# MOHAMED IBRAHIM AMER

## PRESENT POSITION

* Professor,
  Civil Engineering Department,
  Faculty of Engineering,
  Cairo University, Giza, Egypt,

* Independent Geotechnical Consultant;
  MCG (Misr Consult Group) Chairman

## PERSONAL INFORMATION

Date of Birth : 11 February 1952.
Place of Birth : Cairo, Egypt.
Marital Status : Married - two children.

## EDUCATION

1981 - 1984 Ph.D. in Civil Engineering, University of Maryland, College Park, Maryland, USA.

1979 - 1980 M.Sc. in Civil Engineering, University of Maryland, College Park, Maryland, USA.

1970 - 1975 B.Sc. in Civil Engineering, Cairo University, Giza, Egypt. Graduation with Honors.

## CAREER HISTORY

1995 – Now Professor of Geotechnical and Foundations Engineering, Cairo University.

1990 – 1995 Associate Professor of Soil Mechanics and Foundations Engineering, Cairo University.

1985 – 1990 Assistant Professor of Soil Mechanics and Foundations Engineering, Cairo University.

03/84 – 10/84 Associate Research Professor, Civil Engineering Department, University of Maryland, College Park, MD, USA.

## CAREER HISTORY "Cont'd"

01/79 – 03/84 Graduate Research Assistant, Civil Engineering Department, University of Maryland, College Park, MD, USA.

During this period I finished and obtained my Master's and Ph.D. degrees.

08/82 – 03/84 Guest Researcher National Bureau of Standards (NBS), Washington, D.C., USA.

08/75– 01/79 Teaching Assistant, Cairo University.
Finishing the military service in the Egyptian Army during the period 11/75 to 01/77

## PUBLICATIONS & THESES

***** Number of completed Ph.D. theses is 12.

* Number of completed Master's theses is 22.

* Number of published papers is over 40.

* Number of text books (geotechnical educational) is 2.

* Number of reviewed and evaluated articles is over 80.

## SCHOLARSHIPS AND HONORS

***** Academic Honors of Cairo University, 1971 - 1975.

***** B.Sc. with Honor degree; ranked the first among 120 students of the graduation project, 1975.

***** Diploma of Completion of the program " Dredged-Economic and Environmental Considerations", Catonsville, Baltimore, Maryland, 1979.

***** Research and Teaching Assistantships, University of Maryland, College Park, 1979 - 1984.

***** Guest Researcher, the National Bureau of Standards, Washington, D.C., USA, 1982 - 1984.

***** Research Associate ship, University of Maryland, College Park, 1984.

## GENERAL ACTIVITIES

Member of the American Society of Civil Engineers.

Member of the Egyptian Society of Civil Engineers.

Member of the Egyptian Society of Earthquake Engineering.

## GENERAL ACTIVITIES "Cont'd"

Member of the Egyptian Syndicate of Engineers.

Member of the Egyptian Building Code Committee on Foundations Subjected to Vibrations and Dynamic Loads.

Member of the Egyptian Building Code Committee on Shallow Foundations.

Chairman of the Social Committee of the Egyptian Student Association in USA and Canada, 1982 - 1983.

## PROFESSIONAL EXPERIENCE

### I. ACADEMIC

| | |
|---|---|
| 10/84 - Now | Faculty Staff Member, Soil Mechanics and Foundation Engineering Division, Civil Engineering Department, Cairo University and individual geotechnical consultant. |
| 03/84 – 10/84 | Post-Doctor at Civil Engineering Department, University of Maryland, USA. |
| 08/82 – 03/84 | Guest Researcher at the National Bureau of Standards (NBS), Washington, D.C., USA. During this period I was associated as a Civil Engineer to the American Companies; Washington Testing Inc. (WTI) and Advanced Research and Technology Inc |

### II. PROFESSIONAL

Since 1984 I was involved in over 2000 consulting projects. The main themes of these projects are geotechnical investigations, analysis and design of underground structures.

Attached are selected relevant samples of these projects.

# PREVIOUS EXPERIENCE RECORD

**"Dr. Mohamed I. Amer"**

# PREVIOUS EXPERIENCE
# IN CIVIL ENGINEERING PROJECTS

Among over 2000 projects accomplished Dr. Mohamed Amer has started his professional career in 1985, the following are some samples of different types of projects. Projects varied from geotechnical investigation & structural design of small villas of total cost about L.E. 700000.00 to mega national projects of cost exceeds US$ 2,000,000,000.00 as of current currency rates. The following examples are classified according to the type of projects. This classification is as follows;

1. International Engineering Projects.
2. Major National Projects.
3. Touristic Projects.
4. Industrial Projects.
5. Infrastructure Projects.
6. Educational Buildings Projects.
7. Oil, Gas & Petroleum Projects.
8. Worship Buildings Projects.
9. Archeological Monuments; Restoration and Underpinning Projects.
10. Quality Control Services.

## I. INTERNATIONAL ENGINEERING PROJECTS

### Qatar

Analysis and design of the main compressor unit foundation of Qatar Fertilizer Company, **(QAFCO)**.

Work included the analysis of the soil data, vibration analysis of the compressor and its foundation, and design of the foundation against vibrations and dynamic loading..

Work also included numerical modeling of the compressor and its foundation block. Analysis of soil data to evaluate the dynamic soil parameters, as well as, the SPT blow counts to be used in Seed & Idriss method of estimating liquefaction susceptibility. For the foundation block, applied modes of vibrations were used as well as the inertia properties of the foundation and shear modulus and damping of soil. 3-D vibration analysis was conducted and results were used in design and evaluation of stress and strains in both foundations and soil.

### Saudi Arabia

The following is a list of projects in which Dr. Amer was involved. Activities included geotechnical analysis, data reduction, preparation of the final foundation recommendations report, and finally analysis & calculations of soil improvement techniques.

1. The medical tower and service building of the General Hospital of Jizan.
2. Maintenance workshop of the Civil Defense Forces, Southern District.
3. Faculty of Health Science, Jizan.
4. The headquarter building of Haif Incorporate, Jizan.
5. Residential planning project in Kahma.
6. Residential planning project in Abi Arish.
7. Hangers of Coast Guard Forces.
8. The Highway & Transportation Administration building in Jizan.
9. Al-Aidaby hospital in Jizan.

**Sudan**

1. Internal roads network of the new water supply plant on the Blue Nile, Suba, Khartoum.

   **Owner** : Khartoum Water Authority.
   **Client** : Misr Concrete Development Co.

2. Analysis of the stability of chlorination building due to deep excavation and seepage from the Blue Nile.

3. Geotechnical report of the site investigation activities for the water supply station fence.

**USAID Contracts**

As a geotechnical consultant, Dr. Amer was contracted with "STOG" company, Pennsylvania, USA to perform the site investigation, as well as, the planning and design of 5 pioneering wastewater treatment plants. These projects were part of the USAID fund to develop the Egyptian Villages. Work has been performed in two governorates; Damietta and El-Menofia.

Tasks included site investigation of each of the five sites mentioned above., including the following:

1. Drilling boreholes.
2. Field SPT testing.
3. Sampling with Shelby tubes and standard split spoons.
4. Performing field vane tests in case soft cohesive soils are encountered.
5. Inserting different length piezometers to monitor and sample ground water level for quality assessment.
6. Performing routine, consolidation and shear strength laboratory testing in order to evaluate strength and settlement parameters.

## II. MAJOR NATIONAL PROJECTS

### 1. Study of Bab El-Sharia Metro Tunnel (ML-3)

**Client** : Cairo Governorate

**Date** : September, 2009

**Scope of Work** : This was a technical committee of 6 professors of Geotechnical and Structural Engineering to study the reasons of the technical difficulties that was faced by the TBM machine during excavation of the 3rd line of Cairo Metro. The machine was at depth of about 23.0 m below Midan Bab El-Sharia and a big settlement reached about 3.0 ms have happened. The machine faced technical problem and a ground loss have happened.

### 2. Structural study of the structural safety of Cairo Metro Tunnel [line3 - stage2]

**Client** : National Tunnel Authority, NTA

**Date** : March, 2012

**Scope of Work** : During the advancement of the TBM machine from the Cairo International Fair to Cairo Stadium, an upword deviation of the machine head was happened. Cracks and other structural problems have been shown in the body of the tunnel and its lining. The scope of work was to study the reasons for the structural defects and to recommend the method of repair.

### 3. Inspection of Al-Azhar Car Tunnels (Two Car Tunnels)

**Client** : Cairo Governorate

**Date** : June, 2014

**Scope of Work** : The purpose of the study was:

1. to inspect the underground water seepage at some locations at the tunnels body.
2. to perform a structural safety analysis of the tunnel due to construction of a 10-storey building close to the center line of the Northern tunnel at Port-Said street intersection.

### 4. Suez Thermal Power Plant

**Client** : Arab Contractors (Osman Ahmed Osman)

**Date** : 2012 and undergoing

**Project Value** : EGP 6,000,000,000.00

**Scope of Work** : Reviewer of the geotechnical & Structural design performed by the contractor for Suez thermal power plant 1x650 MW Gas/Oil Fire Unit Project - Suez - Egypt. Our task involved reviewing the geotechnical design aspects such as:

- Factual reports.
- Side Support Systems.
- Dewatering and cutt off systems.
- Design of Power Block Structure.
- Design of intake Pump House.
- Design of discharge structure.

**5. Almaza City Center**

**Client** : Majid Al-Futtaim

**Date** : 2012

**Project Value** : US$ 1,200,000,000.00

**Scope of Work** : The Geotechnical consultant for Almaza City center project. The area of the project is about 38,000 $m^2$ located at Al-Nozha district, Cairo, Egypt. The total cost of the project is 1200000000 $. The project composes of:

- Hyper Market (10000 $m^2$).
- Underground Water Tank (525 $m^2$).
- Two Parking lots (16155 $m^2$)
- Ancillary Buildings (11600 $m^2$).

A geotechnical campaign was carried out at the project location including 142 boreholes of depth varying between 10.00 to 20.00 meters, field and laboratory tests (SPT, pocket penetrometer, Grain Size Analysis, Atterberg limits, unconfined compression test, chemical analysis and Oedometer test). Foundations recommendations, analysis and design of natural slopes and settlement were given in the geotechnical report submitted to our client.

**6. Mall of Egypt**

**Client** : Majid Al-Futtaim

**Date** : 2011

**Project Value** : US$ 2,000,000,000.00

**Scope of Work** : Civil works consultant of Mall of Egypt project located at Wahat Road, Giza, Egypt. The area of the project is about 33 $km^2$ bounded by Dream Land properties from North and East, road leading to Mubarak educational city from south and Al-Wahat road and Media Production City from West. Our task involved the geotechnical investigation of the project site. A geotechnical campaign was performed and 417 boreholes were drillied at the site with depth ranging between (10.00 - 30.00 ms). Analysis and design of different geotechnical aspects (underground structures, slope stability and estimating settlement and differential settlement) were carried out. Foundations design also was carried out. The project was estimated to cost about 2000000000 $ (2 billion dollars).

**7. Makarem Mall & Commercial Center**

**Client** : Mr. Badawy Zaki Makarem

**Date** : 2011

**Project Value** : EGP 25,000,000.00

**Scope of Work** : Structural & geotechnical design of multi story mall and commercial building covering an area of 3800 $m^2$ located at Al-Tagamoa Al-Khamis District, New Cairo, Cairo. The mall consists of 6.00 ms lower basement, lower ground floor, upperground floor and 4 typical floors. The total height of the building is 30.00 ms from the street level. Supervision of the construction was also included in our scope of work.

**8. GB Dry Port**

**Client** : Ghabbour Auto

**Date** : 2011

**Project Value** : EGP 200,000,000.00

**Scope of Work** : Consultant of GB Dry Port project. The project has an approximate area of 660000 $m^2$. The project comprises of adminstrative and srvice buildings, light car sheds and showrooms. Furthermore, the project is surrounded by a fence. Our scope of work the included followinng:

- Geotechnical site investigation (field and laboratory tests).
- Foundations Recommendations.
- Analysis and design of different geotechnical & structural aspects.

**9. Al-Rewaee Mall**

**Client** : Al-Barbary Group

**Date** : 2010

**Project Value** : EGP 30,000,000.00

**Scope of Work** : Main consultant of Al-Rewaee Adminstrative, commercial and residential center project located at Cairo, Egypt. The project consists of 2 basements, ground floor and 11 typical floors covering an areaof approximately 1500 $m^2$. Our task included:

- Geotechnical site investigation (Mechanical borings, field and laboratory testing).
- Quality Control of the structural fill layers.
- Analysis and design of different geotechnical aspects (Side Support and dewatering systems).
- Structural design.
- Supervision of all geotechnical and structural works (Side Support system, Dewatering system, CFA piles drilling, pile load tests, superstrucutre construction).

**10. Toyota Showroom and Service Station**

**Client** : TOYOTA - EGYPT

**Date** : 2007

**Scope of Work** : Main consultant of Toyota showroom and service station project located at Abbasseia, Cairo, Egypt. The station is designed as a number of steel and concrete buildings covering an area of about 1800 $m^2$. A geotechnical campaign consisting of 30 boreholes of depth ranging between ( 8.0 to 14.0 ms) was performed at the site location in order to fulfill our task as a geotechnical consultant in evaluating soil condition parameters, recommend the foundation design criteria and the precautions needed to be taken during construction.

**11. New East Port Said Harbor**

**Client** : Port Said Port Authority (PSPA)

**Date** : 2008

**Scope of Work** : The main geotechnical consultant for the new project east Port Said City. The area of the project is 35 $km^2$ bounded by Mediterranean sea from north, eastern branch of Suez Canal from west and Sinai form east and south. Our task involved 50 boreholes down to a maximum depth of 50 ms, 20 locations to

perform field vane tests to a depth of 20 ms and 35 locations to do piezocone (CPTU) tests. All geotechnical field and laboratory tests and investigation have been undergone. Analysis of geotechnical data, assessment of suitability of the site for the purpose of the project and its industrial zone, liquefaction potential and risk assessment analysis are among the purpose of study. Also, types of foundations, dewatering systems and recommendation for the suitable technique of soil improvement and consolidation control are to be included in our final report.

**12. P&G Manufacturing Expansion Project**

**Client** **:** MC Consultants (Dr. Sameh Abdelgawad)

**Date** **:** 2008

**Scope of Work** **:** The project will be executed on two different pieces of land:

*** POLARIS**

- Parcel Location: The site is located within the POLARIS International Industrial Park and is approximately 3 km west of the 6th of October industrial area.
- Parcel Size: Total area of the site is approximately 220,000 m², with an almost rectangular shape approximately 160 m above sea level. The site is situated on a flat desert area, surrounded by natural terrain.
- Current and Historical Use: The subject site lies on vacant desert land and has not been previously developed.

*** IDG**

- Parcel Location: The site is located within the Industrial Development Group Park and is approximately 500 m west of $6^{th}$ of October industrial area.
- Parcel Size: Total area of the site is approximately 200,000 m², with an almost rectangular shape approximately 160 m above sea level. The site is situated on a flat desert area, surrounded by natural terrain.

- Current and Historical Use: The subject site lies on vacant desert land and has not previously been developed.

Our task includes field & laboratory investigation through boreholes, SPT, CPTU, and temporary piezometers. The geotechnical data and analysis will be used for:

a. Description of Site Geology in order to include Soil Classifications (USCS).
b. Final Laboratory Test Results.
c. Final Boring Logs.
d. In-Situ Testing.
e. Water Level Observations.
f. Consolidation Characteristics.

g. Drainage Coefficient.
h. Allowable Soil Bearing Capacities.
i. Coefficient of Active Earth Pressure.
j. Coefficient of Earth Pressure at Rest and Angle of Internal Friction.
k. Coefficient of Passive Earth Pressure.
l. Coefficient of Friction and Cohesion for Resisting Lateral Loads.
m. Modulus of Sub-grade Reaction (Slab / Mat Design).
n. Effective Roadbed Soil Resilient Modulus.
o. Recommendations for Foundation Type and Depth.
p. Long and Short Term Foundation Settlement Predictions.
q. Recommendations for compacting and placing engineered fills for the support of structures, slabs, and pavements.
r. Preliminary recommendation for pavement design.
s. Recommendations for the treatment of expansive, collapsible or otherwise unsuitable soils including blending, soil densification, chemical treatment or removal.
t. Soil properties under dynamic and cyclic loads, including low strain amplitude shear wave velocity, material damping and Poisson's ratio.
u. Liquefaction assessment of the two sites.

**13. Cairo Festival City Project**

**Client** **:** Al-Futtaim Real Estate Development "AFRED"

**Date** **:** 2006

**Scope of Work** **:** AFRED owns a lot of 700 feddans (≈ 3 million $m^2$) at New Cairo City on the ring road east of Cairo City. The project site had 3 quarries of different depths. The largest one was about 40 m deep and a plan area exceeds 10,000 $m^2$. Our role was to examine the available fill material around the quarries and to set the specifications and procedure to fill up these three quarries to be used for construction or other activities as assigned in the Master Plan of the project.

**<u>At 2007 – 2008</u>**

Our office has been the geotechnical consultant for "DETAC", the contractor of the five model villas for the project. Also, our office was their geotechnical consultant for the internal roads of the model villas, Toyota car exhibit and Honda car service center; all in the same project.

**14. Seismic Stability Evaluation of Aswan's old dam**

**Client** : Ministry of Irrigation and Public Works

**Date** : August 1987 to December 1988

**Scope of Work** : Material quality assessment of the dam. Also, study of the stability of the dam and its foundations & its annexes under the effect of earthquakes & seismic loads

**Notes** : Work started in August 1987 to December 1988 in cooperation with Harza Engineering Company.

**15. New Esna Barrage**

**Client** : Ministry of Irrigation and Public Works

**Date** : 2007

**Scope of Work** : Revising the design of all the projects components during all its phases (before & during construction).

Attend meetings with contractors to solve technical problems.

**16. Preparation of Egyptian Code for Soil Mechanics and Foundations**

(Personal Participation of Dr. Mohamed Amer)

**Client** : Ministry of Housing and New Communities.

**Scope of Work** : Participating in preparation of manuscript and revised editions of all prints of part III and part VI of the code; "Shallow foundations" and "Foundations subjected to vibrations" respectively since 1987 until last edition in 2001.

**17. Preparation of the Unified Arabic Code of Soil Mechanics and Foundations.**

(Personal Participation of Dr. Mohamed Amer)

**Client** : Arab Engineers Union

**Scope of Work** : Adapting the Egyptian code to be applied to the regional unified Arabic Code.

**18. The Cargo Village of Cairo International Airport.**

**Client** : Consulting & Technical Studies Office.

**Date** : 2001

**Scope of Work** : 32 boreholes were implemented in the airports site & 16 plate load tests In the following sites

- Cargo & maintenance Area.
- HEIA new refrigeration faculty

**19. Lake Manzala Engineered Wetland Project – Egypt – Port Said.**

**Client** :

- Egyptian Environmental Affairs Agency (EEAA).
- United Nations Development Programmers (UNPD).
- Misr Concrete Development Company.

**Date** : 2001

**Scope of Work** : Study and construction of new Fish Farming Lakes as a method of biological treatment of Bahr El-Bakar's main sewage drain of Port-Said governorate and territories. Our office performed all slope stability analysis, consolidation & settlement analysis as well as quality control of the embankment construction.