



PHYSICAL ADDRESS

#1413 PR-21
Repto Landrau
San Juan, PR 00927

MAILING ADDRESS

PO Box 270328
San Juan, PR 00927-0328

T: 787-781-6340
F: 787-706-0183
E: mail@geo-engineering.com
www.geo-engineering.com

CARLOS E. RODRÍGUEZ-PÉREZ, PhD, PE

Geotechnical Engineer
PhD (1979) in Civil Engineering
Field: Geotechnical Engineering
University of Illinois at Urbana-Champaign

MS (1974) in Civil Engineering
Field: Geotechnical Engineering
University of Illinois at Urbana-Champaign

BS (1973) in Civil Engineering
National Autonomous University of Mexico (UNAM)

Licensed Engineer (PE) in Puerto Rico
License No. 10034

Dr. Rodríguez has a professional experience in Geotechnical Engineering spanning over 25 years. He has been a consultant for geotechnical firms, contractors, insurance companies, and government agencies (including ARPE, PRHTA, PRASA, and DENR) in both Puerto Rico and abroad. In 1989 he founded GEO Engineering, Inc. Dr. Rodríguez has published sixteen papers and has a professional experience comprising over 550 projects.

CARLOS F. RODRÍGUEZ-JIMÉNEZ, MS, PE

Geotechnical Engineer
MS (2004), in Civil Engineering
Field: Geotechnical Engineering
University of Illinois at Urbana-Champaign

BS (2002) in Civil Engineering
University of Illinois at Urbana-Champaign

Licensed Engineer (PE) in Puerto Rico
License No. 21704

Eng. Rodríguez has a professional experience concentrating in geotechnical engineering design, geotechnical construction inspection, and construction materials testing.

FIRM OVERVIEW

GEO Engineering, Inc. is a consulting geotechnical engineering firm founded in 1989 to help clients solve soil and rock engineering problems. Our firm's experience in Puerto Rico spans over 550 projects, including work for government agencies such as the Puerto Rico Highway and Transportation Authority (PRHTA), the Puerto Rico Ports Authority (PRPA), the Puerto Rico Aqueduct and Sewer Authority (PRASA), the Department of Environmental and Natural Resources (DRNA by its Spanish acronym), the Infrastructure Financing Authority (AFI by its Spanish acronym), Puerto Rico Industrial Development Company (PRIDCO) and the Puerto Rico Electrical Power Authority (PREPA); pharmaceutical companies and petrochemical plants; as well as architectural-engineering firms, developers, and contractors.

GEO Engineering specializes in geotechnical consulting as well as comprehensive geotechnical construction inspection and construction materials testing. Knowledge and expertise of the local geotechnical and geological conditions are GEO Engineering's most valuable assets. We have performed geotechnical studies for large-scale, high-profile projects, including:

- AES Energy Plant in Guayama, PR
- Extension of the Taxiway and Cargo Road of the LMM International Airport in Carolina, PR
- Bridge over the Tallaboa River in Peñuelas, PR
- Panamerican Terminals I and II (for the largest cruise ships in the world) in San Juan, PR
- "Sala Sinfónica Centro de Bellas Artes de San Juan" in San Juan, PR
- The Vanderbilt Hotel in San Juan, PR
- La Concha Hotel in San Juan, PR
- "Proyectos Emblemáticos Mayagüez 2010 – Natatorio y Complejo de Tennis RUM y Parque del Litoral" in Mayagüez, PR

We have also been pre-qualified to perform geotechnical studies by AFI and the Office for Improvement of Public Schools (OMEF by its Spanish acronym). We invite you to refer to pages 5 and 7 for expanded sample project lists, or contact our office for a comprehensive project list.

At GEO Engineering we strive to render superior services to our clients by promptly recognizing their needs, providing appropriate, cost-effective solutions to their geotechnical problems, and furnishing technical assistance during the design and construction of their projects. GEO Engineering's experience and recurrent assignments from our clients speak to our consistently successful performance record and the quality of our services. We hope you will consider us to collaborate with your work team on your company's future projects.

GEO Engineering
Cost-effective solutions is our commitment



In today's civil engineering projects and their ever-increasing construction costs, the need for effective geotechnical solutions is a key factor for constructing better-built yet economically feasible structures. Technical excellence and experience constitute the cornerstone of our firm, allowing us to develop practical, cost-effective solutions that translate into overall economy for our clients' projects.

At GEO Engineering we prepare geotechnical evaluations for both new and existing projects and provide consulting services in the following geotechnical engineering areas of specialization:

FOUNDATION ENGINEERING

- Shallow Foundations and Mats
- Retaining Walls and Flexible Retaining Structures
- Foundations on Compacted Fill and Compressible Soils
- Settlement Evaluation
- Expansive Soils
- Soil Stabilization
- In-Situ Soil Improvement (e.g. vibroflotation, grouting, rammed aggregate piers, etc.)

DEEP FOUNDATIONS

- Pile Foundations (Driven piling and CFAs)
- Drilled Shafts and Caissons

EXCAVATIONS

- Open and Braced Excavations
- Dewatering, Water Pumping Tests, and Drainage Schemes

SLOPE STABILITY

- Soil and Rock Cuts
- Natural Slopes
- Evaluation of Slope Failures
- Rock Blasting Evaluation

WATERWAYS ENGINEERING

- Levees
- Dikes
- Breakwaters
- Channels
- Bridges



LANDFILL EXPANSIONS AND CLOSURES

SINKHOLE INVESTIGATIONS, GEOPHYSICAL EVALUATIONS, AND UNDERGROUND DISPOSAL OF RUNOFF

TUNNEL ENGINEERING AND UNDERGROUND CONSTRUCTION

GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS

- Liquefaction Evaluation of Sandy Soils
- Evaluation of Earthquake Soil Response
- Machinery Foundations

ANALYSIS BY MEANS OF THE FINITE ELEMENT METHOD

GEOTECHNICAL FIELD INSTRUMENTATION
Installation, Monitoring, and Interpretation of:

- Inclinometers
- Observation Wells and Piezometers
- Settlement Plates
- Crack Monitors
- Vibrations

FORENSIC GEOTECHNICAL ENGINEERING (COURT EXPERT WITNESS)

Buildings and Housing Developments

- Regency Park Development
Guaynabo, PR
RAY Architects and Engineers

Geotechnical evaluation for design and construction of the housing development

- "Hacienda Real" Development
Carolina, Puerto Rico
GAUNDIUM Inc.

Geotechnical evaluation of existing conditions for design and construction of the housing development

- NEOS Office Building
Santurce, PR
PREPA c/o RAY Architects and Engineers

Geotechnical evaluation for design and construction of the office building

Roadways

- Bridge over the Tallaboa River
Peñuelas, Puerto Rico
PRHTA

Geotechnical evaluation for a 5-span bridge

- Widening PR-111
Moca, Puerto Rico
Stanley Consultants

Geotechnical evaluation for the widening of two kilometers of highway

- Improvements to PR-140
Utua, Puerto Rico
PRHTA c/o CHM Engineers

Geotechnical evaluation of route to widen the existing road

Terminals and Piers

- PanAmerician Terminals I and II
San Juan, PR
RAY Architects and Engineers

Geotechnical evaluation for the construction of two terminals for mega cruise ships in Isla Grande

- Reconstruction of the Former Army Terminal at Puerto Nuevo
San Juan, Puerto Rico
Stanley Consultants

Geotechnical evaluation for reconstruction of the terminal

- Antilles Cement Facilities at Isla Grande
San Juan, Puerto Rico
Antilles Cement Corp.

Geotechnical evaluation for design and construction of facilities

Waterways

- Channelization of Humacao River
Humacao, Puerto Rico
Puerto Rico Dept. of Natural and Environmental Resources

Geotechnical evaluation for the design and construction of two kilometers of river channelization

- Channelization of Guayanilla River
Guayanilla, Puerto Rico
Puerto Rico Dept. of Natural and Environmental Resources

Geotechnical evaluation of two long dikes under construction after undergoing stability problems

- Channelization of Grande de Arecibo River
Utua, Puerto Rico
Puerto Rico Dept. of Natural and Environmental Resources
- Geotechnical evaluation for design and construction of the channelization of a river sector*

Utilities

- High-Transmission Towers AES Plant
Guayama, Puerto Rico
AES-Puerto Rico c/o RAY Architects and Engineers

Geotechnical evaluation for twenty high-transmission towers

- Puerto Nuevo Regional Treatment Plant
Expansion San Juan, Puerto Rico
LG Scott (CH Caribe Engineers)

Geotechnical evaluation for design and construction of a large expansion of the metro area water treatment plant

- Cambalache Power Plant
Arecibo, Puerto Rico
Stanley Consultants

Geotechnical evaluation for a large upgrade of the power plant

Landfills

- Closure of Guaynabo's Municipal Landfill
Guaynabo, Puerto Rico
Landfill Technologies, Inc.

Geotechnical evaluation for design and construction of a landfill closure

- Lateral Expansion of Fajardo's Municipal Landfill
Fajardo, Puerto Rico
Landfill Technologies, Inc.

Geotechnical evaluation for design and construction of a large landfill expansion

- Expansion of Juncos' Municipal Landfill
Juncos, PR
Juncos Municipality

Geotechnical evaluation for design and construction of a large landfill expansion

Sinkholes and Injection Wells

- Miraflores Development
Dorado, PR
Frama Construction

Geotechnical evaluation for design and construction of the housing development

Geotechnical evaluation of sinkholes and injection wells for runoff disposal

- Evaluation of Sinkholes D, E, F
Florida, PR

Geotechnical evaluation of sinkholes and injection wells for runoff disposal

- Toyota Site - Jimenco Industrial Park
Toa Baja, Puerto Rico
Gregory L. Morris & Associates

Evaluation of an area for the underground disposal of runoff through injection wells

Please contact our office for a comprehensive list of our projects.

**CONSTRUCTION MATERIALS TESTING
GEOTECHNICAL CONSTRUCTION INSPECTION**

With the increasing demands of project specifications, the need for a robust quality control/assurance program has become a fundamental principle in successful project delivery. GEO Engineering relies on its meticulously trained staff as well as sophisticated facilities and equipment to provide unparalleled construction materials testing and geotechnical construction inspection services.

CONSTRUCTION MATERIALS TESTING

GEO Engineering's laboratory has a wide variety of equipment to perform testing of construction materials, including:

- Soils
- Concrete and mortar
- Masonry units
- Steel

Our technicians are also extensively trained to accurately perform all standard geotechnical tests, in addition to in-depth specialized testing such as:

- Unconfined compression strength for soils and rock
- Consolidation
- Direct shear
- Field and laboratory California Bearing Ratio (CBR)
- Field and laboratory Electrical Resistivity

GEOTECHNICAL CONSTRUCTION INSPECTION

GEO Engineering's technicians are trained in current construction practices and processes as well as in-situ testing to ensure that construction projects fully comply with given sets of specifications. Inspection services are available for:

- Earthwork Construction
- Deep Foundation Installations – (Piles and drilled shafts)
- Ground Improvement – Rammed aggregate piers, vibroflotation, grouting
- Earth Retention Systems – Soil nails, tie-backs, slurry walls, tangent and secant pile walls, soldier beam and lagging walls, MSE walls, sheetpiling
- Geotechnical Instrumentation Construction and Monitoring (Inclinometers, Observation Wells, Settlement Plates)

All GEO Engineering field technicians are Nuclear Regulatory Commission (NRC) and American Concrete Institute (ACI) certified.

We invite you to visit our facilities. Please contact our office to make an appointment at your convenience.



**CONSTRUCTION MATERIALS TESTING
GEOTECHNICAL CONSTRUCTION INSPECTION**

PROJECTS

Earthwork Construction

- "Jardín Dorado" Development
Dorado, Puerto Rico
QB Construction

Earthwork construction inspection
Soils and materials testing

- East Corridor Highway PR-66 (PR-26 to Trujillo Bajo Ward)
Carolina, PR
Ferrovia Agroman SE

Earthwork construction inspection

Earth retention system construction inspection (MSE Walls)

- Office Depot Lot in Plaza Tropical
Bayamón, PR
Office Depot, Inc.

Earthwork construction inspection

Soils and materials testing

Deep Foundation Installations

- Vanderbilt Hotel
San Juan, PR
International Hospitality Associates

CFA Pile installation inspection

Earth retention system construction inspection (Secant Pile Walls)

Earthwork construction inspection

Soils and materials testing

- La Concha Hotel
San Juan, PR
International Hospitality Associates

DeWaal and CFA Pile installation inspection

Earthwork construction inspection

Soils and materials testing

- "Sala Sinfónica del Centro de Bellas Artes"
Santurce, PR
AFI

CFA Pile installation inspection

Earthwork construction inspection

Soils and materials testing

Ground Improvement

- "Parque del Litoral" – Mayagüez 2010
Mayagüez, Puerto Rico
AFI – CPM

Rammed aggregate pier installation inspection

Soils and materials testing

- Panamerican Terminals I and II
Isla Grande, PR
Ray Architects and Engineers

DeWaal and CFA Pile installation inspection

Earth retention system construction inspection (Jet Grout Column Secant Wall)

Soils and materials testing

Soils and materials testing

- "Balcones de Monte Real II" Development
Carolina, PR
Diskin Construction

Stabilization of highly compressible soil layer

Earthwork construction inspection

Soils and materials testing

Earth Retention Systems

- "Hacienda Real" Development
Carolina, PR
Gaudium Inc.

Earthwork construction inspection

Earth retention system construction inspection (MSE Walls)

Geotechnical instrumentation monitoring

Soils and materials testing

- New Electrical Substation and Standby Power – Carraízo Dam
Trujillo Alto, PR
Juan F. García, Inc.

Earth retention system construction inspection (Tiebacks)

Earthwork construction inspection

Soils and materials testing

- Windgate Apartments
Caguas, PR
Windgate SE

Earthwork construction inspection

Earth retention system construction inspection (Soil Nails, MSE Walls)

Geotechnical instrumentation monitoring

Soils and materials testing

Geotechnical Instrumentation Construction and Monitoring

- "Tren Urbano" – Río Piedras station and vicinity
Río Piedras, PR
KKZ Consortium

Soils and materials testing

Geotechnical instrumentation monitoring

- "Centro de Diagnóstico y Tratamiento de Corozal"
Corozal, PR
Triple-S c/o Morales-Morales Law Offices

Geotechnical instrumentation monitoring

Geotechnical instrumentation monitoring

- "Lomas de Manatubón" Development
Manatí, PR
Berríos & Longo Law Offices, P.S.C.

Geotechnical instrumentation monitoring

Geotechnical instrumentation monitoring

Please contact our office for a comprehensive list of our projects.

