

Years of Experience

29

Areas of Specialized Knowledge

Project Management
Support of Excavation
Ground Improvement
Deep & Shallow Foundation
Offshore Geotechnical
Retaining/Flood Walls
Levees / Dams
Marine Structures
Seismic Analysis
Earthquake Engineering
Geotechnical Instrumentation

Education

PhD/Geotechnical Engineering/
Tufts University/ 2006
MSc/Geotechnical Engineering
Engineering/University of
Massachusetts/2003
BSc/Civil Engineering/ University of
Alexandria/1992

Professional Registrations and Certifications

Professional Engineer/TX/126072
Professional Engineer/MA/47087
Professional Engineer/FL/68061
Professional Engineer/NY/097769
Professional Engineer/NC/047606
Professional Engineer/NJ/24GE05348800
Professional Engineer/RI/0012861
Professional Engineer/NH/16621

Select Honors and Awards

A Research Award from the graduate
school at Tufts University for tracking
Granular soil visually using a
microscopic video camera in 2005

Training

Geotechnical Modeling Workshop
(GeoStudio), GEO-SLOPE International,
Ltd., Harrisburg, PA 2008.
Advanced Course on Computational
Geotechnics using PLAXIS Finite
Element Glasgow, UK, 2009
Tropical Basic Offshore Safety Induction
Course, T- BOSIET, in Abu Dhabi, UAE,
2011.

Employment History

Geocomp Corporation -2021 to present
AECOM - 2016 to 2021
ADMA offshore - 2013 to 2016
TechnipFMC- 2010 to 2013
Gannett Fleming- 2008 to 2010
Terracon -2006 to 2008
Saudi Aramco- 1993 to 1999

Dr. Elsayed is a professional civil engineer with expertise in offshore, waterfront & marine structures, dredging, bulkhead wall repair, design of new bulkhead, wharf repairs designs, mooring platforms, dolphin designs, design of deep foundations for offshore structures, evaluation of leg penetration analyses for barge movement, design of monopiles for wind farms, support of deep excavation, ground improvement techniques, geotechnical analytical methods including finite element analyses with Plaxis and groundwater control with GeoStudio.

He has worked and managed numerous projects as a leading role involving design and analyses of LNG terminals, flood walls, levees, hurricane protection systems, earth dams, retaining walls, slope remediation, pile foundations, construction support for bridges, building structures, utilities, landfill liner, berm construction and artificial Islands. He also managed geotechnical instrumentation installation and monitoring tasks for various transportation projects for the Army corps of engineers.

Key Project Experience

Geotechnical Team Leader, Réseau Expresse Métropolitain (REM) Tunnel in Montreal Canada: Developed as one overall integrated system that links existing bus, transit and highway networks to serve the greater Montréal area. When completed in 2022, REM's 67 kilometers of double track will make it the fourth largest atomized electric transit network in the world with four branches and a total of 27 stations. Served as independent technical reviewer for the difficult geotechnical components including design tunnels, bridges, station and road improvements such as assessing soil parameters, performing sensitivity analysis, reviewing design of secant piles wall that acts as permanent SOE for the cut and cover section and attended value engineering task forces.

5 Miles Retaining Walls Reconstruction at the Military Academy in WestPoint, NY Geotechnical Team Leader, Managed by the Army Corps of Engineers, New York District: Working on a complete engineering inspection of 11 miles of historical masonry retaining walls to present condition survey and risk assessment for mitigating distresses on specifically identified retaining walls by the Client. The task included applying the probabilistic approach verses the deterministic approach to come up with a plan of repair and prioritizing which walls to be constructed. Designed a support of excavation system made of soldier piles and lagging to support the walls, roads and buildings during construction of new walls. Issued a complete set of specifications and Issued for construction drawings.

Interstate I-91 Intelligent Transportation System Design Build Project, Springfield, MA Geotechnical Engineer, Responsible for designing the foundation system for the proposed CCTV cameras, variable multi signals (VMS) structures, concrete slabs and footings for node pads and barbed wire fencing. Managed the subsurface investigation and oversaw the construction project management and vendor performance. The foundation system consisted of drilled shafts with variable diameters and depths to withstand the dead load of the signs and a 120 mile per hour wind load in variable soil conditions. Ensured preparation and submission of required financial and administrative reporting regarding the project in a timely manner.

The Brooklyn Bridge - Montgomery Coastal (BMCR) Manhattan, NY, EDC Project. Geotechnical Team Leader, The project is conceived as an integrated coastal protection using T-wall and Wall-Flap Gates aimed at reducing flood risk due to coastal storms and sea level rise in Lower Manhattan. Planned and coordinated field investigation. Coordinated the design of the T-wall foundation using micro-piles. Slope stability, and seepage analysis. Micro-piles also provided least intrusive methods among all pile types because of its small diameter and upper casing acting in a way to support and shore the hole foundations. Reviewed seepage analysis under the proposed flood wall. Seepage Barrier option consisted of sheet piles, Jet grouting and chemical grouting.

North Dock and South Dock Repair, the Military Academy in WestPoint, NY, Geotechnical Team Leader, Managed by the Army Corps of Engineers, New York District: Working on a complete new design of the helipad within the north dock that will be built on new Combi wall system made of high modulus steel pipe piles section with steel sheet piles in between that contains the old deteriorated cellular cofferdams. The new helipad will encapsulate the existing deteriorated one. In addition, the project includes rehabilitation of the existing shoreline protection berms rip rap slope. Several options have been provided such as construction of a new concrete toe or providing concrete articulated blocks to prevent further erosion and reconstruct a new riprap to current standards. Besides, a new pile foundation system for the south dock is currently under design.

Service Plaza Strategic Plan for Florida's Turnpike, Various Locations, FL, Florida Department of Transportation, Florida's Turnpike Enterprise Geotechnical Project Manager, Responsible for the rehabilitation and new construction of eight service plazas on Florida's Turnpike. Managed subsurface investigations program; evaluated laboratory testing results; analyzed and designed foundations for convenience stores, restaurants, fueling area canopies, lift stations and fuel farms; developed flexible and rigid pavement designs for car and truck parking facilities and access roads; and provided design recommendations for stormwater retention ponds and facilities. Signed and sealed the final geotechnical reports for the eight plazas. Participated in formulating the policies and goals of the project with the design-build team.

Modifications to S.R. 90 (U.S. Route 41/Tamiami Trail), Miami-Dade County, FL, U.S. Army Corps of Engineers, Jacksonville District, Geotechnical Engineering Manager, Responsible for performing geotechnical analyses involving roadway modifications and foundations for culvert extensions. This project involved raising approximately eight miles of the existing roadway about three feet on top of its level and replacing approximately three miles of roadway with bridge structures to allow additional hydraulic conveyance from the L-29 (Borrow) Canal into the Everglades National Park. The existing roadway was founded on zero to seven feet of peat. The placement of the additional embankment was expected to cause long-term settlement and stability problems for both the embankment and its foundation. Work included determining the anticipated magnitude of the consolidation settlement, the time required for primary and secondary consolidation and the necessary embankment modifications to permit the required construction.

East Midtown Greenway East 53rd-61st Street Project NY, Geotechnical Team Leader, Provided scope of work and technical approach of the geotechnical engineering field investigation services. The project site is located in the East River and along the shore of the East River from East 53rd Street to East 61st Street in Manhattan, New York. There are several abandoned piles on the river side and empty lots on the land side. The project involves the construction of a new walkway over the East River with upland connections and "nodes". The proposed walkway is approximately 2,200 feet long and generally 40 feet wide.

Empire Wind Farm, Equinor, NY, Geotechnical Team Leader, worked on reviewing PreFEED work for the gravity base foundations for the wind turbines offshore NYC. Performed feasibility design of South Brooklyn Marine terminal upgrade to host the storage facility and the onshore substation.

South Shore Staten Island shore protection flood study, NY, Geotechnical Team Leader, worked on a final design of 5 miles long of shore protection including a buried seawall section, culvert and weir structures, seepage analysis, modeling of ground water surface using Modflow, slope stability analysis, deformation analysis, settlement analysis, gap analysis and cofferdam design.

The Gondola Project, NY, Geotechnical Team Leader, worked on a feasibility analysis of a Tower foundation to support cable cars from the Battery Park to the Governor Island. Options included will be Open ended steel pipe piles/Caissons drilled and socketed into rock, other options are on the table such as concrete gravity foundations and artificial islands to contain steel pipe piles.

Bayport Container Terminal, The Port of Houston Authority (PHA), Houston, TX, Geotechnical Team Leader, PHA plans to develop a major marine terminal complex at the Bayport Ship Channel in the Port of Houston. Led the efforts for the design of drilled shafts pile foundations, performed geotechnical evaluations, evaluated slope stability issues and provided input for the Structural team to perform the final design. Also performed geotechnical tasks for the PHA Turning Basin Terminal projects for repairing Wharves 20, 21, 24, 25, and 26 at the Terminal. Tasks including, settlement analysis, performing repair options for the current bulkhead, performing stability analysis, sheet pile and king pile section design and recommend mitigation to the settled slab.

Amtrak Projects, Nationwide in the US. Geotechnical Team Leader, Designed a shoring system made of steel permanent casings to withstand Track loads of Cooper E80 and Vibrations. Amtrak requested AECOM to design the steel casings to support such a huge horizontal forces exerted from the track movement on the foundations on the new platforms at their stations Five Amtrak stations in Omaha: Nebraska, Cleburne & MacGregor: Texas, Wolf Point & Shelby: Montana were the subject on investigation. Utilized, Finite element analysis using Plaxis and Quake /W software to investigate the effects of vibrations and lateral forces on the pile foundations. Amtrak accepted the recommendations of Montana Stations with no comments. Currently we are working on the other stations in Texas and Nebraska.

Flood Proofing and Uplift Evaluation of School Construction Authority, Long Island City, Queens, NY, Geotechnical Task Leader, Designed Vent /valves for a basement concrete foundations to act as a wet Flood proofing method and in accordance with FEMA publications. Used numerical methods with the aid of the computer program Seep/W to model the relieving vents and arriving at an acceptable factor of safety to resist uplift pressure of the basement slab.

New Meadowlands Flood Protection Project, Bergen County, NJ, Geotechnical Team Leader, Serving as a geotechnical reviewer for engineering analysis and design of the flood protection alternatives. The investigated flood protection alternatives include Levees, T-Wall and I-Walls, Cellular Cofferdams, Parallel sheet-pile walls, and Sheet pile walls with battered piles.

ELNG Terminal, Technip, ABU Dhabi UAE, Lead Geotechnical Engineer for), ELNG Specifically, the project included the offshore geotechnical investigation for the construction of causeway, mooring dolphins, breasting dolphins, offshore electrical substations platforms, flare line/stack, platform and quay wall. Bathymetry, Metocean and geophysical investigations were also included in my scope of work. In addition, onshore geotechnical investigations for onshore buildings, pipeline and storage tanks were also prepared under that task. Issued scope of work for the probabilistic seismic hazard analysis for the Site that was performed by Arup and followed up with Subcontractors. The total cost of the project is 3 billion USD.

SATAH Oil Field, Technip, Abu Dhabi, UAE: Geotechnical Engineer of Record, evaluated stone column options as a ground improvement techniques in organic soil, reviewed deep dynamic compaction for soil improvement in very weak organic soils. Raised some concerns with the subcontractor “Menard” regarding the effectiveness of the deep dynamic compaction below the water table in addition to the issue of cut off trench effectiveness which will be used to intercept the dynamic wave’s propagation from affecting the very critical adjacent structures and reduce the peak particle velocity to an acceptable level. A study was performed to find out the depth of the trench needed to cut the vibrations. In addition, evaluated the soil conditions to host the precast concert underground cable trenches. The total cost of the oil field development project was 500 million USD.

Miscellaneous Offshore Projects, France, UK, Angola, and Abu Dhabi. Principal Geotechnical Engineer:

- Issued Scope of work for offshore investigation to be performed by Fugro for feasibility study of Masdar City in offshore Abu Dhabi that included **geotechnical factual and interpretative reports.**
- Designed drilled grouted steel pipe piles to be socketed in Calcarnite soil to new oil head towers in Nasr Oil Field, Zakum Oil Field, Um shaif Oil Field and Umm Lulu Oil Field as part of their expansion development.
- Issued Geotechnical Scope of work for FEED and EPC for 150 Km oil pipeline from Khafji in Saudi Arabia to Al Zoor Port in Kuwait that included trench ability study, routing analysis, and settlement analysis and risk mitigation measures.
- Designed suction bucket jacket foundations with erosion protection for Conceptual study for Aberdeen Windfarm.
- Designed mooring anchors for LNG port in Fujairah UAE,
- Designed Sepla anchors for a semi submerged Spar in Brazil.
- Designed and reviewed “issued for construction documents” of several Mudmat of Jacket Installations in Abu Dhabi.
- Issued Scope of work for Geophysical investigation for several well head towers for Dubai Petroleum in Dubai, UAE.

- Responsible for Fleet movement of several Barges around Zakum oil Field to ensure leg penetration analysis has been performed and there is no risk of punch through or hang up during approaches.

Technip Angola, Senior Geotechnical Engineer: Designed soil improvement methodology for crude oil storage tanks for Angola national oil company Sonangol. CLIENT requested to eliminate pile foundations for lack of experienced contractors at the Site. Thus, designed a jet grout program to increase soil capacity below the Tanks and reduce the settlement of the encountered very soft soil. Stone columns option was evaluated also but was not chosen because of the required high bearing capacity below the tanks to be around 300 kPa.

Nasr Oil Field, Abu Dhabi, Senior Geotechnical Engineer, Reviewed geotechnical factual and interpretative reports, Designed off shore pile foundations for 7 steel structures well head towers within Nasr Oil. Issued the scope of work for the bathymetric and geophysical survey for the project. The design is consisted of grout steel piles socketed 74 meters below mud level into Calacrnite and limestone. Responsible of performing and evaluating leg penetration analyses for 7 barges owned by ADMA to approve their approaches on the 300 structural well head towers within Zadco Oil Field. Risks highlighted are punch through/sudden collapse and legs hang up.

Artificial Island Project with Zadco, Abu Dhabi, Geotechnical Expert/Designer, Participated in a design workshop to set the design basis for four Artificial Islands for Zadco operational oil company with Exxon Mobile. Reviewed and approved geotechnical factual and interpretative reports that were issued by Fugro for the entire project. Evaluated the vibroflotation options along with the stone columns options to increase factor of safety against liquefaction. Designed pile foundations both drilled and precast in the island. Designed revetment and proposed a renovated technique to eliminate the need for permanent casings for each pile. The technique is using CLSM (controlled low strength material) instead of permanent casings and this will have a huge cost savings for bidding for the EPC phase. The precast foundations were shallow isolated footings to light weight small modules. Evaluated HDD options vs mechanical at the pipeline landing and recommended a conceptual design. Supported the geotechnical efforts with the HDD contractor.

Satah Al-Razboot (SARB) offshore oil field, Abu Dhabi. UAE, Geotechnical Engineer, Commented and approved the geotechnical factual and interpretative reports by Fugro and Horizons for the project. Oversaw and approved the dredging, reclamation, compaction, shore protection and harbour construction works for the construction of these offshore artificial islands that were awarded to the joint venture of Middle East Dredging Company (Medco) and Dredging International. Supervised construction of the perimeter shore protection by rock armour and prefabricated Accropode II® concrete blocks; construction of a mini harbour and 1,000 m of concrete block quay walls and protective breakwater; compaction and soil improvement of the reclaimed platform.

Das Island, Abu Dhabi, UAE, Lead Geotechnical Engineer, Reviewed and approved geotechnical factual and interpretative reports that were issued by Fugro for the entire project. Evaluated the shore approach and wave protection system to accommodate oil pipeline subsea trench from the offshore well assets to the storage tanks on Das Island. Value engineering was performed including several options such as, dredging, mechanical cut, HDD and riser platform. Mechanical cut was the cheapest option among all because of shallow water and soil nature.

Phoenix Sky Harbor International Airport Automated Train , Phoenix AZ, Senior Geotechnical Engineer, Responsible for providing geotechnical recommendations for the deep foundations of an elevated guideway for a new automated train and the related stations, buildings and maintenance facilities, as well as for providing subgrade recommendations for at-grade track sections. Participated in the drafting/compilation of the project documentation, reviewed and evaluated the work methods proposed by the contractor. Duties, also, include coordinating work efforts with airport personnel, verifying boring log information, evaluating laboratory test data, developing geotechnical design parameters, and providing design and construction oversight services for drilled shafts. Designed a micropile wall to support the existing abutment of a railroad bridge as part of relocating the 44th street underneath the bridge. Modeled the micropile wall using the computer program PLAXIS and compared the results to the results obtained from the computer program LPILE. Also, the geotechnical analyses were performed to assist in making recommendations for shallow and deep foundations, retaining walls, soil nail walls, shoring systems and embankment fills. Designed soldier pile and lagging system to support 20 feet high of soil adjacent to Taxiway S. Managed construction activity for a part of stage 1 of the project. Parts of the construction management includes overseeing daily activities of the site, supervising staff engineers, running regular weekly meeting with the subcontractors, providing guidance on arisen technical complex construction issues. Acted as the liaison among the other project managers to assist with several project managerial issues.

Herbert Hoover Dike Rehabilitation and Repair, Reach 1B, Palm Beach County, FL, U.S. Army Corps of Engineers, Jacksonville District, Senior Geotechnical Engineer, Responsible for performing geotechnical analyses on Reach 1B of the Herbert Hoover Dike, which surrounds Lake Okeechobee in southern Florida. The project involves performing seepage and slope stability analyses and designing improvements for the dike along Reach 1B and at two structures, including a culvert (C-13) and the spillway (S-352). Significant seepage and piping events along the southern and southeastern portions of the dike were observed in 1995 and 1998 during high-water events, which resulted in significant maintenance on the dike. A relatively impervious and light blanket of peat and organic silts and clays is located at the landside toe of the dike, which increase the groundwater pressure and therefore the exit gradients and uplift pressures. Different solutions to improve the stability of the dike, including the construction of relief wells, a seepage berm, a cutoff wall, and a deep drainage trench, have been evaluated.

Three Rivers Regional Landfill, Aiken, SC, Geotechnical Project Manager, responsible for performing stability re-evaluation of the Three Rivers Landfill due to increased final cover slopes from 4H:1V to 3H:1V. Specific tasks included review of existing/prior design information, evaluation of geosynthetic clay liner, selection of design parameters for waste / soil / and various geosynthetic interfaces, evaluation of bearing capacity of the landfill subgrade, evaluation of the differential settlement of the leachate collection pipes using the finite element analysis computer program Plaxis, performing seismic response / liquefaction analysis of the landfill site, performing global stability analysis under static and seismic conditions using the computer program Slope/W and performing veneer analysis of the final cover system that sloped 3H:1V.

Miscellaneous projects, Jacksonville, FL and Savannah, GA Geotechnical Project Manager, responsible for subsurface investigations, which included completing slug tests using vibrating wire piezometers, collecting soil samples and monitoring concrete works in the Indian River Lagoon area in Fort Pierce, Florida, for the U.S. Army Corps of Engineers. This work was completed as part of an effort to determine the feasibility of constructing a new lake in the area. Prepared a geotechnical exploration report and making recommendations for the rehabilitation of the Jacksonville sheriff office's target range training facility and buildings in Jacksonville, Florida. This work included completing a slope stability analysis, shallow foundation design and designing of an earth-reinforced geosynthetic wall. Prepared a geotechnical exploration report and making recommendations for the design of drainage improvements facilities for Moncrief Creek in Jacksonville, Florida. Interpreted the results of cone penetration soundings using CPT-pro software for a project involving the Lexington Park, Phase I, residential development in Jacksonville, Florida. Monitored the drilling of soil borings at Savannah/Hilton Head International Airport in Georgia for a project involving the construction of a new hangar for Gulfstream Aerospace Corporation. Recommended capacities for steel H-piles needed for emergency repairs to the North bank Riverwalk in downtown Jacksonville, Florida. For residential villas. Estimated the capacities of prestressed concrete piles for a new fire station overlooking the St. Johns River in Jacksonville, Florida. This work took into consideration the negative skin friction from the downdrag forces resulting from the settlement of the surrounding organic soils. Recommended slab-on-grade design parameters for a new running track at the University of North Florida in Jacksonville, Florida.

Publications:

Lizhou Chen, Abdelhamid Belgaid, **Assem Elsayed** & Xiaoming Yang (2019). "Compression Index Estimation by Water Content & Liquid Limit & Void Ratio Using Statistics Method". International Conference on Geotechnical Engineering and Environmentally Protected Lands, March, 2020 Miami, United States.

Lizhou Chen, Yanbin Gao, **Assem Elsayed** & Xiaoming Yang (2019). "Soil Consolidation and Vacuum Pressure Distribution Under Prefabricated Vertical Drains". Journal of Geotechnical and Geological Engineering, Issue 4/2019.

John C. Niedzielski, P.E., M.ASCE, Samer R. Rabab'ah, Ph.D., P.E., M.ASCE, **Assem A. Elsayed**, Ph.D., P.E., M.ASCE, Dean B. Durkee, Ph.D., P.E., M.ASCE., "Design and Construction of Drilled Shaft Foundations for the Phoenix Sky Train Project" Proceedings of the Geo-Frontiers, Dallas, Texas, March, 2011: Advances in Geotechnical Engineering. This paper also showed in ASCE civil engineering magazine in May, 2011.

Samer R. Rabab'ah, Ph.D., P.E., M. ASCE, John C. Niedzielski, P.E., M. ASCE, **Assem A. Elsayed**, Ph.D., P.E., M. ASCE, Wassel al Bodour, Ph.D., and Dean B. Durkee, Ph.D., P.E., M. ASCE. "Comparison of Drilled Shaft Design Methods for Drilled Shafts in Sand, Coarse Gravel and Cobble Soils" Proceedings of the Geo-Frontiers, Dallas, Texas, March, 2011: Advances in Geotechnical Engineering.

Assem Elsayed, Ph.D., P.E., M.ASCE, Samuel Paikowsky Sc.D., F.ASCE, and Pradeep Kurup, Ph.D., P.E., M.ASCE "Characteristics and Engineering Properties of Peaty Soil Underlying Cranberry Bogs" Proceedings of the Geo-Frontiers, Dallas, Texas, March, 2011: Advances in Geotechnical Engineering.

Elsayed, Assem, and Chris Swan. "Controlling Preshear Relative Density in Triaxial Tests and its Effects on Undrained Behavior of Sand" Proceedings of the GeoFlorida, February, 2010, West Palm Beach, Florida.

John C. Niedzielski, P.E., M.ASCE, Samer R. Rabab'ah, Ph.D., P.E., M.ASCE, Dean B. Durkee, Ph.D., P.E., M.ASCE, **Assem A. Elsayed**, Ph.D., P.E., M.ASCE. "Foundation Design and Construction Challenges for the Phoenix Sky Train Project" Proceedings of the 35th Annual Conference on Deep Foundations, Hollywood, California, October, 2010.

Elsayed, Assem, and Chris Swan. "Compression Behavior of Synthetic Lightweight Aggregates." Presented at the World of Coal Ash Conference in Covington, Kentucky, 2007.

Elsayed, Assem. "Interpretation of Cone Penetration and Dilatometer Tests in Peaty Soil in Carver, Massachusetts." Civil Engineering Practice: Journal of the Boston Society of Civil Engineers Section/ASCE, Vol. 21, No. 2, pp. 39-52, 2006.

Elsayed, A. A. "The Physics, Formation, and Mitigation of Tsunamis." The New Zealand Geotechnical Society, Issue 70, pp. 34-41, 2005.

Paikowsky, G. S., **A. A. Elsayed**, and U. P. Kurup. "Engineering Properties of Cranberry Bog Peat." Proceedings of the 2nd Conference on Advances in Soft Soil Engineering and Technology, pp. 153-171, Putrajaya, Malaysia, 2003.

Elsayed, Assem A. "The Engineering Properties of Peat." Presented at the Northeast Geotechnical Graduate Research Symposium in Amherst, Massachusetts, 2002.