

DATA SHEET

(Personal Information)

Name : **EMILIO M. MORALES**

Date of Birth : July 6, 1948

Place of Birth : Nueva Ecija, Philippines

Profession : Civil Engineer
Principal

EDUCATION:

- : **Advanced to PhD Candidacy 2005**
Geotechnical and Geoenvironmental Engineering Program
Asian Institute of Technology, Bangkok, Thailand
(uncompleted thesis) **"The Application of Artificial Intelligence to Geotechnical Engineering Site Characterization and Liquefaction Zonation in Metro Manila"**
- : **Master of Science in Civil Engineering**
Carnegie Institute of Technology
Carnegie – Mellon University, CLASS 1980
Pittsburgh, PA, USA
- : **Bachelor of Science in Civil Engineering**
Mapua Institute of Technology (1970)

PROFESSIONAL EXAMINATION:

Philippine Civil Engineering Board Examination (1970)
C.E. License No. 11236

GRADUATE WORK:

PhD Thesis (under Preparation) :

"The Application of Artificial Intelligence to Geotechnical Engineering Site Characterization and Liquefaction Zonation in Metro Manila"

MSCE Thesis :

Computer Graphics Applications in Civil Engineering
Title: **"Computer Aided Generation of Soil Profiles for Geotechnical Engineering"**

Research Work :

"Electro kinetics as a Remediation Technique using Carbon Electrodes" –
Asian Institute of Technology (AIT)

"Innovations in the Analysis, Design and Erection of Prestressed Concrete Anchored Bulkheads" – Carnegie Mellon University

"Study on the Impact Resistance of Fiber Reinforced Prestressed Cylindrical Piles" –
Raymond International

Patent Award: Application Type/No.: Invention 1/2012/000032
Prefabricated Self Locking Modular Structural Elements for Fences, Walls, Posts and Structural Beams and Columns Reinforced by Structural Fiberglass Mesh System

HONORS & AWARDS:

- : Awardee: 2014 Most Distinguished Alumnus MIT CE- Ense, Mapua Institute of Technology October 18, 2014
- : Awardee: Outstanding Civil Engineers Award – 2012
Philippine Institute of Civil Engineers (PICE)
75th Anniversary Celebration - November 8, 2012
- : Awardee: 2012 The Outstanding Mapuan (TOM) in the profesional field of endeavor-Civil Engineering, Mapua Institute of Technology May 19, 2012
- : Awardee: 2012 Presidential Award
Philippine Institute of Civil Engineers (PICE)
- : Awardee: Outstanding Civil Engineer Award - 2012
Philippine Institute of Civil Engineers (PICE)
- : Awardee: Outstanding Structural Engineer Award - 2012
Association of Structural Engineers of the Philippines (ASEP)
50th Anniversary Celebration
- : Awardee: Outstanding Civil Engineer - 2012
Mapua Institute of Technology CE-ENSE
- : Certificate of Recognition from the **Professional Regulation Commission Republic of the Philippines** for work in the Field of SOIL MECHANICS and FOUNDATION ENGINEERING.
- : Awarded **Professional Specialist Category** by the Philippine Institute of Civil Engineers in the fields of:
 - **Structural Engineering**
 - **Geotechnical Engineering**
- : **Most Outstanding Mapua Alumni Award** – National Asociation of Mapua Alumni (NAMA) - 2011
- : **MostOutstanding Alumni Award** – Mapua Institute of Technology CE-ENSE 1999
- : **Fellow** – Philippine Institute of Civil Engineers (**PICE**)
- : **Fellow** – Association of Structural Engineers of the Philippines (**ASEP**)
- : **Fellow** – American Society of Civil Engineers (**ASCE**)

SERVICE TO THE CIVIL ENGINEERING PROFESSION

Former Chairman	NSCP 2015 (Until May 2018)
Former Chairman	Re appointed as Chairman of the NSCP 2015 CODE COMMITTEE Update. Association of Structural Engineers of the Philippines (ASEP) Committee on the updating of the NATIONAL STRUCTURAL CODE for BUILDINGS 2014 Edition. The predecessor Code was 2010 Edition.
Former Chairman	NSCP 2010 CODE COMMITTEE Association of Structural Engineers of the Philippines (ASEP) Committee on the updating of the NATIONAL STRUCTURAL CODE for BUILDINGS 2010 Edition. The predecessor Code was 2002 Edition. The Committee was able to prepare the revision in 1 year.
Chairman	Joint PICE/ASEP Investigation Team for Cherry Hills Landslide Investigation.
Chairman	Committee on Excavations and Foundations and Retaining Walls National Structural Code for Buildings, 3rd Edition 1986.
President	International Geosynthetics Society Philippine Chapter (2208-2010)
Chairman	PICE Geotechnical Special Group
Chairman	ASEP Geotechnical Committee
Member & Former Director	Philippine Concrete Industry Association (PCIA)
Member	Committee on Excavations and Foundations and Retaining Walls National Structural Code for Buildings, 2nd Edition 1981
Member	CE-Ense Program Academic Advisory Panel Mapua Institute of Technology, Manila
Member	Bohol Earthquake Assessment Team - ASEP

ACADEMIC TEACHING EXPERIENCE:

FORMER MEMBER OF FACULTY : Graduate Division
SENIOR LECTURER College of Engineering
University of the Philippines, Diliman, Quezon City
Courses: ADVANCED SOIL & ROCK MECHANICS,
FOUNDATION ENGINEERING

INVOLVEMENT IN CIVIC ORGANIZATION:

- Member of Rotary Club of Makati Central (RCMC) and Harris Fellow
- Member of Rotary Club of Makati Central (RCMC) and a Harris Fellow
- Member – Brotherhood of Christian Businessmen and Professionals
- Mission Director to set up Outreach in Angeles City

COMMUNITY AND PUBLIC CITATIONS:

- Volunteer Structural Engineer for the Rehabilitation of Various Churches in The Diocese of Tagbilaran, Bohol.
- Donated Engineering Services as well as funds for the rehabilitation of Pangangan Church Bohol Island.

- Donated Professional Engineering Services to investigate the site of the Pangangan Elementary School which was vacated and condemned by the DENR as a result of our findings and recommendations. The school was reoccupied saving the Teachers and School Children from the discomfort of makeshift and temporary School Buildings.
- Have agreed to the Rehabilitation of San Isidro Labrador Church using our Professional and financial resources to restore the church roof and walls. Plans now being gathered by Diocese of Tagbilaran.
- Volunteer Structural Engineer for the Shrine of the Risen Christ, Porac, Pampanga
- Undertook the Structural Rehabilitation and Spearheaded Fund Raising Activities for the Parish Church, now nearing completion.
Parish of the Risen Christ, Smokey Mountain, Tondo, Manila
- Guest of Honor and Commencement Speaker
Mapua Institute of Technology
160th Commencement Exercises
November 27, 2015 @ PICC, Pasay City
- Member of the Brotherhood of Christian Businessmen and Professionals (BCBP) which espouses Ethical Business Practice and Christian Values in the Marketplace.

PUBLICATION/PROFESSIONAL ACTIVITIES:

A. PUBLISHED AND PRESENTED 14 INTERNATIONAL PAPERS:

- Speaker *19th IABSE Congress Stockholm, Sweden: Challenges in Design and Construction of an Innovative and Sustainable Built Environment*
Paper: **“Engineering Investigation, Analyses and Retrofit Procedures for Earthquake Damaged Heritage URM Churches in Bohol Island, Philippines”**. September 21-23, 2016
City Conference Center (CCI), Stockholm, Sweden
- Speaker *International Symposium on Seismic Retrofit of Unreinforced Masonry Churches of the Philippines*
Paper: **“Remediation and Retrofit Strategies in the Philippines”**. January 13-14, 2016 @
National Museum Auditorium, Manila, Philippines
- Speaker *SPACE 2015: ASEP International Symposium*
Paper: **“A Forensic Geotechnical Investigation – Failure of an Engineered Slope in A Major Hillside Cut”**. April 23-24, 2015 @ Intercontinental Hotel, Makati City.
- Speaker *SPACE 2014: International Conference on Civil Engineering Initiatives for Resilient Structures*
Paper: **“Seeing the Unknown - The Use of GPR in Civil Engineering”**
SMX Convention Center, SM AURA, Bonifacio Global City
April 24-25, 2014
- Speaker *5th Asia Conference on Earthquake Engineering*
Paper: **“The Abatan Bridge – A Forensic Study on How and Why it Failed”**.
Howard International House, No. 30 Sec. 3, Shin-Sheng South Road, Taipei, Taiwan,
October 16-18, 2014
- Speaker *ASEP 15th International Conference AIC*
Paper: **“A Clear and Present Danger 2 – The Use of QT/TMT Rebars in Seismic Zone 4”**.
- Speaker *Paper: “Full Scale Trial Embankment Test – Acceleration of Consolidation using Rammed Aggregate Piers”* ASEP 15th International Conference
AIC. Dusit Thani Hotel, Makati City September 28-30, 2011

- Speaker GEOFONTIERS 2011 "**Full Scale Trial Embankment Test- Acceleration of Consolidation Using the Rammed Aggregate Pier (RAP®) System**" Dallas , Texas March 12-17 , 2011
- Speaker Fifth International Conference on Case Histories in Geotechnical Engineering
Paper: **Settlement of a Light Rail Pier Supported on Large Diameter Bored Piles Remediated by Jet Grouting.**
New York, NY April 13-17, 2004
- Speaker International Symposium 2003 on Soil/Ground Improvement & Geosynthetics in Waste Containment and Erosion Control Applications
Paper: **A Review of the Electrokinetic Process for Soil Remediation**
AIT , Bangkok, Thailand December 2-3, 2003
- Speaker The Second Civil Engineering Conference in the Asian Region (2nd CECAR)
Paper: **"The Cherry Hills Landslide Tragedy"**
Hotel Metropolitan, Tokyo, Japan (April 16-20, 2001)
- Speaker Third International Conference on Case Histories in Geotechnical Engineering
Paper: **"Structural and Functional Distress Due to Slag Expansion"**
University of Missouri-Rolla, St. Louis, MO. U.S.A. (June 1-6, 1993)
- Speaker First ACI International Conference on Evaluation and Rehabilitation of Concrete Structures and Innovations in Design, 1991
Paper: **"Rehabilitation of a Fire Damaged Building"**
HK Marriott Hotel, Hong Kong
- Speaker Seventh International Convention on Structural Engineering:
Facing the Challenge of Economic Growth
Paper: **"Stronger is Not Necessarily Better – The Significance of Tests and Properties of Civil Engineering Materials"**
Manila Midtown Hotel, Pedro Gil cor. M. Adriatico Street
Ermita, Manila. May 15-17, 1999

B. PUBLISHED AND PRESENTED 39 NATIONAL PAPERS:

- Speaker 18th Regions IV-A and IV-B Technical Conference
"Civil Engineers: Breaking the Grounds Building the World"
Paper: **"Effective Integration and Application of Various Geotechnical Systems: Hybrid Solutions for Complex Problems"**. Development Academy of the Philippines, Tagaytay City, Cavite. August 10-11, 2017
- Speaker Sustainable Proactive Advocacies in Civil Engineering 2017 (SPACE 2017)
"Civil Engineers Getting Ready for the Big One"
Paper: **Testing Materials: "The Qualified Use of QT/MT Rebars in the NSCP and Why This is Necessary"**. AIM Conference Center, Makati City. August 10-11, 2017
- Speaker A Symposium on Cultural Heritage
"Appreciating the Rich Cultural Heritage of the Churches of the Diocese of Legazpi"
Paper: **Masonry in Churches in the Philippines: Features, Construction and Vulnerability in Natural Forces and Past Intervention.**
The Chancery, Cathedral Compound, Albay District, Legazpi City
July 11-12, 2017
- Speaker 10th Biennial National Convention of Church Cultural Heritage Practitioners
Bohol Tropics Resort, Graham Ave., Cogon District, Tagbilaran City, Bohol
April 24-27, 2017
- Speaker 19th National Civil Engineering Students' Conference
Paper: **"Full Scale Trial Embankment Test – Acceleration of Consolidation Using the Rammed Aggregate Pier (RAP) System"**. November 19, 2016
SMX Davao Convention Center, SMX Lanang Premier, J.P. Laurel Avenue, Davao City.

- Speaker SPACE 2016 "Change is Coming! Updates in the Theory, Design & Practice of Civil Engineering" – PICE-Makati, ASEP & ISSEP
Paper: "**The Structure and Strength of Thin Shell Domes**". September 1-2, 2016
Century Park Hotel, Malate, Manila
- Speaker PICE 38th National Convention
Paper: "**Soil Mechanics Principles in Construction Practice**"
Cebu International Convention, Mandaue Cebu City
November 22-24, 2012
- Speaker PICE National Convention 2009
Paper: "**Geophysical Methods in Civil Engineering – Practical Applications**"
Camp John Hay Trade and Cultural Center, Baguio City
November 26 to 28, 2009
- Speaker PICE Annual Convention 2006
Paper: "**Slope Stability in Construction**"
Iloilo Grand Hotel
November 2006
- Speaker PICE 29th PICE Annual Convention
Paper: "**The Megadike Transverse Spillway No. 3 Failure**"
The Manila Hotel 2003
- Speaker Association of Structural Engineers of the Philippines (ASEP) and
Philippine Institute of Civil Engineers - Lungson ng Maynila Chapter (PICE-LNM)
Paper: "**Structural Remediation Using CFRP**"
NIA, Quezon City
November 24-25, 2000
- Speaker PICE 26th National Convention
Paper: "**Ground Improvement By Mechanical Means**"
The Manila Hotel
November 09-11, 2000
- Speaker PICE 1999 National Convention
Paper: "**Cherry Hills Landslide**"
Waterfront Hotel, Lahug, Cebu City
November 25-26, 1999
- Speaker Philippine Constructors Association, Inc. Technology Forum on
"Ground Improvement Techniques"
Papers: "**Difficult Foundation Problems Solved by Jet Grouting**" and "**Soil Nailing An Innovative Solution to Problems in Ground Support.**"
November 18, 1999
- Speaker Vibrametrics ASEP/PICE Slope Stability
Paper: "**Cherry Hills Landslide Tragedy**"
Occupational Safety & Health Center, North Avenue cor. Agham Road, Q.C.
October 9, 1999
- Speaker PICE Negros Local Mid Year Convention
Paper: "**The Electric Cone Penetrometer (CPT/CPTU) and Its Use in Geotechnical Engineering Services**"
September 17-18, 1999
- Speaker PICE 2nd Geotechnical Symposium
Baguio City
September 3-4, 1999
- Chairman ASEP/PICE First Geotechnical Symposium
Paper: "**The Electric Cone Penetrometer (CPT/CPTU) and Its Use in Geotechnical Engineering Services**"
March 12-13, 1999

- Speaker 21st National Convention
Paper **"Pressure Calibration Using Precision Deadweight Piston Calibrators"**
World Trade Center, Roxas Boulevard cor. Gil Puyat, Pasay City
November 26 - 28, 1998
- Panelist PICE 24th National Convention "25 Years of PICE"
Paper **"Total Quality Management in Civil Engineering"**
Manila Midtown Hotel,
November 14, 1998
- Speaker CAST '98 Conference on Concrete Art, Science & Technology
Paper 1: **"Significance of the Ratio of Tensile Strength to Yield Stress (TS/YS) of Reinforcing Bars"**

Paper 2: **"Rehabilitation of a Fire Damaged Building"**
Edsa Plaza Hotel, Mandaluyong City, Philippines
June 5-6, 1998
- Speaker Department of Public Works and Highways (DPWH) Geotechnical Engineering Seminar
Paper: **"Overview of Geotechnical Engineering & Soil Exploration"**
September 2 to 6, 1991
- Speaker University of the Philippines, National Engineering Center Seminar on Earthworks and Heavy Equipment Management
UP Engineering Center
Paper: **"Earthworks Planning & Execution - Geotechnical Investigation"**
February 26, 27 & 28, 1991
- Author Paper on **"The MCCRRP and Geotechnical Engineering."**
- Author Paper on **"Dynamic Consolidation as a Method for Soil Stabilization."**
- Author Paper on **"Rockmound Bulkhead Analysis and Design."**
- Author Paper on **"Monitoring for Embankment Control and Safety."**
- Speaker PICE Mid Year Convention
Baguio Convention Center
Paper: **"Innovations in Foundation Engineering"**
- Speaker The 23rd National Road Safety Convention
Road Engineers Association of the Philippines (REAP)
Paper: **"Soil Mechanics Principles Applied to Earthworks"**
Occupational Safety Building, Quezon City
- Lecturer ASEP NSCP Seminar Pierto Princesa, Palawan
- Lecturer Joint United Nations Development Program (UNDP)/ National Engineering Center
International Seminar on Soft Clays-UP Diliman
- Lecturer PICE Continuing Education Program
Paper: **"Spread Sheets in Civil Engineering"**
- Lecturer UST Association of Civil Engineering Students
Topic: **"Soil Stabilization Concepts and Procedures"**
- Lecturer PICE Continuing Education Program LNM Chapter
Topic: **"Soil Properties for Analysis and Design"**
- Lecturer PICE Continuing Education Program
Paper: **"Role of the Structural Engineer in Geotechnical Investigations."**
- Speaker ASEP Conference
Paper: **"Lessons from the Cotabato City Earthquake."**

- Speaker UP College of Architecture
Paper: **"The Cotabato Earthquake Causes of Failure."**
- Speaker CDCP Seminar on a Seismic Design.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:

- CHAIRMAN : PICE Geotechnical Specialty Group
- CHAIRMAN : ASEP Geotechnical Committee
- FELLOW : American Society of Civil Engineers (**ASCE**)
- FELLOW : Philippine Institute of Civil Engineers (**PICE**)
- FELLOW : Association of Structural Engineers of the Philippines(**ASEP**)
- MEMBER : PCIERD (Philippine Council for Industry & Energy Research & Development) Technical Committee
- LIFE MEMBER : Association of Structural Engineers of the Philippines (**ASEP**)
- PRESIDENT : International Geosynthetics Society (PHILIPPINE CHAPTER) 2008-2010
- MEMBER : American Concrete Institute (**ACI**)
- MEMBER : Industrial Fabrics Association Inc. (IFAI)
- MEMBER : American Society for Non Destructive Testing (**ASNT**)
- MEMBER : American Society for Testing and Materials (**ASTM**)
- MEMBER : International Geosynthetics Society (IGS)
- Former MEMBER : **ASFE** (The Association of Engineering Firms Practicing in the Geosciences)
- MEMBER & FORMER DIRECTOR : Philippine Concrete Industry Association (PCIA)
- MEMBER & DIRECTOR : ISSEP and Chair of R&D Committee.
- FORMER CHAIRMAN : NSCP 2015 (until May 2018)

SPECIAL TRAINING:

1. Attended Design Seminar on use of Carbon Fiber Reinforcement CFRP for Repair & Strengthening of Structures (First Asian to Undergo this Training on CFRP Design) Conducted by Ing Ernst Basler and SIKA [First Asian to Undergo this specialized training] Zurich, Switzerland
2. Certified NDT LEVEL I and LEVEL II Ultrasonic Testing Krautkramer Branson UT Course LEVEL I AND LEVEL II, San Diego, California, USA
3. Attended Field Operation and Training in the Use of Electric Cone Penetrometer (ECPTU) Testing Heerenveen, The Netherlands
4. Attended short course on the use of ECPTU, Pressure meter and Flat Dilatometer Texas A & M University Conducted by Prof. Louis Briaud
5. Radiation Health Safety Officer's Course, Certified RHSO Seminar Conducted by Edilberto Cabalfin (PNRI Accredited Trainor)

6. Attended at least Five (5) Annual Conferences for Geopier Technology Development and Research.
7. Attended Training in use of Seison Refraction Equipment usage and Applications, Geometrics, Inc., California, USA.
8. Speaker in 13 International Conferences and 31 Local Conferences on Various Topics. Please see *Publications/Professional Activities*.

INTRODUCED THE FOLLOWING PIONEERING TECHNOLOGIES IN THE PHILIPPINE CONSTRUCTION INDUSTRY

1. Pioneered in the use of CFRP Reinforcement in the Philippines for Structural Retrofitting
2. Pioneered in the use of soil nailing as a slope stabilization measure in the Philippines.
3. Pioneered in the introduction of Jet Grouting in the Philippines.
4. Pioneered in the introduction of GEOPIER Rammed Aggregate Piers in the Philippines.

WORK ON QUALITY EXCELLENCE

Co-FOUNDER AND TECHNICAL DIRECTOR:

Philippine GEOANALYTICS Inc. Group of Companies serving the Construction Industry

WWW.PGATECH.COM.PH

In the process, earned for the Group the following Quality Distinctions:

- **First Laboratory** to be accredited **outside the Continental US** under the National Voluntary Laboratory Accreditation Program NVLAP by the US Bureau of Commerce.
- **First Laboratory** to be accredited under the ISO/IEE Guide 25 (now **ISO 17025**) by the Bureau of Product Standards Philippine Government BPS No 001
- **FirstFilipino Consulting Firm** in the Philippines to be accredited under **ISO 9001** through TUV Germany.
- Set up of the **First Commercial Calibration & Metrology Laboratory** in the Philippines (**ISO 17025 accredited**).

WORK EXPERIENCES:

- *Principal*
EM²A Partners & Company
Quezon City
- *Consulting Geotechnical Engineer*
Morrison-Knudsen International
Boise, Idaho
300 Family Housing Units Project
Subic Naval Base
- *Consulting Geotechnical Engineer*
Sundt Corporation
Tucson, Arizona
450 Family Housing Units Project
Clark AFB

- *Consulting Engineer*
Nestle Philippines, Inc.
Various Projects
- *Consulting Engineer*
San Miguel Corporation
Various Projects
- *Consulting Engineer*
Caltex (Phils.), Inc.
Engineering Department
Marketing Operations
- *Head of Division, Planning and Engineering Group*
Construction Management Systems Department
Philippine National Construction Corporation (PNCC - formerly CDCP)
Rank: Assistant Vice President
- *Head of Section*
Monitoring & Controls Section
PSCD, TMD
Construction Development Corporation of the Philippines (CDCP)
Rank: Senior Manager
- *Assistant Project Geotechnical Engineer*
D'APPOLONIA CONSULTING ENGINEERS
10 Duff Road, Pittsburgh, PA, USA
- *Head*
Geotechnical Department
Planning & Engineering Group
Construction and Development Corporation of the Philippines (CDCP)
In Charge of Geotechnical Engineering for MCCRRP reclamation works including Soil Stabilization test works and Quarry Prospecting in Manila Bay.
Designed most of the Rock Bulkhead works from 1978 to 1979

JOB EXPERIENCES IN SITE CIVIL DESIGN AND GEOTECHNICAL/ MATERIALS ENGINEERING

1. ECWES Landfill Cavite (with Birkhan& Nolte Ingenieuresellschaft Germany) Complete site Civil Design of Sanitary Landfill including Earthworks Balancing, Design of Cells, protective dikes and Sanitary Drainage. Undertook Geotechnical Investigation and conducted Stability analyses of Dike system. Made detailed structural design of Landfill facilities and infrastructure such as Office Building, Maintenance shed and recycling shed.
2. VEOLIA Landfill Site Bulacan -Complete site Civil Design including Earthworks balancing, Design of Cells and Sanitary Drainage. Served as Geotechnical and civil consultant including evaluation of site soil Investigation results.
3. Birkhan& Nolte Ingenieuresellschaft Germany-Tarlac Sanitary Landfill site Served as Third Party Quality Control Laboratory on site Monitoring fill compaction of Embankments.
4. San Mateo Landfill _Undertook remediation Geotechnical studies for Collapse sheetpile wall retention system.
5. Birkhan & Nolte IngenieuresellschaftGermany - made conceptual studies on Middle East Landfill including provision of Animation to demonstrate the Feasibility of Landfill operations
6. VEOLIA- Prepared concept studies on Transfer stations including evaluation of provision for Manual Picking with or without conveyor system. Provided Presentation animation studies to sell the system.
7. Dizon Copper Mines-Made conceptual studies on utilization of Abandoned Open pit mine for use as sanitary Landfill. Provided concept studies and provided animation video for presentation to investors including sequencing of landfill operations as well as filling operations.
8. Visited Burgess and Niple (B & N)(Ohio, USA) visited Sanitary Landfill site in ColumbusOhio to Benchmark Sanitary Landfill design for familiarization studies on Landfill Design and Operation.
9. San Miguel Corporation – Structural Design of UASB – Upflow Anaerobics sludge Bed Reactor Brewery Wastewater Treatment Plant.
10. Magnolia Nestle – Structural Design of elevation aerobic Wastewater Treatment Plant.
11. Nestle Ice Cream Division – Structural Design of Aerobic Wastewater Treatment Plant.
12. Preparation of analyses, evaluation and recommendations for various Soil Investigation projects in the Philippines (see partial list of projects). (1975 to present).
13. As Head of Geotechnical Department P&E Group, CDCP Supervised Monitoring of various Soil Stabilization test works for MCCRRP Project such as:
 - *Surcharge Method*
 - *Sand Drain Method*
 - *Sand Compaction Pile (COMPOZER System)*
 - *Well point System*
14. Software Design for data reduction and regression analyses MENARD PRESSUREMETER (1979). Milwaukee Water Pollution Abatement Project, USA.
15. In-situ measurement of Soil Shear Strength using Field Vane Shear Apparatus.
16. In-situ Plate Load Testing of soils.
17. Prepared Concrete Trial mix designs for ADB HQ Bldg. using own design software (1986) including ICE in Mix Design to control cracking of mass foundation.
18. Prepared computerized aggregate blending program for asphalt mix for use at Subic Naval Base, Olongapo City for OICC SOWESPAC. (1985)

19. Supervision of Onshore and Offshore Pile Load Testing. (*LUSTEVECO Ship Repair Facility, PRC Boilerhouse, US Embassy Chancery, etc.*)
20. Various Laboratory and Field Testing of soils and operation of Soil Mechanics Laboratory.
21. Use of Inclinometers and Settlement Plates for measurement of soil displacement under load.
22. Slope Stability Analysis of embankments using STABL Software and own software running on microcomputer.
23. Attended Short Course on the Pressuremeter, Static Cone Penetrometer (CPT) and Dilatometer - TexasA&M University under *Professor Louis Briaud*.
24. Undertook Training in Static Cone Penetrometer, APVanden Berg, Heerenveen, Netherlands including actual testing at various sites.
25. Offshore and Onshore Soil Investigation procedures such as:
 - *Undisturbed and Disturbed Sampling*
 - *Rock Core Sampling*
 - *Standard Penetration Test*
 - *Dynamic Cone Penetrometer Test*
 - *Static Cone Penetrometer Test*
26. Prospecting for Dredger Sand Quarry areas. (*Manila Bay Reclamation Project - MCCRRP*).
27. Established monitoring program for assessing Post stabilization results for roadway construction in soft reclaimed land using Wick Drains.
28. Evaluated various Soil Stabilization Technology for possible use at the MCCRRP such as:
 - *Dynamic Consolidation or Heavy Tamping*
 - *Paper Drains*
 - *Lime Stabilization*
29. Observed the use of the following foundation systems:
 - *Large diameter bored piling*
 - *Slurry walls using bentonite*
 - *Paper drain installation*
 - *Rock and soil anchor drilling*
 - *Jet Grouting*
 - *Soil Cement Columns*
 - *Tunnelling using TunnelBoring Machines*
 - *Tunnelling using Jet Grouting for Roof Reinforcement*

SPECIAL ASSIGNMENTS UNDERTAKEN

1. As Head of Geotechnical Engineering Department, Planning and Engineering Group, CDCP, presided over the Geotechnical engineering aspects of the *Manila Cavite Coastal Road and Reclamation Project MCCRRP*, a 2,000 Hectare Road Reclamation and Development project .(1978-1979) to include:
 - Stability Analyses of Rock Bulkheads using personally designed software on an HP Programmable Calculator then, to be utilized as the containment wall and wave protection for the whole reclamation.
 - Prospecting for dredger quarry areas including the sinking of numerous boreholes within Manila Bay.
 - Presided over the Soil Stabilization Trial Works in Partnership with FUDO Construction / Kawasaki Steel to determine the most cost effective Soil stabilization technologies to be adopted for the Project.

- Setup of Soil mechanics Laboratory and Soil Exploration Team to monitor quality and condition of the seabed as well as the reclaimed Material.
 - Determine various silt control measures to protect the various aquatic livelihood areas from silt pollution and siltation.
 - Conducted numerous borings for Geotechnical works and for dredger quarry areas.
 - Conducted and interpreted Consolidation settlements over time to determine the necessary make-up volume.
2. Served as Geotechnical Engineering consultants to *Katahira Engineers Inc., for the R-1 Expressway Project* including the stability analyses and wave protection of the Expressway embankment as well the evaluation of the proposed foundation solution for the Bridge crossings. Conducted the necessary Geotechnical Engineering campaign including the conduct of numerous borings to determine soil shear strength and compressibility under loading. Quantification of magnitude of settlements was also performed for the project as well as determination of theoretical Statical pile load capacities.
 3. Served as Geotechnical Consultant to the *Project Planning and Management Office (PPMO) PAGCOR* for the reclamation aspects of the *AngBagongNayon Entertainment City* which encompasses a projected reclamation area of 720 hectares. As consultant was responsible for directing monitoring teams for the quantification of the Dredging Contractor's accomplishment including quantification of Make-up volume due to settlement loss. Projected settlement calculations and looked into foundation solutions for the various proposed structures and amenities. Set up monitoring procedures and Guidelines for the reclamation.
 4. Served as Geotechnical and Site Development Consultant for the *Manila Bay Development Corporation* for their 47 hectare reclamation project at the MCCRRP. Prepared the necessary reclamation methodologies and Geotechnical instrumentation and monitoring.
 5. Served as Geotechnical Engineer and Site Development Consultant for the 100 Hectare CBP 1 A parcel now known as the Mall of Asia complex to include Sanitary Engineering services and conduct of subsurface soil exploration.
 6. Served as Geotechnical, Detailed Structural Engineering and Civil design Group for JG Summit Inc. for the JG Summit Petrochemical plant in Simlong, Batangas City. As part of the engagement by EM²A Partners & Co. we performed:
 - a. Design of land reclamation of a 5 Hectare area in Batangas Bay, including the use of Precast Concrete bulkhead/Marginal wharf system to sustain heavy lift of minimum 300 MT single Load from shipside.
 - b. Undertook the site development planning for the whole Petrochemical Facility
 - c. Served as detailed Structural design engineer of record for the design of the Petrochemical plant seconded to *Mitsubishi Heavy Industries (MHI)*.
 - d. Designed an innovative Precast concrete prefabricated cells for use as a Receiving Marginal receiving wharf to handle 300 MT single load .
 - e. Currently retained and engaged as the Geotechnical Consultants as well as Site Development Design Engineers for the *JG SummitNaptha Cracker Project*. This is a downstream complementation and expansion of JG Summits Petrochemical complex.
 7. Served as Consultant to *Earth & Style Corporation* for the Geotechnical engineering works and Reclamation Methodology for a 100 Hectare Marginal land in Marilao, Bulacan.
 8. Served as Consultant and Engineer of Record for the ongoing NESTLE Frontier project at the FPIP complex in Tanauan , Batangas, to include Site development planning and Design and detailed Structural, Civil and sanitary Engineering Design. This is a PhP 12.0 B project on a 27 hectare site which will house the major Manufacturing complex of NESTLE for its various product lines.

9. Detailed as Engineering Software Designer with the rank of Assistant Project Engineer at the consultant's office of the Milwaukee Water Pollution Abatement Project - Milwaukee, Wisconsin for the purpose of installing a Computer Graphics Software component for the Integrated Information Retrieval and Interpretation System (IRIS) for Geologic/Geotechnical Mapping and Logging of the City of Milwaukee. JOINT CH2M HILL - D' APPOLONIA PROJECT. (1979)
10. Geotechnical Engineer for the Urban Redevelopment Project of the City of Port Gentil, Gabon, West Africa. This involved extensive soil investigation, field testing, preparation of Geotechnical Maps and prescribed bearing capacities for various structures. Effected considerable savings in field exploration costs thru correlation of results. (1977)
11. Prepared Data Reduction Program for MENARD PRESSUREMETER using mathematical regression techniques. The software includes a Graphics facility for plotting results. MWPAP - D' APPOLONIA CONSULTING ENGINEERS. (1979)
12. Conducted Slope Stability Analyses for various structures using computer software-STABL D' APPOLONIA CONSULTING ENGINEERS. (1979)
13. Sent to CDCP Hong Kong operations to assist in the joint preparation of Conceptual Project Execution Plans for various Civil Works projects. (1981)
14. Sent to Tawau, Sabah, Malaysia in connection with the Sabah East Coast Road Project for various trouble shooting assignments which included studies of Campsite facilities, equipment and construction problems, making technical justifications for revised construction procedures to the Resident Engineer. Also looked into quarry and aggregate processing facility and made recommendations for improving operations. (1977)
15. Investigated and prepared studies on causes and remedial measures for the settlement of various bridge abutments in the Candaba Swamps. (1979)
16. Headed CDCP team as Geotechnical Manager in the soil stabilization study program working with consultants from the *Kawasaki Engineering Corporation* for the purpose of determining the most effective and economical soil stabilization procedure for various land uses of the Reclaimed soils of the Manila Cavite Road and Reclamation Project. (1977)
17. Served as Geotechnical/Materials Engineering Consultant to MORRISON - KNUDSEN INTERNATIONAL for the 300 Family Housing Units Project, Subic Naval Base, Olongapo, Zambales. Engagement resulted in acceptance of Revisions in Compaction Specifications by the **US NAVY** due to Swelling Soils uncovered in the Soil Studies. (1986)
18. Served as Consultant for CALTEX (Phils.) (now CHEVRON) INC. for Investigation and Design of Pollution Containment Dike, Lapu-Lapu Terminal, Cebu City. (1985)
19. Undertook Failure Analyses and Studies on Typhoon Damage to Major Structures for PACIFIC CEMENT CO. INC. Subsequently retained for Structural Redesign of said Structures using recommended improvements made on the basis of findings made during the failure analysis. (1985)
20. Sent to CDCP Saudi Construction operations for the purpose of preparing accelerated construction Project Execution Plans. (1981)
21. Served as Geotechnical co-consultant to SUNDT Corporation, Tucson, Arizona for 450 Housing Units at Clark Air Force Base (1987)
22. Served as Co Consultant for Foundations Tagaytay Highlands Belleview Condos along Marginal Slopes.
23. Engaged in various projects for mitigation and remediation of damage due to Swelling/Heaving Soils.
24. Served as Consultant for the J.G. Summit Petrochemical Plant involving massive cuts in residual soils and rock.
25. Serve as Consultant for the Design of Piled Bulk Grains Handling Pier for San Miguel Corporation Integrated Bulk Handling Terminal, Mariveles, Bataan.

26. Served as Geotechnical Consultant for Manila Bay Reclamation Project of Manila Bay Development Corporation.
27. Prepared Foundation Studies for PSPC Refinery, Tabangao, Batangas.
28. Designed Soil Nailed Retaining Walls and Remediation for Collapsed Sections of Meridien Properties - EssensaTower Project.
29. Served as Geotechnical Engineer Designer for Soil Nailing Works - Katipunan Station LRT II for Hanjin Itochu Joint Venture.
30. Served as Geotechnical Consultant for West Leyte Road Improvement Project.