. Detailed design for 10 bus stops along Oshodi - Apapa corridor, 2 bus terminals at Oshodi and Apapa North, a terminal at Obalende, upgrading of 3 stations at Leventis, Marina and CMS.
- King Abdul Aziz International Airport, Saudi Arabia. Design review for a new airport based on a new phased master plan up to the year 2035, comprising a new passenger terminal complex (670,000 m<sup>2</sup>) with a capacity of 30 million passengers per annum, control tower and related systems, support buildings and facilities, major utility networks.
- Updating Oman Highway Design Manual and General Specifications for Roads and Bridges, Oman. Review of existing highway and bridge design standards and general specifications for roadworks; international search for best practice in the design of roads and bridges in light of the specific physical, cultural and transport conditions in the country; and production of updated manuals for Road and Bridge Standards, and General Specifications.
- Shamiyah Expansion, Saudi Arabia. Detailed design for an extension to the Makkah Holy Haram to accommodate additional 800,000 worshipers. Several steel bridges (total of 42,750 m<sup>2</sup>) linking the new building to the service building and to the existing Holy Haram. The project comprises also the new Mobile Mataf Extension.
- Link to Third Floor of Jamarat Bridge, Saudi Arabia. Several 30 m span of steel space truss sheds along the link roadway.

#### 1999 – 2003 Project Engineer, Free Lancer, Egypt.

Structural Engineer responsible for the structural design and analysis of the following projects in Egypt (using the Egyptian codes):

- Extension to Semiramis Intercontinental Hotel, Cairo.
- Workshop and storage area for Egyptair Company.
- Various residential buildings.

# 1997 Design Engineer with Alpha Metal for Steel Construction, Technical Office, Cairo, Egypt.

Preparation of structural shop drawings for the following projects in Egypt:

- Geroland Recreation Center: Restaurant and Workshop Buildings.
- Industrial Facilities for Delta Sugar Company (DSC).
- Middle East Factory.

#### 1995 - 1999 Design Engineer with Hassan Engineering Consulting Office, Cairo, Egypt.

Structural design and conducting safety checks for different steel structures in Egypt, including:

- Ceramica Cleopatra Factory Phase 4, 10th of Ramadan City, Egypt.
- Flour Land Silos and Mills, 6th October City, Egypt.
- Misr Elhegaz Industrial building for PVC products.
- Warehouse for Abo Zaabal Chemicals and Fertilizers Company.
- Industrial Facilities for Misr Company for Mechanical and Electrical Projects (Kahromika).
- EMCO Oils Factory.
- Green Resort North coast, Egypt.
- Multi-level lecture halls' building. Faculty of literature Mansoura University.

## Appendix III: (Author Citation and H-index):



Appendix IV: (Letters and Certificates):



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#### TO WHOM IT MAY CONCERN

This is to certify that Dr. Amr Abdel Salam Shaat was employed by Dar Al-Handasah consultants (Cairo-limited) as a Senior Structural Engineer. He worked with our firm from March 2008 till December 2011 as a freelancer and from December 2011 till August 2012 as a full-timer. During his employment term, Dr. Shaat participated in the steel structural design and design review, including approval of submittals, coordination with other engineering disciplines, and preparation of technical documents, for the following projects:

- 1. Central Utility Plant and Tunnels for Makkah Haram, Saudi Arabia.
- 2. Mataf Extension, Saudi Arabia.
- 3. Lekki Expressway Pedestrian Bridge in Lagos, Nigeria.
- 4. Extension of the Makkah Holy Haram (Shamiyah Expansion), Saudi Arabia.
- 5. New Exhibition Halls at Dubai World Trade Centre, United Arab Emirates.
- 6. King Saud University for Health Sciences, Saudi Arabia.
- 7. Neuroscience Hospital, Saudi Arabia.
- 8. Blaise Diagne International Airport in Dakar Terminal and Other Buildings, Senegal.
- 9. Link to Third Floor of Jamarat Bridge, Saudi Arabia.
- 10. Oshodi to Obalende (via Mile 2) Bus Rapid Transit System, Nigeria.
- 11. Abu Dhabi International Airport Utilities Validation and Master Plan Update, United Arab Emirates.
- 12. Masa'a Extension at Makkah Haram, Saudi Arabia.
- 13. Al-Birkah Tunnel Extension, Saudi Arabia.
- 14. Development of King Abdul Aziz Endowment for the Two Holy Mosques, Saudi Arabia.
- 15. Ogun State Cargo Airport Project, Nigeria.
- 16. Al Waddan Theatre, Libya.
- 17. Tripolis Complex Towers, Libya.
- 18. Toilets around Haram, Saudi Arabia.
- 19. King Abdullah Financial District, Saudi Arabia. (Design review)
- 20. King Abdul Aziz International Airport, Saudi Arabia. (Design review)
- 21. Haramain High Speed Rail (HHR), Saudi Arabia. (Stations design review)
- 22. Special Forces Facility, Kuwait. (Construction supervision)
- 23. Updating Oman Highway Design Manual and General Specifications for Roads and Bridges, Oman.

**Charles Malek** dar al-handasah

Director of Structural Engineering Department

www.dargroup.com



Current Top 225 International Design Firms Story: <u>Oil Prices Drag Down Global Design Market</u>

More detailed information on ENR's Top 225 International Design Firms: <u>View complete list with revenue and market data</u>

 Click below for earlier editions:

 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003

**Companies** are ranked according to revenue for design services performed in 2016 in \$ millions (\*). Those with subsidiaries are indicated by (*†*). For information on subsidiaries and where each firm worked outside of the U.S., see www.enr.com. \*\*Firms not ranked last year. Some markets may not add up to 100% due to omission of "other" miscellaneous market category and

rounding. NA-Not available.

001-100 | 101-200 | 201-225

Key to type of firm A-architect; E-engineer; EC-engineer-contractor; AE-architect-engineer; EA-engineer-architect; ENVenvironmental; GE-geotechnical engineer; L-landscape architect; P-planner; O-other. Other combinations possible. Firms classified themselves.

RANK 2017	RANK 2016	FIRM	FIRM TYPE
1	1	WSP, Montreal, Quebec, Canada †	EC
2	5	AECOM, Los Angeles, Calif., U.S.A. †	EAC
3	2	ARCADIS NV, Amsterdam, The Netherlands †	EC
4	4	JACOBS, Dallas, Texas, U.S.A.	EAC
5	3	WORLEYPARSONS, North Sydney, NSW, Australia	EC
6	7	DAR GROUP, Dubai, U.A.E. †	EA
7	16	STANTEC INC., Edmonton, Alberta, Canada †	A

## ENR 2017 Top 225 International Design Firms

Prof. Dr. KAMAL HASSAN Prof. Dr SHERIF K. HASSAN		Consulting Office	
Prof. Dr SHERIF K. HASSAN	Prof.	Dr. KAMAL HASSAN	
	Prof.	Dr SHERIF K. HASSAN	
Structural Engineering Dept.	-	Structural Engineering Dept.	
KH Faculty of Engineering	KH	Faculty of Engineering	



#### To Whom it May Concern

This is to certify that Dr. Amr Abdel Salam Shaat was employed by **KH Consulting Office** as a Structural Engineer. He worked with our consulting firm from August 1995 till February 1996 as a full-timer and from December 1997 till October 1999 as a part-timer. During his employment term, Dr. Shaat has participated in the structural analysis and design of the following projects:

- 1. Ceramica Cleopatra Factory Phase 4, 10th of Ramadan City, Egypt.
- 2. Flour Land Mill and Silos, 6th October City, Egypt.
- 3. Misr ELHegaz Industrial building for PVC pipes, 10th of Ramadan City, Egypt .
- 4. Warehouse for Abo Zaabal Chemicals and Fertilizers Company.
- 5. Industrial Facilities for Misr Company for Mechanical and Electrical Projects (Kahromika).
- 6. EMCO Oils Factory, Sadat city.
- 7. Green Resort North coast, Egypt. (Concrete Structures).
- 8. Multi-level lecture halls' building, Faculty of literature Mansoura University.(Concrete Structures).

Dr. Shaat was also responsible for conducting the required structural safety checks for different steel and concrete buildings for qualification requirements by the Egyptian Insurance Federation concerned with building construction risks.

**Consulting Engineer** 

Dr. Sherif K. Hassan (Ph.D., MASCE)

Director, KH Consulting Office Professor, Structural Eng. Dept. Faculty of Engineering Ain Shams University e-mail: skhassan77@netscape.net

تشارى راقم JY12 تاذ الهندس كلية الهند امعة عين

ا شارع جمال نوح - الماظه - مصبر الجديدة - تليفون و فاكس ٢٢٩١٦٠٠٤ لله Fax 22916004 ٢٢٩١٦٠٠٤ الماظه - مصبر الجديدة - تليفون و فاكس ٤٤ ٢٢٩١٦٢٤

