CONSULTING ENGINEERS ASSOCIATES 2005 LTD

COMPANY PROFILE

1.0 COMPANY BACKGROUND

Consulting Engineers Associates 2005 Ltd is a locally incorporated firm of Consulting Engineers and Project Managers, whose key personnel are qualified engineers with considerable experience in the planning, management and execution of Civil/Structural, Electrical and Mechanical Engineering Designs and Construction.

The company’s principal Engineer, Mr. Vaughn Lezama is a Fellow and Past President of the Association of Professional Engineers of Trinidad and Tobago and a registered professional engineer with 30 years experience in engineering consultancy practice. He has been involved in over 350 separate projects in Trinidad and Tobago and the Eastern Caribbean for Government agencies, local and overseas corporations and international funding agencies including the IDB, World Bank, CDB and EEC.

The firm was first incorporated as Consulting Engineers Associated Limited and commenced business in 1993 as a limited liability company with offices at # 54 Ramsaran Street, Chaguanas. In 2005 the firm was reregistered as Consulting Engineers Associates 2005 Ltd under new management. The current staff consists of seventeen (17) personnel.


2.0 EXPERIENCE

Following is a brief description of some sample projects undertaken by the company and which demonstrates the range of the company’s engineering experience.

**STRUCTURAL ENGINEERING DESIGN SERVICES**

**Proposed NGC Office Complex, La Brea**

Civil/Structural Engineering Designs of 124,000 sq. ft, 7-Storey Office Complex at the New Union Industrial Estate, La Brea (Client: National Gas Company of Trinidad and Tobago, estimated project Cost - $180,000,000.00)

**NESC Head Office, Brechin Castle**

Civil/Structural, Electrical and Mechanical Engineering Designs for development of a 28,000- sq.ft. Office Complex at Brechin Castle, Couva (Client: National Energy Skills Centre, estimated Project Cost - $42,000,000.00.)
NEC Offices and Warehouse Complex, Labidco Industrial Estate

Civil/Structural Engineering Design of 10,500-sq.ft. Office and Warehouse Complex at Labidco Estate (Client: National Energy Corporation estimated Project Cost – $25,000,000.00)

Phoenix Park Gas Processors Limited Head Office Complex – Rivulet Road, Point Lisas

Civil/Structural Engineering Design of 16,000-sq.ft. Office Complex at Rivulet Road, Point Lisas (Client: PPGPL, estimated Project Cost - $24,000,000.00)

Cipriani College of Labour and Co-operative Studies (CCLCS)

This Project involved a $30 million expansion of the CCLCS campus facility at Valsayn. CEAL was responsible for all of structural engineering designs and technical support services during the construction phase.

Petrotrin Control Building and Main Intake Substation

Civil and Structural Engineering Designs for the Site 1 Control Building and Main Intake Substation, Petrotrin Refinery Upgrade Project, Package D-1 (A), Pointe-a-Pierre Refinery (Client: George Wimpey [Caribbean] Limited).

Amoco Beachfield Maintenance Building

Architectural and Engineering Designs, Scope of Works and Specifications for Amoco Beachfield Maintenance Building. (In collaboration with Tarmac Construction Ltd; Client: Amoco Trinidad Limited).

Powergen Workshop Facility, Point Lisas

Architectural and Engineering Designs and Contract Administration Services for Powergen’s Workshop Facility, Point Lisas. (Client: Power Generation Company of Trinidad and Tobago Ltd.)

Hydro Agri Learning Centre

Detailed Architecture, Electrical and Mechanical Engineering, Scope of Works and Specifications for refurbishment of Hydro Learning Centre, Point Lisas. (Client: Hydro Agri, Trinidad Ltd.)

Gulf View Medical Centre Expansion

Structural, Electrical and Mechanical Engineering Design Services for Gulf City Medical Centre Expansion Works. (Client: Gulf City Medical Centre)
ABIL Factory, Warehouse and Office Complex – San Juan

Structural, Electrical and Mechanical Engineering Design and Supervision Services for development of Associated Brands Industries Limited (ABIL) new Factory, Warehouse and Office Complex at San Juan (Project Cost $30M)

Hydro Agri Chemico Building Control Room Renovations

Architecture, Electrical and Mechanical Engineering, Scope of Works, Specifications and Construction Supervision of renovations and conversion of Old Chemico Building Control Room to Offices’ (Client: Hydro Agri Trinidad Ltd.)

Messer Oxygen Plant Expansion – Point Lisas

Structural analysis and design of Piled Foundations for installation of large vessels and equipment for expansion of existing Oxygen Plant. Structural, Electrical and Mechanical Engineering Designs of Control Building and Personnel Building as well as design of Infrastructure Works for Messer Oxygen Plant Expansion at Point Lisas. (EPC in collaboration with W.E Whiteman & Co. Ltd., Client: Ranch Cryonics Inc.)

STRUCTURAL, MECHANICAL & ELECTRICAL DESIGN SERVICES

TSTT bMobile Services Centres

Structural, electrical and mechanical engineering designs and construction supervision of TSTT bMobile Services Centers at Brian Lara Promenade, POS, Trincity Mall, Trincity and Library Corner, San Fernando. The scope of work at these centres called for a high quality in the construction and building finishes and CEAL was able to achieve all of these with the use of the firm’s experience engineers and Clerk of Works.

PCS Nitrogen Jetty Sub-Station

Structural, Electrical and Mechanical Engineering Designs for PCS Nitrogen Jetty Electrical Sub-Station, Point Lisas. (EPC in collaboration with Super Industrial Services Ltd.; Client: M.W Kellogg Company)

Lurgi Electrical Sub-Station

Structural, Electrical and Mechanical Engineering Designs for Lurgi Electrical Sub-Station, Circored Project, Point Lisas (EPC in collaboration with W.E Whiteman & Co Ltd.)
Cliffs and Associates Administration Building

Engineering Designs (Structural, Electrical and Mechanical) for Cliffs and Associates Administration Building, Circored Project, Point Lisas (EPC in collaboration with W.E Whiteman & Co. Ltd; Client: Bechtel, Canada Inc).

CIVIL ENGINEERING INFRASTRUCTURE DESIGN SERVICES

Corinth Gardens Housing Development, Corinth, San Fernando

100 Acres HDC Housing Development Site consisting of single family, townhouse and apartment units, nursery school, primary school, library, community and commercial centres. CEAL undertook the complete infrastructure design including roads, drainage, sewage collection system, sewage lift station and retaining walls on behalf of the design-build developer, Pace Construction Limited

Lady Young Gardens Housing Project

CEAL undertook the engineering design of the roads, drainage infrastructure and Retaining Walls for this 6.5 hectares (16 acres) development project on sloping lands off the Lady Young Road, Morvant and which comprises town houses, duplexes and row houses. The construction works were managed on behalf of HDC by Civil Engineering Management Services Associates (CEMAS) and the works executed by China Jiangsu International Corp.

Ocean View Housing Development, Claxton Bay

CEAL undertook the engineering design of all infrastructure works including Roads, Drainage, Water Reticulation, Sewage Collection System and Drainage Detention ponds for a 100-Acre land development project in Claxton Bay. (Client: Ocean View Development Limited)

Immortelle Housing Development, Point Fortin

Detailed Engineering Design, Construction Drawing and Specifications for development of a 50-acres housing development site. Designs include road network, drainage and hydrology studies, sewage collection system and sewer treatment plant design for the development which consist of single family, townhouse and apartment units and community services facilities. (Client: Immortelle Development Limited, project Cost $35M)

Orchard Gardens North

Design of Infrastructure Works including roads, water reticulation and sewage collection system for 188 lots development, Orchard Gardens, Chaguanas. (Client PARK View Holdings Limited)
Park View Development

Design of Infrastructure Works for Park View Housing Development consisting of a 46-Lot housing development. (Client: Park View Holdings Limited)

Neilson Gardens Development

Design of Infrastructure for 24-Lots development, including roads and drainage Infrastructure, Montrose Chaguanas. (Client: Park View Holdings Limited)

Coora River Sluice Gate System

Detailed Hydrology Study and Engineering Design of Sluice Gate System to prevent salt water intrusion in the Coora River Basin (Client: Ministry of Agriculture, Lands and Marine Resources)

New Water Reticulation System – Port of Port of Spain – PATT

Detailed engineering designs of new water reticulation system for the port of Port of Spain (Client: Port Authority of Trinidad and Tobago)

CARONI Agricultural Lands Projects - Orange Grove, Felicity and Edinburgh Estates

Planning sub-division into 2-acre agricultural plots, engineering design and construction supervision of infrastructure, including road network, drains and irrigation systems at three former Caroni Estate sites to provide sustainable agricultural plots to former Caroni workers. These sites are Orange Grove Estate – 250 Acres, Felicity Estate – 1,532 acres and Edinburgh Estate – 1,750 acres. (Client: Estate Management and Business Development Co. Ltd – EMBD, Project Cost – Orange Grove Estate - $12.1M, Felicity Estate - $41.1M and Edinburgh Estate - $39.1 M)

ENGINEERING STUDIES

Hydro Agri Plant Drainage Study

Hydrological and Hydraulic Study of existing Plant Drainage System. Report with recommendations for flood mitigation measures. (Client: Hydro Agri Trinidad Limited)

PCS Nitrogen Urea Portal Scraper Rail Study

This Engineering Study was commissioned by PCS Nitrogen Trinidad Limited and involved the following:

- Investigation and evaluation of irregularities in the scraper rails alignment
- Evaluation of the rail foundation to determine reason for irregularities
- Determination of solutions for addressing the rail foundation irregularities
Preparation of engineering designs, drawings and cost estimates for implementation of the recommended solutions.

Preparation of Specifications and Scope of Works for implementation of the proposed engineering solutions for repair and retrofitting of the rail foundation to ensure long term serviceability of the rails.

**PATT Berth 6A Crane Rail Investigation**

This study was undertaken at the Port of Port of Spain and was commissioned by the Port Authority of Trinidad and Tobago. It involved the following:

- Investigation and evaluation of irregularities in the rail alignment which have led to deterioration of sections of the rail due to impact loads between the rail and crane rollers
- Evaluation of the rail foundation to determine reason for irregularities
- Determination of solutions for addressing the rail irregularities
- Preparation of engineering designs and drawings for implementation of the recommended solutions.
- Preparation of Specifications and Scope of Works for implementation of the proposed engineering solutions for repair, replacement and/or retrofitting of the rail and rail foundation to ensure long term serviceability of the rails.

**Community Development Works Coalmine, Sangre Grande**

Project involved condition assessment of existing infrastructure in the community of Coalmine, Sangre Grande, development of a Master Plan for improvement of existing infrastructure and facilities and the establishment of additional infrastructure and facilities to meet the needs of the community. Identification of the project components and development of engineering designs and Tender Documents for upgrading of existing infrastructure and facilities and for construction of additional facilities to serve the social needs of the community. Estimated Project Cost $10 M. (Client: Rural Development Company Limited – RDC)

**Caroni Large Farms Development Projects**

Field study, data collect, determination of level of existing infrastructure, including, roads, drainage and utilities, undertake needs analysis to determine the nature and type of rehabilitation or new infrastructure works required to service the farm activities. Conduct impact study of the expected development of the site on the local and national drainage system, develop design criteria for each type of utility, conduct an investigation of the possible options for providing the identified infrastructure and utility needs, evaluate the available infrastructure development options to determine the least cost or most feasible option, undertake detail engineering designs of the desired infrastructure including roads, drainage system, water supply, electricity and telephone, prepare Tender Documents including Scope of Works, Conditions of Contract, Specifications and Bills of Quantities and undertake construction supervision and contracts administration for two 100-acre large farm development projects at Jerningham.
Estate and Caroni Estate. (Client: RDC; Project Cost – Jerningham Estate - $12.5M and Caroni Estate - $9.94M)

**DESIGN-BUILD & FAST TRACK PROJECT EXPERIENCE**

**30-Acre Site for Fabrication of Offshore Structures**

Design and Construction of Infrastructure Works (Civil, Mechanical and Electrical) for 30-Acre Site for Fabrication of Offshore Structures at La Brea Industrial Estate. This $40 million EPC Contract was executed in association with the civil engineering construction firm of Sunco Engineering Services Company Limited (Client: The National Gas Company of Trinidad and Tobago)

**Corinth Gardens Housing Development.**

CEAL with the support of its associate sub-consultants undertook the complete infrastructure design including roads, drainage and sewage collection system and retaining walls on behalf of the Design-Build developer, Pace Construction Limited for this 100 Acres HDC Housing Development Site which consists of single family, townhouse and apartment units, nursery school, primary school, library, community and commercial centres.

**Speyside Secondary School Expansion, Tobago**

Details designs, construction management and inspection of the construction of a new wing to the Speyside Secondary School. This $10.0M Design-Build Contract was executed by the project team in association with general contractor, MSR Construction Limited. (Client: Maintenance Training and Security Company Limited-MTS)

**Port of Spain Port Facilities Upgrade for the 5th Summit of the Americas**

CEAL undertook the fast-track design, construction management and inspection for the upgrade and retrofitting of a number of port facilities on behalf of the Port Authority of Trinidad and Tobago (PATT) in preparation for the 5th Summit of the Americas. The facilities and infrastructure which were upgraded and/or retrofitted include the Cruise Ship Complex, Shed 3, Shed 4 and Dock Road. Port Sheds 3 & 4 were gutted and completely outfitted with architectural finishes, HVAC and Electrical services to meet the requirements of a Baggage Hall and Arrival Hall respectively to facilitate delegates hosted by two Cruise Ships berthed at the port for the conference while Dock Road was repaired, repaved and illuminated with outdoor architectural lighting. These projects costing altogether $15.0M were designed and constructed in a record time of 6 weeks. (Client: PATT)

**SWMCOL Sea Lots Waste Transfer Station, POS**

CEAL undertook the design, construction management and inspection for the design-build, fast-tract construction of SWMCOL Waste Transfer Station at Sea Lots, Port of Spain (opposite the POS Market). This design-build, fast-tract project
was undertaken in association with general contractor MSR Construction Limited. It was executed in a record period of 17 days to facilitate the closing down of the POS Dump in time for the 5th Summit of the Americas. (Client: SWMCOL, Cost - $2.5M)

**El Quemado River Bridge, Talparo**

CEAL in association with civil engineering contractor, R. Mahabir and Sons Limited undertook the design-build construction management of the El Quemado River Bridge at Talparo on behalf of the Rural Development Company Limited. The work involved the design-build of a 15 m span RC Bridge on pile foundation and included river training works and a hydrology study of the river catchments to determine the required flow capacity at the bridge. Project cost - $12.5 M

**PROJECT MANAGEMENT / CONSTRUCTION SUPERVISION**

**Supervision of Refurbishment of 27 TTPOST Delivery Offices and Construction of One New Office**

This project involved the refurbishment of 27 TTPOST Delivery Offices throughout Trinidad and the construction of one new office building at Williamsville. CEAL was responsible for providing the supervision services for this project. Personnel on this project included 6 Clerk of Works, a Project Liaison Officer, a Project Manager and CEAL head office support staff.

**MHTL M5000 Methanol Plant at Point Lisas**

Provision of QA/QC inspection services during construction of the foundation works for MHTL M5000 Plant at Point Lisas (Client: IPSL). Services included Site Supervision, Inspection and Technical support services to IPSL in execution of the QA/QC function

**Community Centres**

CEAL has been actively involved in the Contracts Management and Construction Supervision of a number of Community Centres at various locations throughout Trinidad on behalf of the Ministry of Community Development Culture and Gender Affairs. These include centres at Gonzales, La Seiva, Ortoire, Sisters Road, Bagatelle, St. Augustine, Penal Rock Road, Rochard Douglas Road, Bon Air, Roystonia and North Manzanilla among others.

**Arcadian (now PCS Nitrogen) #03 Ammonia Plant**

Construction supervision of site Preparation, Piling and Foundation Construction works on Arcadian #03, 750 STPD Ammonia Plant, Point Lisas. (Client: Arcadian Trinidad Ammonia Limited)
MHTL-AUM Plant – Point Lisas

Provision of QA/QC services for construction of MHTL-AUM complex at Point Lisas (Client: IPSL). Included on-site supervision and inspection of the works to ensure conformity with the project specifications.

Marabella and Couva Junior Secondary Schools

CEAL is currently involved in the provision of Contract Administration and Supervision Services for construction of Marabella and Couva Secondary Schools on behalf of EFCL. The construction costs of these projects are respectively $145M and $172.8M.

3.0 QUALIFICATIONS/SKILLS

3.1 Company

Since its inception in 1993, the Company has been involved in over 400 engineering projects of varying scope and technical requirements for a number of Clients ranging from Local and International Corporations to Government and Local Authorities.

Consulting Engineers Associates 2005 Ltd has in-house computer capabilities consisting of a local area network system which includes ten (10) fully automated draughting stations and three (3) engineering workstations. The firm is able to produce both small scale and large-scale drawings. Drawing reproduction is undertaken by use of a Canon BJC-5000 Printer for small-scaled drawings up to size 22” x 17” and an ENCAD Cadjet 2 Plotter, which can produce drawings up to 52” wide. The Printer and Plotter are connected by network to all workstations thus facilitating the easy reproduction of drawings and documents.

AutoCAD Version 2005 is loaded and used on all the draughting workstations. The firm also has a licensed copy of STAAD III Structural Analysis computer software, which is used for the execution of all major structural analysis and designs. Project scheduling and monitoring is undertaken with the use of Microsoft Project 2003 the firm also has a license copy of Haested Methods StormCAD and Pond Pack Computer software which are used for undertaking Drainage Design.

The firm utilizes the word processing and spreadsheet facilities of Microsoft Office for the preparation of Documents and Bills of Quantities. This software is loaded on all hardware.

The firm has nine-(9) full-time AutoCAD draughtmen who are assigned to individual AutoCAD workstations. Consulting Engineers Associates 2005 Ltd therefore has a relatively high-automated draughting capability and is therefore able to maintain a high rate of design drawing production.

3.2 Individuals

Following are details of the key personnel in the organization.
Mr. V. Lezama - Civil Engineer

Mr. Lezama is a Director and Principal Engineer of Consulting Engineers Associates 2005 Ltd and has extensive experience in Planning and Design of major Civil Engineering and Infrastructure and Building Works. Mr. Lezama is a Fellow of the Association of Professional Engineers of Trinidad and Tobago, a Member of the American Society of Civil Engineers with 25 years standing, a Registered Engineer with the Board of Engineering of Trinidad and Tobago and has been in engineering consultancy practice for the past 30 years.

Mr. L. Bholasingh - Electrical Engineer

Mr. Bholasingh is an Electrical Engineer with over 28 years experience in engineering practice. Mr. Bholasingh is principally responsible for the detailed design and specifications of electrical works including circuitry, internal and external lighting layout, panel and power supply schematics, fire safety, alarm and communication systems.

Mr. Erland Alleyne

Mr. Alleyne is a graduate civil engineer who has had responsible charge for the design and supervision of a wide range of civil engineering projects.

Mr. Dion Webber

Mr. Webber is a graduate civil engineer who has gained experience in construction supervision and civil engineering design of a wide range of projects including drainage, hydrology, retaining walls and general civil engineering infrastructure design.

3.3 Additional Personnel

Consulting Engineers Associates 2005 Ltd has additional in-house engineering staff and is also able to outsource support technical services from several Associates with whom we enjoy a working relationship. These include the following professionals who are qualified in Architecture, Building Services Designs, Surveying, Project Management and Quantity Surveying.

- Mr. Damian Nunez (URBASYS Ltd) - Architect
- Mr. Colin Charles (C&H Associates Ltd) - Quantity Surveyor
- Ms. Ana Maria Mejia (Independent Consultant) - Civil/Hydrological Engineer
- Mr. Trevor Koylass (Trevco Ltd) - Land Surveyor
- Mr. Harvey Ramrekar (Creative Designs Ltd) - Land Surveyor
- Mr. Cecil Chin (Helicon Limited) - Civil Engineer/Marine Specialist
- Mr. Patrick Carter - Building Services Technologist
4.0 RESOURCES AVAILABLE

Section 3.0 above provided details of the technological (computer hardware and software) and manpower resources which are available to the firm to allow the timely and professional execution of the project.

5.0 PROFESSIONAL AFFILIATION

Consulting Engineers Associates Limited is a member of the Association of Consulting Engineers of Trinidad and Tobago. The firm’s principal is a Fellow of the Association of Professional Engineers of Trinidad and Tobago and a Registered Engineer with the Board of Engineering of Trinidad and Tobago.

6.0 REFERENCES

Consulting Engineers Associates 2005 Ltd can provide Client references in support of its experience and capability.

7.0 CONDITIONS OF ENGAGEMENTS

The Conditions of Engagement for services provided by the firm will be in accordance with the Conditions of Engagement for Engineering Services (March 1984) as compiled by the Association of Professional Engineers of Trinidad and Tobago or as mutually agreed with the Client.
ORGANIZATION CHARTS
CONSULTING ENGINEERS ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PROJECT MANAGERS

MANAGING DIRECTOR
General Administration/
procurement

Civil Works
- Roads
- Water
- Sewage
- Drainage
- Hydrology
- Infrastructure etc.

Geotechnical & Environmental
- Soil Investigation
- Environmental Studies

Structural & Marine Works
- Building Structures
- Bridges
- Ports
- Marinas

Mech./ Elec. Services
- Electrical
- Mechanical
- Plumbing

Architectural Services
Urban Architecture Systems. Ltd.
ASSIGNED

Quantity Surveying. Services
C & H Associates Ltd.
ASSIGNED

Contract Administration
- Supervision
- Claims
- Arbitration
- Quality / Cost Control

CONSULTING ENGINEERS ASSOCIATES 2005 LTD
OPERATIONAL DEPARTMENTS
FIG. 3
CONSULTING ENGINEERS ASSOCIATES LIMITED

V. Lezama BSc., FAPE, MASCE, R. Eng.  
M. Lezama BSc, MSc, C. Eng.  
E. Alleyne BSc.  
D. Webber BSc.  

Civil Engineering Technicians  
M. Ali - Civil Engineering Technician  
R. Greenidge - Civil Engineering Technician  
K. Williams - Civil Engineering Technician  
J. Nunez - Civil Engineering Technician  
A. Samuel - Civil Engineering Technician  
B. Philmore - Civil Engineering Technician  
P. Sookoo - Civil Engineering Technician  

C. Scanterbury - Secretary  

L. Bholasingh - Services Engineer  
D. Nunez - Architect (URBASYS Ltd.)  
C. Chin - Civil Engineer (Helicon Limited)  
C. Charles - Quantitv Surveyor (C&H Associates Ltd)
PROJECTS PROFILE

View a photographic record of a sample of projects undertaken by the firm at our website

www.ceal2005.com
## CONSULTING ENGINEERS ASSOCIATES 2005 LTD – PROJECTS PROFILE

<table>
<thead>
<tr>
<th>PROJECT TITLE &amp; LOCATION</th>
<th>DESCRIPTION</th>
<th>VALUE TT$</th>
<th>STATUS</th>
<th>CUSTOMER</th>
<th>COMMENTS</th>
</tr>
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<tbody>
<tr>
<td><strong>STRUCTURAL ENGINEERING DESIGN PROJECTS</strong></td>
<td></td>
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</tr>
<tr>
<td>CIPRIANI COLLEGE OF LABOUR AND CO-OPERATIVE STUDIES</td>
<td>Structural Engineering Design and technical support services during construction</td>
<td>$30.0M</td>
<td>Completed</td>
<td>NIPDEC</td>
<td>Architects &amp; Project Mangers – TRINSULT Ltd</td>
</tr>
<tr>
<td>PHOENIX PARK GAS PROCESSORS LTD HEAD OFFICE COMPLEX</td>
<td>Civil/Structural Engineering Design of 16,000 sq.ft Office Complex.</td>
<td>$24.0M Budget</td>
<td>Engineering designs completed</td>
<td>PPGPL/NLBA</td>
<td>In association with Helicon Ltd, - Architects - NLBA</td>
</tr>
<tr>
<td>NEC OFFICE AND WAREHOUSE COMPLEX - LABIDCO INDUSTRIAL ESTATE</td>
<td>Civil/Structural Engineering Design of 10,500 sq.ft Office and Warehouse Complex.</td>
<td>$25.0M Budget</td>
<td>Engineering designs completed</td>
<td>National Energy Corporation</td>
<td>Architects – URBASYS Ltd</td>
</tr>
<tr>
<td>LABIDCO OFFICE COMPLEX - LA BREA</td>
<td>Civil/Structural Engineering Design of 124,000 sq.ft 7-Storey Office Complex</td>
<td>$180.0M Budget</td>
<td>Engineering designs completed</td>
<td>National Gas Company of TnT</td>
<td>Engineering designs completed</td>
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<td>NESC HEAD OFFICE COMPLEX</td>
<td>Civil/Structural, M&amp;E Engineering Design of 28,000 sq.ft Office Complex</td>
<td>$42.0m budget</td>
<td>Engineering designs completed</td>
<td>National Energy Skills Centre</td>
<td>Engineering designs completed</td>
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<tr>
<td>AMOCO BEACHFIELD MAINTENANCE BUILDING</td>
<td>Maintenance Building for Amoco LNG Upstream Dev. Project</td>
<td>$1.5M</td>
<td>Completed</td>
<td>TARMAC Construction Ltd.</td>
<td>Structural Engineering Designs</td>
</tr>
<tr>
<td>PETROTRIN CONTROL BUILDING AND MAIN INTAKE SUBSTATION</td>
<td>Main Control Building-Petrotrin Refinery Upgrade Project, Point-a-Pierre</td>
<td>$18M</td>
<td>Completed</td>
<td>PETROTRIN</td>
<td>Civil/Structural Engineering - EPC in association with TARMAC Construction</td>
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<tr>
<td>POWERGEN WORKSHOP FACILITY, POINT LISAS POWER STATION</td>
<td>18,600 sq. ft. workshop with 2 No. 50 ton Canes</td>
<td>$4.8M</td>
<td>Completed</td>
<td>POWERGEN</td>
<td>Engineering &amp; Project Management</td>
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<tr>
<td>GULF VIEW MEDICAL CENTRE EXTENSION</td>
<td>Civil, Structural, M &amp; E engineering design for extension of medical facility</td>
<td>$4.85M</td>
<td>Completed</td>
<td>Gulf View Medical Centre</td>
<td>Engineering and Project Management.</td>
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<tr>
<td>PROJECT TITLE &amp; LOCATION</td>
<td>DESCRIPTION</td>
<td>VALUE TT$</td>
<td>STATUS</td>
<td>CUSTOMER</td>
<td>COMMENTS</td>
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<tr>
<td><strong>STRUCTURAL ENGINEERING DESIGN PROJECTS</strong></td>
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<tr>
<td>ELIZABETH GARDENS VILLAS</td>
<td>Structural Engineering Designs</td>
<td>$15.0m</td>
<td>Completed</td>
<td>URBASYS Ltd</td>
<td>Architects–URBASYS Ltd</td>
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<tr>
<td>ASSOCIATED BRANDS INDUSTRIES LIMITED (ABIL)</td>
<td>New Factory, Warehouse and Office Complex at San Juan</td>
<td>$30.0M</td>
<td>completed</td>
<td>ABIL</td>
<td>Complete Civil, Structural, M&amp;E Engineering Services</td>
</tr>
<tr>
<td>SAMPSON HEIGHTS CONDOMINIUM</td>
<td>8-Apartment Condo-Complex</td>
<td>$2.4M</td>
<td>Completed</td>
<td>C&amp;H Associates Limited</td>
<td>Structural Engineering Designs</td>
</tr>
<tr>
<td>BUCCOO COMMUNITY CENTRE</td>
<td>Civil, Structural, M &amp; E Engineering design</td>
<td>$4.5m</td>
<td>Completed</td>
<td>MTS</td>
<td>Architects – URBASYS Ltd</td>
</tr>
<tr>
<td>BLACK ROCK PAN THEATRE</td>
<td>Civil, Structural, M &amp; E Engineering design</td>
<td>$4.0m</td>
<td>Completed</td>
<td>MTS</td>
<td>Architects – URBASYS Ltd</td>
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<tr>
<td>CARONI RIVER – BRIDGE CROSSING FOR 54” DIA. PIPE</td>
<td>42m span Steel Structure Pipe Crossing on Piled Foundation</td>
<td>$1.5M</td>
<td>Designs Completed</td>
<td>TRINSULT/ WASA</td>
<td>Structural Engineering</td>
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<tr>
<td>KINGS BAY VILLAS</td>
<td>Luxury Villas</td>
<td>$1.5M(ea)</td>
<td>Designs Completed</td>
<td>Parkview Holdings Ltd</td>
<td>Structural Engineering</td>
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<tr>
<td>HYDRO AGRI ADMINISTRATION BUILDING EXTENSION</td>
<td>Extension of Administration Building</td>
<td>$0.75M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Limited</td>
<td>Engineering Designs and Tender Documents</td>
</tr>
<tr>
<td>UREA FORMALDEHYDE RESIN PLANT, POINT LISAS INDUSTRIAL ESTATE</td>
<td>Infrastructure, Process and Non-Process Building, offices, Tank Foundation, Natural Gas Pipeline and Ancillary Facilities</td>
<td>$6.0M</td>
<td>Completed</td>
<td>Handy Equipment Company Limited</td>
<td>Engineering &amp; Project Management</td>
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<tr>
<td>LA SIEVA COMMUNITY CENTRE</td>
<td>6500 sq.ft two-storey Community centre with elevator</td>
<td>$6.0M</td>
<td>Completed</td>
<td>MTS</td>
<td>Structural, M&amp;E Designs and Project Management</td>
</tr>
<tr>
<td>COMMUNITY CENTRES CONSTRUCTION PROGRAMME</td>
<td>Construction of Community Centres at Penal Rock Road, Rochard Douglas Road and Hindustan</td>
<td>$12M</td>
<td>Completed</td>
<td>Ministry of Community Development</td>
<td>Structural, M&amp;E Engineering Designs &amp; Contract Documents</td>
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<tr>
<td>WESTINGHOUSE MOTOR LIFTING HOIST STRUCTURE - Point Lisas</td>
<td>Monorail Hoist Structure for maintenance of Westinghouse Motors</td>
<td>$0.3M</td>
<td>Completed</td>
<td>POWERGEN</td>
<td>Engineering Designs</td>
</tr>
<tr>
<td>S.P.I GANWAY, PCS Nitrogen Pier, Point Lisas</td>
<td>Upgrade of S.P.I Gangway - PCS Nitrogen Pier</td>
<td>$0.6M</td>
<td>Completed</td>
<td>P.C.S Nitrogen Trinidad Limited</td>
<td>Engineering Designs</td>
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</tbody>
</table>
## CONSULTING ENGINEERS ASSOCIATES 2005 LTD – PROJECTS PROFILE

### PPGPL MOLE SIEVE STORAGE WHAREHOUSE, Point Lisas
Construction of 7,700 sq.ft Warehouse Structure  
$3.5M  
Completed  
PPGPL  
Engineering Design, Tender Documentation and Construction Supervision

<table>
<thead>
<tr>
<th>PROJECT TITLE &amp; LOCATION</th>
<th>DESCRIPTION</th>
<th>VALUE TT$</th>
<th>STATUS</th>
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<tbody>
<tr>
<td>FOUNDATIONS &amp; RETAINING WALLS DESIGN PROJECTS</td>
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<tr>
<td>PCS REGENERATION SYSTEM FOUNDATION</td>
<td>R.C Foundation and Augered Piles</td>
<td>$0.5M</td>
<td>Completed</td>
<td>PCS Nitrogen Trinidad Limited</td>
<td>Engineering Designs and Const Supervision</td>
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<tr>
<td>CONOCO GASOLINE TANK FOUNDATION – Point Lisas</td>
<td>RC Foundation</td>
<td>$1.5M</td>
<td>Completed</td>
<td>Tarmac Construction Ltd.</td>
<td>Engineering</td>
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<tr>
<td>HYDRO AGRI 150k PPH BOILER FOUNDATION</td>
<td>RC Foundation for PPH Boiler</td>
<td>$0.75M</td>
<td>Design and Construction completed</td>
<td>Hydro Agri Trinidad Limited</td>
<td>Engineering and Project Management</td>
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<tr>
<td>PCS NITROGEN LTS CATALYST CONVERTER FOUNDATION</td>
<td>R.C Foundation for its Catalyst Vessel</td>
<td>$0.30M</td>
<td>COMPLETED</td>
<td>PCS NITROGEN</td>
<td>Engineering &amp; Tender Documents</td>
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<td>PCS NITROGEN BOARDING TOWER FOUNDATION</td>
<td>R. C. Foundation for erection of vessels Boarding Tower</td>
<td>$0.25M</td>
<td>Completed</td>
<td>PCS - Nitrogen</td>
<td>Engineering Designs</td>
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<tr>
<td>SETTLING TANK, PORT OF SPAIN POWER STATION -POS</td>
<td>Tank and Foundation for Effluent Neutralisation Plant</td>
<td>$0.5M</td>
<td>Completed</td>
<td>POWERGEN</td>
<td>Engineering Designs</td>
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<tr>
<td>FIRE WATER TANK FOUNDATION - LNG PLANT, POINT FORTIN</td>
<td>650,000 gallons fire Water Tank for Atlantic LNG plant at Point Fortin</td>
<td>$18M</td>
<td>Completed</td>
<td>Damus Ltd.</td>
<td>Design of Tank Foundation for EPC Contract undertaken by Damus Ltd.</td>
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<td>NEW FIRE HEATER, PRIMARY REFORMER AND PRE-REFORMER VESSELS FOUNDATIONS</td>
<td>Engineering Designs of Vessel Foundations</td>
<td>$15.0M</td>
<td>Completed</td>
<td>PCS Nitrogen Trinidad Limited</td>
<td>Design of Pile Foundations and Pile Caps</td>
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<td>PROJECT TITLE &amp; LOCATION</td>
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<td>FOUNDATIONS &amp; RETAINING WALLS DESIGN PROJECTS</td>
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<td>HYDRO LN2 STORAGE TANK FOUNDATION</td>
<td>Piled R. C. Foundation for LN2 Tank</td>
<td>$0.5M</td>
<td>Design Completed</td>
<td>Hydro Agri Trinidad Ltd</td>
<td>Engineering Designs &amp; Project Management</td>
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<td>MESSER OXYGEN PLANT EXPANSION – Point Lisas</td>
<td>Piled RC Foundations</td>
<td>$4.5M</td>
<td>Completed</td>
<td>Ranch Cryogenics Inc</td>
<td>Design of Piled Foundations for Installation of Plant Vessels and Equipment</td>
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<td>PPGPL TANKER LOADING ARM FOUNDATION</td>
<td>Construction of Foundation for New Tanker Loading Arm</td>
<td>$0.175M</td>
<td>Completed</td>
<td>PPGPL</td>
<td>Engineering Designs and Scope of Works</td>
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<td>JSCL CONCRETE BATCH PLANT FOUNDATION</td>
<td>Foundation for Concrete Batching Plant at the CRH/UBH interchange Project</td>
<td>$0.20M</td>
<td>Completed</td>
<td>Junior Sammy Contractors Ltd</td>
<td>Design of Foundations</td>
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<tr>
<td>PCS HYDROGEN RECOVERY UNIT FOUNDATION</td>
<td>New Foundation for Relocation of Hydrogen Recovery Unit</td>
<td>$0.15M</td>
<td>Completed</td>
<td>PCS Nitrogen Trinidad Ltd</td>
<td>Design of Mat Foundation &amp; Prepare Scope of Works</td>
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<td>TSTT CELL SITES TOWER FOUNDATIONS</td>
<td>Construction of Cell tower foundations at various locations in Trinidad</td>
<td>$25M</td>
<td>Completed</td>
<td>Grupo Saber Inc</td>
<td>Design of Foundation for Cell sites Towers</td>
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<td>PCS VERTICAL OIL SEPARATOR VESSEL FOUNDATION</td>
<td>Construction of Foundation for installation of Process Plant Vessel</td>
<td>$0.48M</td>
<td>Completed</td>
<td>PCS Nitrogen Trinidad Ltd</td>
<td>Engineering Designs and Scope of Works</td>
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<td>CIVIL AVIATION AUTHORITY WASTE WATER TREATMENT PLANT FOUNDATION</td>
<td>Construction of Foundation for installation of Package STP</td>
<td>$0.50M</td>
<td>Completed</td>
<td>Water Tech Limited</td>
<td>Engineering Design</td>
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<td>FOUNDATIONS &amp; RETAINING WALLS DESIGN PROJECTS</td>
<td>RETAINING WALL AT NAPARIMA/MAYARO ROAD (COCOYEA VILLAGE)</td>
<td>5.7 m H x 27m L Cantilever Retaining Wall on Augered Pile Foundation</td>
<td>$1.65M</td>
<td>completed</td>
<td>Community Improvement Services Limited</td>
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<td>RETAINING WALLS AT LADY YOUNG GARDENS APARTMENT COMPLEX</td>
<td>RC Cantilever Retaining Walls of varying heights (3.3m, 4.4m &amp; 7.5m)</td>
<td>unknown</td>
<td>completed</td>
<td>Housing Development Corporation</td>
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<td>RETAINING WALL AT CORINTH HOUSING DEVELOPMENT</td>
<td>RC Cantilever Retaining Wall</td>
<td>unknown</td>
<td>completed</td>
<td>Housing Development Corporation</td>
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<td>HONDA RIVER WALLING</td>
<td>RC Cantilever Retaining Walls of varying heights (3.75m &amp; 4.22m) to River Lining</td>
<td>unknown</td>
<td>completed</td>
<td>Drainage Division MOWT</td>
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<td>RETAINING WALL AT SAN FERNANDO GIRLS GOV’NT PRIMARY SCHOOL</td>
<td>RC Cantilever Retaining Wall 33.5 m L x 3.6 m H on augered pile foundation</td>
<td>$0.85M</td>
<td>construction contract award outstanding</td>
<td>Palo Seco Agricultural Enterprises Ltd</td>
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<td>RETAINING WALLS AT GONZALES COMMUNITY CENTRE</td>
<td>Double reinforced 200mm Concrete Block Masonry and RC Retaining Walls Structures</td>
<td>$0.045M</td>
<td>completed</td>
<td>Ministry of Community Dev.</td>
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<td>RETAINING WALL AT LA SEIVA COMMUNITY CENTRE</td>
<td>L-Shaped RC Retaining Wall Structure</td>
<td>$0.075M</td>
<td>completed</td>
<td>Maintenance Training and Security Co. Ltd</td>
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<td>PPGPL NEW TANKER LOADING ARM FOUNDATION</td>
<td>RC Foundation Structure to support Tanker Loading Arm</td>
<td>$0.150m</td>
<td>completed</td>
<td>PPGPL</td>
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<td>SLOP OIL RECOVERY PLANT FOUNDATION, GALEOTA</td>
<td>RC Concrete Foundations and Infrastructure</td>
<td>$12.0M</td>
<td>Completed</td>
<td>H. J. Gransaull &amp; Co. Ltd.</td>
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<td>RETAINING WALLS AT BICHE HIGH SCHOOL</td>
<td>RC Cantilever Wall, Sheet Pile Wall and CFA Soldier Pile Wall</td>
<td>$7.4M</td>
<td>Construction contract awarded</td>
<td>Education Facilities Company Limited</td>
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<td>PROJECT TITLE &amp; LOCATION</td>
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<td>INFRASTRUCTURE DESIGN PROJECTS</td>
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<tr>
<td>CORINTH GARDENS HOUSING DEVELOPMENT</td>
<td>100 Acres housing development site consisting of singly family, townhouses, apartment units, commercial and community facilities</td>
<td>$150M</td>
<td>Completed</td>
<td>HDC/Pace Construction Ltd</td>
<td>Design of roads, drainage, detention pond, water reticulation system, sewage collection system, lift station and retaining walls</td>
</tr>
<tr>
<td>LADY YOUNG GARDENS HOUSING DEVELOPMENT</td>
<td>16 Acres development on sloping lands – townhouses, duplexes and row houses</td>
<td>$50M</td>
<td>completed</td>
<td>HDC/CEMAS</td>
<td>Design of roads and drainage infrastructure and retaining walls</td>
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<tr>
<td>OCEAN VIEW HOUSING DEVELOPMENT</td>
<td>100 Acres Housing Development – Claxton bay</td>
<td>$42M</td>
<td>completed</td>
<td>Ocean View Development Ltd</td>
<td>Design of roads, water, sewage, drainage and detention ponds</td>
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<tr>
<td>IMMORTELLE HOUSING DEVELOPMENT</td>
<td>50 Acres housing development project – Point Fortin</td>
<td>$35M</td>
<td>completed</td>
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<tr>
<td>PARK VIEW DEVELOPMENT, CHAGUANAS</td>
<td>5.5 Ha. Land &amp; housing – 46 lots development project</td>
<td>$6.75M</td>
<td>completed</td>
<td>Park View Holding Ltd.</td>
<td>Design of roads, water, sewage, drainage and detention ponds</td>
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<tr>
<td>ORCHARD GARDENS NORTH – CHAGUANAS</td>
<td>188 Lots housing development</td>
<td>$12M</td>
<td>completed</td>
<td>Park View Holding Ltd.</td>
<td>Design of roads, water, sewage and drainage</td>
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<tr>
<td>NEILSON GARDENS</td>
<td>24-lots development</td>
<td>$7.5M</td>
<td>completed</td>
<td>Park View Holding Ltd.</td>
<td>Design of roads and drainage infrastructure</td>
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<tr>
<td>COORA RIVER BRIDGE</td>
<td>30-M span bridge, Pre-stressed Beam on Piled Foundation</td>
<td>$1.5M</td>
<td>Designs Completed</td>
<td>Ministry of Agriculture</td>
<td>Structural Engineering Designs &amp; Contract Documents</td>
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<tr>
<td>COORA RIVER SLUICE GATE SYSTEM</td>
<td>Sluice Gate System for Coora River Basin</td>
<td>$4.0M</td>
<td>Completed</td>
<td>Ministry of Agriculture</td>
<td>Engineering, Hydrology &amp; EIA Study</td>
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<tr>
<td>PORT OF POS NEW WATER RTICULATION SYSTEM</td>
<td>New Water Reticulation System for the Port of POS</td>
<td>$12.0M</td>
<td>Completed</td>
<td>Port Authority of Trinidad &amp; Tobago (PATT)</td>
<td>Engineering designs and Construction Supervision</td>
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<tr>
<td>LA BREA DOCK EXPANSION</td>
<td>Dredging &amp; Expansion of La Brea Dock Facility</td>
<td>$3.5M</td>
<td>Design Completed</td>
<td>IMC Logistics Inc.</td>
<td>Engineering Designs</td>
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</table>
# CONSULTING ENGINEERS ASSOCIATES 2005 LTD – PROJECTS PROFILE

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<tr>
<td>INFRASTRUCTURE DESIGN PROJECTS</td>
<td>Development of 2-Acre Agricultural Plots for former Caroni workers at Orange Grove, Edinburgh and Felicity Estates</td>
<td>$92.3M</td>
<td>Completed</td>
<td>Estate Management and Business Development Company Ltd</td>
<td>Design of Roads, Drains, Irrigation Infrastructure and Construction Supervision</td>
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<tr>
<td>HYDRO AGRI OIL /WATER SEPARATOR</td>
<td>Oil/Water Separation System</td>
<td>$0.35M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Limited</td>
<td>Engineering Designs and Construction Supervision</td>
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<tr>
<td>MULCHAN SEECHAN LINK RD DEV.</td>
<td>Road and Drainage Infrastructure</td>
<td>$2.5M</td>
<td>Completed</td>
<td>Park View Holdings</td>
<td>Road and drainage Design</td>
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<tr>
<td>BERTHING DOLPHINS - HYDRO AGRI INNER BASIN PIER SAVONETTA</td>
<td>Piling, topside structure, fender and bollards for Berthing Dolphins</td>
<td>$1.5M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Ltd (YARA)</td>
<td>Engineering Designs and Construction Supervision</td>
</tr>
<tr>
<td>HYDRO AGRI COOLING WATER CHANNEL</td>
<td>Inspection and Structural appraisal of Channel Lining</td>
<td>$2.5M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Ltd. (YARA)</td>
<td>Engineering Designs and Construction Supervision</td>
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<tr>
<td>GLYCOL COOLER STANDBY PUMP AND PIPEWORK – Point Lisas</td>
<td>Modification of Glycol Cooler pumping System to facilitate standby Pump</td>
<td>$0.1M</td>
<td>Completed</td>
<td>POWERGEN</td>
<td>Engineering Designs</td>
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<tr>
<td>WATER TREATMENT PLANT, PENAL POWER STATION</td>
<td>Structural and mechanical works for commissioning of Water Treatment Plant</td>
<td>$1.5M</td>
<td>Completed</td>
<td>POWERGEN</td>
<td>Engineering and Tender Documents</td>
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<tr>
<td>QUAY WALL JETTY – CLAXTON BAY</td>
<td>80M Quay Wall Jetty with sheet piling bulkhead and mooring bollards</td>
<td>$2.5</td>
<td>Completed</td>
<td>Worldwide Equipment Caribbean Ltd</td>
<td>Engineering Designs and Contract Documents</td>
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<tr>
<td>PCS NITROGEN DECONTAMINATED CENTRE</td>
<td>Decontamination Facility</td>
<td>$0.30M</td>
<td>Design Completed</td>
<td>PCS Nitrogen</td>
<td>Engineering Designs</td>
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<tr>
<td>HYDRO AGRI PILE ENCAPSULATION PROJECT</td>
<td>Rehabilitation for Existing Pile System Marine Structures</td>
<td>$2.5M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Ltd.</td>
<td>Engineering Designs and Construction Supervision</td>
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<tr>
<td>NHSL FORESHORE HELIPAD FACILITY</td>
<td>POS Helipad Facility off the Foreshore Highway to facilitate medivac and other emergencies</td>
<td>$2.6M</td>
<td>Completed</td>
<td>National Helicopter Services Limited</td>
<td>Engineering Designs &amp; Construction Supervision</td>
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<td><strong>M &amp; E SERVICES PROJECTS</strong></td>
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<tr>
<td>TSTT HOUSE A/C UPGRADE INDEPENDENCE SQUARE, POS</td>
<td>Evaluation of existing A/C System and new A/C System Design</td>
<td>$1.0M</td>
<td>Completed</td>
<td>TSTT</td>
<td>Mechanical Engineering Design &amp; Construction Supervision</td>
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<td>TSTT BMOBILE CUSTOMER SERVICE CENTRES</td>
<td>Development of bMobile Customer Service Centres at Brian Lara Promenade, POS, Library Corner, San Fernando and Trincity Mall, Trincity</td>
<td>$9.0M</td>
<td>Completed</td>
<td>TSTT</td>
<td>Structural, M&amp;E Design Services and Construction Supervision</td>
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<tr>
<td>HYDRO AGRI (YARA TRINIDAD LTD) CHEMICO BUILDING AND CONTROL ROOM</td>
<td>Detailed Architectural and M&amp;E designs for renovation and conversion of Old Chemico Control Room to Offices</td>
<td>$1.5M</td>
<td>Completed</td>
<td>Hydro Agri (Yara Trinidad Ltd)</td>
<td>M&amp;E Design Services and Construction Supervision</td>
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<tr>
<td>TSTT FIRE STOPPING AND FIRE DAMPING PROGRAMME</td>
<td>Detailed M&amp;E Designs for TSTT Fire Damping and Fire Stopping Projects at various Exchange Sites throughout T&amp;T</td>
<td>$120.0M</td>
<td>Complete</td>
<td>TSTT</td>
<td>M&amp;E Design Services and Construction Supervision</td>
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<tr>
<td>PROJECT MANAGEMENT/ CONSTRUCTION SUPERVISION</td>
<td>TTPOST DELIVERY SERVICE OFFICES</td>
<td>Refurbishment of Delivery Offices and Construction of One New TTPOST Office</td>
<td>$30M</td>
<td>Completed</td>
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<td>MHTL M5000 METHANOL PLANT – POINT LISAS</td>
<td>Construction of Foundations works</td>
<td>$40M</td>
<td>Completed</td>
<td>MHTL</td>
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<td>COMMUNITY CENTRES PROGRAMME</td>
<td>Construction of Community Centres throughout Trinidad – Ortoire, Sisters Road, St. Augustine, North Manzanilla, Arima, Gonzales, Bon Air, Roystonia, Bagatelle &amp; others.</td>
<td>$40M</td>
<td>In progress - 2006 to 2011</td>
<td>Ministry of Community Development</td>
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<td>PLIPDECO PORT ROAD WIDENING</td>
<td>Construction of Roadworks, Drainage and Water Main</td>
<td>$1.9M</td>
<td>Completed</td>
<td>Sunco Engineering Services Ltd</td>
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<td>PETROTRIN BITUMEN LOADING FACILITY</td>
<td>Construction of Pavement, Drainage &amp; Infrastructure</td>
<td>$1.22M</td>
<td>Completed</td>
<td>Sunco Engineering Services Ltd</td>
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<td>NGC SAVONETTA PIER #4 ACCESS ROAD</td>
<td>Construction of Access Road to NGC Pier #4</td>
<td>$1.0M</td>
<td>Completed</td>
<td>Sunco Engineering Services Ltd</td>
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<td>NUCOR IRON CARBIDE SETTLING BASIN – Point Lisas</td>
<td>R. C. Structure</td>
<td>$ 1.0M</td>
<td>Completed</td>
<td>Nucor Iron Carbide</td>
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<td>HYDRO AGRI PLANT REVAMP – Point Lisas</td>
<td>Civil Work for Plant Revamp</td>
<td>$5.0M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Ltd</td>
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<td>NUCOR SETTLING BASIN</td>
<td>Construction of R C Settling Basin Structure</td>
<td>$1.01M</td>
<td>Completed</td>
<td>Nucor Iron Carbide</td>
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<td>ARCADIAN #03 AMMONIA PLANT FOUNDATION CONSTR.</td>
<td>Construction Supervision of Piling and R C Foundations</td>
<td>$10.0 M</td>
<td>Completed</td>
<td>Arcadian Trinidad Ammonia Ltd.</td>
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<td>PROJECT TITLE &amp; LOCATION</td>
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<td>MARABELLA AND COUVA SECONDARY SCHOOLS</td>
<td>Construction of two schools under the Secondary Schools Construction Programme</td>
<td>$318M</td>
<td>Completed</td>
<td>Education Facilities Company Limited</td>
<td>Contract Administration and Supervision Services</td>
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<td>HYDRO AGRI LOGISTIC WAREHOUSE</td>
<td>Construction of Warehouse Structure</td>
<td>$1.0M</td>
<td>Completed</td>
<td>Hydro Agri Trinidad Limited</td>
<td>Construction Supervision</td>
</tr>
<tr>
<td>CONTROL ROOM EXTENSION</td>
<td>Construction of Extension to PCS 01/02 Control Room</td>
<td>$1.0M</td>
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<td>PCS Nitrogen Trinidad Ltd</td>
<td>Construction Supervision</td>
</tr>
<tr>
<td>WRIGHTSON ROAD IMPROVEMENT WORKS</td>
<td>Upgrade of Wrightson Road from St. Vincent Str. To Colville Str.</td>
<td>$9.5m</td>
<td>Completed</td>
<td>Sunco Engineering Services Ltd</td>
<td>Construction Management</td>
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<tr>
<td>UPGRADE OF PCS NITROGEN MAIN ACCESS ROAD</td>
<td>Upgrade of main access road to PCS Nitrogen Facilities at Point Lisas</td>
<td>$1.2M</td>
<td>Completed</td>
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<tr>
<td>PROJECT TITLE &amp; LOCATION</td>
<td>DESCRIPTION</td>
<td>VALUE TT$</td>
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<tr>
<td>DESIGN-BUILD &amp; FAST TRACK PROJECTS</td>
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<tr>
<td>LABIDICO INDUSTRIAL ESTATE OFFSHORE STRUCTURES FABRICATION YARD</td>
<td>30-Acre Site for fabrication of Offshore Structures at La Brea Industrial Estate</td>
<td>$40M</td>
<td>Completed and in operation</td>
<td>National Gas Company of Trinidad &amp; Tobago</td>
<td>Design/Build Contract for Construction of Infrastructure Works (Civil, M&amp;E) in association with Sunco Engineering Services Co.</td>
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<tr>
<td>CORINTH GARDENS HOUSING DEVELOPMENT</td>
<td>100 Acres Housing Development Site - Corinth Gardens, San Fernando</td>
<td>$150M</td>
<td>Completed</td>
<td>HDC</td>
<td>Design/Build Contract for Infrastructure works in association with Pace Construction Limited</td>
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<tr>
<td>CIRCORED PROJECT ELECTRICAL SUBSTATION</td>
<td>Electrical Substation for Lurgi Hydrogen Plant</td>
<td>$1.5M</td>
<td>Completed</td>
<td>Lurgi</td>
<td>Design/Build Contract in association with W. E. Whiteman &amp; Co Ltd.</td>
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<tr>
<td>AMOCO BLUFF EROSION MITIGATION - GALEOTA</td>
<td>Coastal protection works at Amoco Pt. Galeota Facilities</td>
<td>$8.5M</td>
<td>Completed</td>
<td>Amoco Trinidad Oil Company</td>
<td>Design /Build Construction Contract in association with TARMAC Construction</td>
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<tr>
<td>ATLANTIC LNG PLANT CONSTRUCTION SITE OFFICES</td>
<td>5000 sq. ft. construction site office building</td>
<td>$0.8M</td>
<td>Completed</td>
<td>Noell Whssoe Inc.</td>
<td>Design/Build Contract in association with L. John Williams Services Ltd.</td>
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<tr>
<td>MESSER OXYGEN PLANT EXPANSION – Point Lisas</td>
<td>Piled RC Foundations</td>
<td>$4.5M</td>
<td>Completed</td>
<td>Ranch Cryogenics Inc</td>
<td>Design/Build Contract in association with W. E. Whiteman &amp; Co Ltd.</td>
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<tr>
<td>SPEYSIDE SECONDARY SCHOOL EXPANSION - TOBAGO</td>
<td>Addition of New Classroom and Administration Wing to existing school</td>
<td>$10M</td>
<td>Completed</td>
<td>MTS</td>
<td>Design / Build Contract in association with MSR Construction Ltd</td>
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## DESIGN-BUILD & FAST TRACK PROJECTS

<table>
<thead>
<tr>
<th>PROJECT TITLE &amp; LOCATION</th>
<th>DESCRIPTION</th>
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<th>CUSTOMER</th>
<th>COMMENTS</th>
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<tr>
<td>POS PORT FACILITIES UPGRADE FOR 4th SUMMIT OF THE AMERICAS</td>
<td>Fast Track design, construction, Contract Administration and supervision of upgrade and retrofitting of Port Sheds, Roads and other Facilities</td>
<td>$15M</td>
<td>Completed in 5 weeks</td>
<td>Port Authority of Trinidad and Tobago</td>
<td>Fast Tract Design, Tender Documentation, Construction and Supervision</td>
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<tr>
<td>SWMCOL SEA LOTS WASTE TRANSFER STATION</td>
<td>Construction of Waste Transfer Station to facilitate the 5th Summit of the Americas Conference</td>
<td>$2.5M</td>
<td>Completed in 4 weeks</td>
<td>SWMCOL</td>
<td>Design/Build Fast track Construction Contract in association with MSR Construction Ltd</td>
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<tr>
<td>EL QUEMADO RIVER BRIDGE - TALPARO</td>
<td>Construction of 15m span RC Bridge on piled foundation</td>
<td>$12.5M</td>
<td>completed</td>
<td>Rural Dev. Co of Trinidad &amp; Tobago (RDC)</td>
<td>Design / Build Contract in association with R.Mahabir &amp; Sons Ltd</td>
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<tr>
<td>PCS NITROGEN JETTY SUB-STATION</td>
<td>Construction of Jetty Electrical Sub-Station</td>
<td>$1.5M</td>
<td>completed</td>
<td>M.W Kellogg Co.</td>
<td>Design / Build Contract in association with Super Industries Services Ltd.</td>
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<td>PROJECT TITLE &amp; LOCATION</td>
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<tr>
<td>HYDRO AGRI PLANT DRAINAGE STUDY</td>
<td>Hydrological &amp; Hydraulic evaluation and Report of Plant Drainage System</td>
<td>$0.5M</td>
<td>Study Completed</td>
<td>Hydro Agri Trinidad Limited</td>
<td>Hydrology Study and Report</td>
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<tr>
<td>NUCOR IRON CARBIDE SILTATION STUDY</td>
<td>Siltation Study of Nucor Berthing Channel</td>
<td>$0.3M</td>
<td>Completed</td>
<td>Nucor Iron Carbide</td>
<td>Engineering Study</td>
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<td>EL QUEMADO RIVER BRIDGE - TALPARO</td>
<td>Hydrology study of River Catchment to determine Flow capacity at Bridge</td>
<td>$12.5M</td>
<td>completed</td>
<td>Rural Dev. Co of Trinidad &amp; Tobago (RDC)</td>
<td>Hydrology Study and Report</td>
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<tr>
<td>UREA PORTAL SCRAPER RAIL STUDY – PCS NITROGEN</td>
<td>Investigation and Evaluation of irregularities in the scraper rail alignment</td>
<td>$2.5M</td>
<td>completed</td>
<td>PCS NITROGEN</td>
<td>Engineering Investigation and Report</td>
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<tr>
<td>BERTH 6A CRANE RAIL INVESTIGATION - PATT</td>
<td>Investigation and evaluation of irregularities in rail alignment which have led to the rail deterioration</td>
<td>$0.25M</td>
<td>completed</td>
<td>Port Authority of Trinidad &amp; Tobago (PATT)</td>
<td>Engineering Investigation and Report</td>
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<tr>
<td>COMMUNITY DEVELOPMENT WORKS - COALMINE</td>
<td>Condition Assessment and Development of a Master Plan for improvement of existing infrastructure and community facilities</td>
<td>$10.0m</td>
<td>completed</td>
<td>Rural Dev. Co of Trinidad &amp; Tobago (RDC)</td>
<td>Engineering Investigation and Report</td>
</tr>
<tr>
<td>CARONI LARGE FARMS DEVELOPMENT PROJECTS</td>
<td>Field Study, Data Collection, Impact Study and Needs Analysis for 100-acre large farms large farm development at Jerningham &amp; Caroni Estates</td>
<td>$22.5M</td>
<td>completed</td>
<td>Rural Dev. Co of Trinidad &amp; Tobago (RDC)</td>
<td>Engineering Investigation, Report and Infrastructure Design</td>
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<tr>
<td>PCS UREA BULK WAREHOUSE STUDY</td>
<td>Investigation into damage and deterioration of Urea Storage Warehouse</td>
<td>$0.25M</td>
<td>completed</td>
<td>PCS Nitrogen Trinidad Ltd</td>
<td>Engineering Investigation, Report and Prepare Scope of Works for Remediation</td>
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<tr>
<td>PPGPL NEW CONTROL BUILDING</td>
<td>Blast Resistance Analysis &amp; Report on Blast Wall</td>
<td>$6.7M</td>
<td>completed</td>
<td>Phoenix Park Gas Processors</td>
<td>Engineering Investigation &amp; Report</td>
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HSE POLICY
INTRODUCTION

The company has a strong commitment to ensuring the highest health and safety conditions for all employees, together with the moral and legal responsibilities of an effective accident prevention and environmental protection program. The program and policies described herein is backed by the management, and administered, facilitated and monitored by the appropriate officers responsible for the respective duties. The company’s program emphasizes the following:

- continuous review and updating of safety procedures
- comprehensive safety training for supervisors, foremen and employees
- requirements for ‘tool box’ meetings with laborers and management
- provision of proper ‘first aid’ facilities and competent medical care
- establishment of general safety and fire prevention/protection plans
- close coordination with insurance carriers on claims investigations
- inspection and monitoring of the project and advising management of trends or problems
- control procedures regarding health hazards and toxic materials
- compliance with government rules and regulations.

- Environmental protection measures to prevent or mitigate the impact of any site operation including contaminations, spillages or disposal of waste that may adversely affect the environment.

SAFETY MISSION STATEMENT

The purpose of this statement is to describe the safety and Health Policy of Consulting Engineers Associates Limited and the management’s commitment to safety on all construction projects undertaken by our company.
All employees, subcontractors, vendors and other personnel assigned to or visiting the construction job sites under the management of CEAL must adhere strictly to the policies of the company with regard to safety and health, which are intended to prevent unwanted incidents that may result in physical and financial loss.

The safety mission of Consulting Engineers Associates Limited is to ensure a safe and healthy work place for all company employees and those who work with the company by continually reducing the number of accidents and injuries. Because working safely is a condition of employment, supervisors shall ensure compliance with the safety and health rules, laws and regulations as they apply to their respective operations, and that all tasks are planned and performed with a concern for safety.

All employees are expected to report for work Drug/Alcohol-free, to perform their job according to established safe practices and to use the safety equipment and devices provided. In addition to complying with safety requirements, employees are responsible for active participation in project safety and health programs, as well as the immediate reporting of all injuries and unsafe practices or conditions observed to their supervisor.

Consulting Engineers Associates Limited is dedicated to ensuring that the highest safety and health standards are maintained for all jobs under our management.

GENERAL SAFETY GUIDLINES

In addition to the basic rules of personal safety and conduct which shall be enforced in accordance with CEAL’s Safety Program, the following shall apply to all personnel assigned to the construction job sites under the control of Consulting Engineers Associates Limited.

1.0 Government Safety Regulations

All staff and site personnel shall comply with all relevant governmental safety regulations.

2.0 Reporting Unsafe Conditions

Reports shall be made to the designated site safety officer regarding any conditions affecting the safety of any site personnel, regardless of cause.

3.0 Accidents

An immediate verbal report shall be made to the safety officer concerning any on site accidents. All serious accidents shall be investigated followed by a written report.

4.0 Safety Talks

Toolbox safety meetings shall be held regularly with employees to discuss safety issues such as present compliance and the implementation of new safety measures.
5.0 Identification Cards

Access cards shall be granted to employees for gate entry. Access cards must be surrendered upon expiry.

6.0 Employee Screening

All employees shall be screened for the abuse of drugs and alcohol, and shall be capable of accomplishing all tasks assigned to them.

7.0 First Aid

First Aid facilities and necessary supplies shall be available to all personnel.

8.0 Smoking

Smoking is allowed in designated areas only.

9.0 Safety Officer

During work hours, a person responsible for safety shall be present. The officer will be responsible for compliance of safety regulations by all personnel.

BASIC RULES OF PERSONAL SAFETY AND CONDUCT

The following basic rules shall apply to all site personnel including those employed by sub-contractors who are under the management of Consulting Engineers Associates Limited.

Orientation

All job site personnel must be oriented by their employer and supervisor prior to beginning work on the project.

Reporting Hazard

Employees must report any unsafe conditions to their supervisor and/or project safety officer.

Injuries

Employees must report any unsafe conditions to their supervisor. All injuries must be reported and treated in the project’s office.
Safety Hats

All persons on the project are required to wear approved safety helmets at all times except while inside offices and in cabs of vehicles with adequate overhead protection.

Eye Protection

All persons on the project are required to wear approved safety glasses while performing or in close proximity to hazardous tasks such as welding, burning, grinding etc.

Respiratory Protection

Proper respiratory protection equipment shall be provided to and used by persons exposed to hazardous chemical substances or when working in unsafe, unventilated areas.

Clothing

Job site personnel shall wear, as a minimum, full-length trousers, short-sleeve shirt with collar and serviceable construction boots. Athletic shoes and sandals shall not be permitted.

Truck Riding

Personnel are not permitted to ride on loads, fenders, running boards, sideboards, and tailgates or with legs or feet hanging over sides of vehicles. Seat belts shall be worn by drivers and passengers inside cabs.

Equipment Operators

Operators must have their qualifications verified and their certificate on their person before authorized to operate construction or other mobile equipment.

Mobile Equipment

Project personnel are not permitted to ride on equipment that is not specifically designed to carry passengers or where proper seating is not provided. Project vehicles shall observe all traffic laws of Trinidad and Tobago.

Mobile Equipment Alarms

All mobile equipment shall have a working horn. All vehicles larger than pick-up trucks shall have a working back-up alarm, which will sound when the vehicle is reversing (not required on track cranes).
### Speed Limits

Vehicular traffic is not to exceed the posted speed limit.

### Scaffolding

Scaffolds are to be erected and dismantled by qualified personnel under the direction of component supervision. Scaffolds are not to be used until inspected and tagged.

### Electrical Equipment

No person, except qualified electricians, shall work on electrical equipment.

### Compressed Air

Personnel shall not use compressed air to blow dirt from clothing, hair or body. Compressed air shall not be misused.

### Smoking

Smoking is not permitted within 25 meters of flammable and combustible material.

### Sanitary Facilities

Personnel must use the sanitary facilities on the job site.

### Horseplay / Fighting

Running, shoving, practical jokes, horseplay or fighting are not permitted on the project.

### Substance Abuse

Violation of the Company’s substance abuse policy, including intoxication by or possession of liquor or narcotics by onsite personnel for sale, gift, barter, or otherwise dispose of on the jobsite is forbidden and shall result in dismissal of offending site personnel.

### Weapons

Possession of weapons by onsite personnel while on company property for sale, gift, barter, or otherwise dispose of is prohibited.

Personnel failing to comply with these rules may be removed from or denied access to the project.

### ENVIRONMENTAL REQUIREMENTS

(i) All personnel must ensure that their work area is kept clean. All garbage must be properly disposed of in garbage containers provided.
(ii) Personnel working with degreasers / solvents etc. for cleaning purpose must dispose of oily or contaminated water into containers provided for this purpose.

(iii) Contaminated soil, paper, cloth or any other material used in the job process, will be disposed by removal to approved disposal site etc.

(iv) All possible measures will be put in place to prevent spillage of any kind. Containment devices will be used in areas where fuels or oils are stored for site use and for any work, which may involve a risk of any spillage.

**POLICY ON PERSONNEL PROTECTIVE EQUIPMENT**

1. The minimum requirements for personal protective equipment shall be Helmets, Safety Glasses and sturdy, leatherwork shoes. Only equipment complying with OSHA, ANSI or other applicable regulations shall be used. Protective equipment which has been altered in any way shall not be worn on the project.

   Personal Protective Equipment which has been altered in any manner so as to reduce its effectiveness shall be repossessed, repaired or destroyed.

1.1 Head Protection

   a. The wearing of head protection on Sunco’s project is mandatory. Hard hats or caps shall meet the specifications of ANSI Z 89.1-1969. Hardhats will be replaced based upon manufacturer’s recommendation.

   b. Bump caps and metallic hard hats or caps are prohibited on CEAL’s project.

   c. Welders are required to wear head protection (hard hat or cap) during welding operations. Soft cap welding or cutting is prohibited.

   d. Persons who operate vehicles and equipment are required to wear protective head gear during the operation of such equipment, except in enclosed cabs.

1.2 Eye Protection

   All personnel involved in the use of power tools and welding equipment must wear approved protective eyewear during working hours. Protective eyewear shall meet the minimum requirements of ANSI Standard Z 87.1, latest edition.

   a. Only approved protective eyewear is allowed to be worn on our project sites.

   b. Glasses shall have side shields. Glasses with brow guards are recommended.

   c. In cases where employees perform work in operating or restricted areas of the facility, the use of chemical goggles, face shields and other protective equipment will be considered where necessary.
d. During grinding operations, full-face shields shall be worn in addition to required protective eyewear.

e. Persons who wear prescription or corrective type eye glasses shall wear goggles over the eyewear, use “over-the-glasses” safety glasses, or have prescription glasses that meet the requirements of the ANSI Z 87.1 standard.

f. Persons who are operating vehicles and equipment must wear protective eyewear while operating such equipment, except in enclosed cabs.

1.3 Respiratory Protection

Respiratory protection devices of the approved type shall be worn by personnel when exposed to hazardous concentrations of dust, fumes, mists or gases as may be required.

a. The use of respiratory equipment shall be used in accordance with applicable procedures and standards.

b. Respiratory equipment will be provided in accordance with the anticipated atmospheric conditions where the work will be performed.

c. Appropriate posting is required when exposure to atmospheric conditions may be harmful to health.

d. CEAL’s Safety Officer shall coordinate with the owner’s HSE representation before starting any work that requires employees to wear respiratory protection.

e. Provisions shall be made for employees who wear corrective lenses and are required to wear full-face respiratory protection. These provisions shall include rotation from such respiratory protection work and eyeglass inserts or special lenses, as if required.

f. Training shall be provided on the inspections, use, sanitary care and limitations of respiratory equipment. The records of such training shall be maintained by CEAL and made available to Owner’s Representative.

g. A competent person shall be designed by CEAL to store, maintain, inspect and clean respiratory equipment.

1.4 Hearing Protection

Approved hearing protection shall be made available and such protection shall be worn by all employees exposed to noise levels 85 dBA and higher where posted and where such high noise levels exist and may not be posted. A rule of thumb is if it is
necessary to shout to be heard when standing near a person, then the noise level exceeds permissible levels.

Signs warning of noise levels in excess of allowable limits will be posted to warn of potential exposure hazard and personal protective equipment requirements. All equipment that produces noise levels in excess of 85 dBA must be identified and tagged as “hazardous noise generating” – Hearing Protection required when operating.

1.5 Fall Protection / Prevention

Lifelines, safety belts and lanyards shall be used only for employee safeguarding. Any lifeline, safety belt, or lanyard actually subjected to in-service loading, as distinguished from static load testing, will be immediately removed from service and shall not be used again for employee safeguarding.

The use of fall protection equipment shall be in compliance with applicable regulatory standards. CEAL shall make maximum use of primary fall protection systems such as scaffolds, aerial lifts, personnel hoists, etc. These systems shall be equipped with complete walking / working surfaces free of floor openings, with standard guardrails systems in place and a safe means of egress. General guidelines include, but are not limited to:

a. Persons who are performing work in unguarded areas and exposed to a potential fall of six (6) feet or more shall utilize fall protection equipment. 100% tie-off is required at all times.

b. In situations where a fall could result in impalement, fall protection equipment shall be utilized regardless of the potential falling distance.

c. Vertical impaling objects, such as rebar, shall have the ends capped with a 2x4 inch block of wood, rebar cap, or other item which adequately covers the impaling end of the object and provides protection from the hazard.

d. Personal fall protection equipment must be inspected prior to each use by the user.

e. Safety harnesses and lanyards shall be inspected prior to each use by the user and any equipment found to be defective would be immediately removed from the project. In addition, fall protection equipment will be inspected bi-annually by a competent person. Fall protection equipment will be marked in such a manner to indicate when such an inspection was performed.

f. Auxiliary fall protection equipment such as static lines and perimeter guards shall be utilized by personnel traveling from one location to another in elevated positions.
g. Personnel working from or traveling in powered work platforms or personnel lifting / hoisting devices shall properly secure their safety lanyards.

h. Access ways such as ladders, shall be provided for personnel who must perform work in elevated areas.

i. Fall Protection devices subjected to shock-loading imposed during fall arresting shall be removed from service and destroyed.

j. Safety nets shall be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

k. CEAL will review the scope of work to identify the methods to achieve 100% fall protection prior to commencement of such work. Where lifeline systems are used, anchor points shall be capable of supporting at least 5,000 pounds or 2275 kg. Lifelines shall be installed and maintained by qualified persons who are competent and possess the rigging knowledge necessary to ensure the integrity and safety factors necessary for lifeline system installation. Lanyards shall be secured to vertical lifelines by rope grabs only. Knots, painters-hitchers, or loops are not acceptable. Horizontal lifelines shall have tie-off points at least waist high.

l. Subcontractors using retractable lifeline devices shall secure them by means acceptable to Bechtel and in all cases by a means capable of supporting at least 5,000 pounds or 2275 kg.

m. CEAL will require employees to wear an approved safety harness / lanyard system if they work from ladders where the fall exposure is less than 6 feet or 2 meters and they are unable to maintain 3-point contract.

1.6 Hand Protection

Gloves shall be used to protect hands when performing work, which would expose one to physical / chemical hazards. Care will be exercised in choosing the correct glove to the task being performed.

1.7 Dress Requirements

All Project personnel are required to wear suitable clothing at all times that will protect the body and extremities. Typical hazards to be protected against and things to consider are:

a. Chemical burns from acid / caustic residues or leaks can be prevented by using acid splash suits, protective boots and appropriate gloves.

b. Skin absorption of allergens or toxins in gaseous, liquid, or solid states can be prevented through the use of splash suits, boots and gloves.
c. Rotating or moving equipment. Loose clothing shall not be worn where it can contact or catch on energized conductors, moving parts, equipment or other hazards of this type.

d. Preference should be given to natural fibers in the clothing worn by personnel.

e. Short pants shall not be worn as outerwear.

f. Tank tops or sleeveless shirts shall not be worn as outerwear.

g. Finger rings, ear rings and others attached to other body parts or necklaces shall not be worn when there is a danger of catching them on moving parts or contacting energized conductors.

h. Certain job tasks may require breathing air, or other specialized protection, assure proper provisions are made i.e. sandblasting.

1.8 Protective Footwear

All personnel on the Project site shall wear protective footwear of sturdy construction. Open toe shoes, high heel shoes, sandals, tennis shoes, jogging or athletic shoes and other such footwear are prohibited on the Project. This rule also applies to personnel who perform work within the confines of an office and will from time to time leave their work area and conduct business where field activities are taking place.

ACCIDENT REPORTING, INVESTIGATING AND ANALYSIS

General Procedure Policy

1. All accidents are reported immediately to the Site Supervisor in charge of the work activity.

2. The supervisor completes the Employee Injury Report and submits it to the Safety Coordinator.

3. All employees are required to cooperate in all accident investigations, even if the accident does not relate to them.

4. Accident investigations analysis are conducted to identify the root causes of the accident and not to blame employees.

5. CEAL’s Safety Coordinator investigates all serious accidents and interview employees whenever necessary in order to validate Accident Investigation Reports
6. Supervisor’s Accident Investigation Checklist

6.1 Control the Accident Scene
- People are first priority
- Send for help … notify senior personnel
- See that the area is safe to administer first-aid

6.2 Stop ongoing hazards and rescue personnel, you should:
- Block mechanical equipment … prevent movement
- Issue personal protective equipment
- Provide emergency lighting, power, air, etc.
- Secure the scene and protect evidence by:
  - Rope off area

6.3 Collect Evidence
Identify transient evidence, take notes, pictures, and sketches:
- Position tools, equipment, layout etc.
- Tire tracks, foot prints, loose materials, etc.
- Collect operating logs, charts, records
- Identification numbers of the equipment and maintenance records

Note: Put dimensions on all sketches; signs and on all photos
Determine whether these factors contribute to the accident
- Housekeeping
  - Work environment, layout
  - Floor, surface condition
  - Lighting, visibility
  - Noise, distractions
  - Air quality, temperature, weather
  - Equipment condition, malfunction
  - Training, experience, supervision
  - Rule, procedure violations
  - Employee morale, attitude
  - Health, safety record
  - Alcohol, drug abuse

6.4 Get Things Back to Normal

6.5 Interview Witnesses
- Interview as soon as possible
- Interview at the accident scene
- Take notes, use a tape recorder
- Put the witness at ease
- Ask open-ended questions
- Repeat the story back to the witness
- End the interview on a positive note

6.6 Always:
- Stress that you only want the facts
- Stress that you want to prevent another accident
- Take the extra time to get understanding

6.7 Analysis
- Write down the accident story
- List the facts (parts of the story) which are in dispute
- Compare the facts and dispute with the physical evidence to establish the best answer
- Complete the story and identify accident causes with your manager.

6.8 Report
- Complete – Supervisor’s Injury / Accident and Cause Analysis Report

PREVENTATIVE MAINTENANCE AND INSPECTION POLICY

General Housekeeping is the fundamental and necessary preventative maintenance activity and is the responsibility of every person working on CEAL’s projects. The major elements of CEAL’s Policy in this regard are related to the storage and handling of materials, the care and use of small tools and the maintenance and operation of CEAL’s construction plant. CEAL’s general Policy on these are as follows:

MATERIAL

1. An orderly arrangement of material and equipment shall be maintained at all times.

2. Materials shall be stored in a manner so as to not obstruct access to fire protection equipment.

3. Materials in work areas shall be limited to actual needs and be stored in a manner to protect combustible material from ignition sources.

4. Construction areas shall be cleaned and arranged by safe means on a daily basis to preclude the creation of tripping, slipping and fire hazards.
5. Containers shall be provided for the separation of waste. Those containers intended to be used for the containment of combustible, flammable or toxic wastes shall be constructed of metal and equipped with covers. Containers shall be emptied at regular and frequent intervals.

6. Means shall be available for the containment of material spills. Spills shall be cleaned up by individuals trained to handle the material and shall be done promptly and disposed of properly. (MSDS will be consulted for proper handling instructions).

7. Materials shall be stacked, racked, blocked or interlocked so as to prevent sliding, falling or collapse.

8. Splinters, nails, sharp edges, etc., shall be removed or protected to eliminate the possibility of injury.

9. Maintenance is a fundamental and necessary activity on CEAL’s projects and shall be performed by every person working on the project.

10. Appropriate trash containers shall be placed strategically on the project and used for disposal of scrap materials and other construction-generated debris.

11. Liquids (such as paints, solvents, thinners, oils, greases) and any other material or containers which have contained chemicals shall be disposed of in accordance with project hazardous waste procedures and regulatory requirements.

12. Storage areas shall be kept clean and materials neatly stacked or placed.

13. Construction materials shall be stored or placed in an orderly manner.

14. Storage quantities shall be minimized.

15. Electric welding leads, cords, wires, electrical cables and other temporary systems shall be kept off the walking surface in an elevated position (minimum 7 feet). When elevated, they pose less danger to personnel and are less susceptible to damage by construction activities.

16. Lunch or eating areas shall be kept clean and free of all food scraps, wrappers, cups and other disposable items.

17. All scrap lumber, waste material and rubbish shall be removed from the immediate work area as the work progresses.

18. All solvent waste, oily rags and flammable liquids shall be kept in fire-resistant covered containers until removed from the worksite.

SMALL HAND TOOLS AND EQUIPMENT
1. CEAL’s Safety Officer will ensure that all tools are used in accordance with the manufacturer’s recommendations, have required guards in place and are maintained in good working order.

2. All tools and equipment shall be used and maintained in accordance with manufacturer recommendations.

3. CEAL’s Safety Officer shall ensure that work is performed only in areas and at times where adequate illumination exists. CEAL will provide all lighting required to safely perform work. Artificial lighting equipment shall be manufactured to a recognized international standard acceptable to the Employer.

MAJOR CONSTRUCTION EQUIPMENT

1. CEAL has an equipped yard and trained maintenance personnel under the supervision of a Mechanical Supervisor. The company implements a system of preventative maintenance of all construction plant including trucks. This includes a stock inventory of frequently changed parts for all equipment.

2. As a general rule all mobile construction equipment carry reverse alarms.

3. Equipment are operated only by operators trained and competent to do so.
KEY PERSONNEL
CURRICULUM VITAE

NAME : Vaughn Lezama

PROFESSION : Civil Engineer

NATIONALITY : Trinidad and Tobago

EDUCATIONAL/PROFESSIONAL AFFILIATIONS

B.Sc. Civil Engineering, University of the West Indies – 1979

Member of the American Society of Civil Engineers

Fellow of the Association of Professional Engineers of Trinidad & Tobago

Registered Engineer – Board of Engineering of Trinidad & Tobago (Reg. # 04-110) - 1988

Past President – Association of Professional Engineers of Trinidad (2007/2008)

RECORD OF ENGINEERING EXPERIENCE

Lee Young & Partners, Engineers and Project Managers, Trinidad & Tobago, West Indies – June 1979 –1994

JUNE – SEPTEMBER 1979 ENGINEER – SANTA CRUZ SEWERAGE SCHEME

Involved in the preliminary study investigation and report for the design and construction of a sewerage system to serve a developing sub-urban community on the outskirts of the Capital City of Port of Spain, Trinidad, West Indies.

SEPTEMBER 1979 – MAY 1981 ASSISTANT RESIDENT ENGINEER – PORT OF SPAIN SALT WATER FIRE FIGHTING SYSTEM

This project involved excavation and laying of a network of 77 km (48 mls) of ductile iron pipe of various sizes and the installation of 500 fire hydrants in the city of Port of Spain. The project also included the construction of a seawater intake structure, pump-house and the installation of pumping equipment to maintain a continuous seawater supply at a minimum pressure of 150 psi throughout the system.

Project cost was U.S. $12.5 million and the Contractor the Canadian Firm of Raken Contracting Ltd. in joint venture with a local partner.

JULY 1981 – JUNE 1982 ASSISTANT RESIDENT ENGINEER – AUDREY JEFFERS HIGHWAY, PORT OF SPAIN, TRINIDAD

This project involved the construction of 3 km of four-lane coastal highway and included two bridges constructed of reinforced concrete deck slab, pre-stressed concrete beams and abutments on piled foundation.

The project also involved land reclamation, embankment surcharging, construction of several reinforced concrete box culverts and coastal slope protection along the foreshore.

Construction was undertaken by the Japanese firm of Fujiko Ltd. with a local partner at a cost of U.S. $16 million.

JUNE 1982 – OCTOBER 1983 DESIGN ENGINEER – SALT WATER FIRE FIGHTING SYSTEM, SAN FERNANDO, TRINIDAD, WEST INDIES
Responsibility on this project included designs and preparation of all Contract Documents and Engineer’s Cost Estimate. The design is that of a closed-loop seawater distribution system with a delivery capacity of 6,500 gpm at 175 psi pressure to serve a population of approximately 45,000.

The System as designed consists of 56 km (35 miles) of ductile iron pipes of varying sizes, 215 fire hydrants, seawater intake structure and storage tanks.

The design involved site investigation and surveys, fluid distribution network analysis, pump selection and supervision of the preparation of construction drawings.

The estimated cost of construction was U.S. $19 million.

OCTOBER 1983 – FEBRUARY 1984
PROJECT CONSTRUCTION ENGINEER – WAREHOUSE COMPLEX
CHAGUANAS, TRINIDAD

Responsibility on this project included design of foundations, as well as preparation of fabrication drawings and direct supervision and management of the construction of a 3-bay portal frame warehouse complex with bays of dimension 120 ft. x 60 ft. and total floor space of 43,200 sq. ft. (4,000 sq. m) on two levels.

MARCH – JUNE 1984
CONSTRUCTION ENGINEER – HOUSING DEVELOPMENT
PROJECT, REAL SPRING, TRINIDAD

Responsibility on this project included setting out surveys, planning, scheduling, direct supervision and management of a number of small labour-only sub-contractors engaged on the construction of the foundations and floor slab on a 120 housing units development.

JULY 1984 – NOVEMBER 1985
RESIDENT ENGINEER – CROWN POINT AIRPORT PHASE I – TOBAGO, WEST INDIES

This project involved the construction of a passenger Terminal Building and related infrastructure including aircraft ramp, car park, roads, drainage and sewerage system at a cost of U.S. $9 million.

My responsibility on this project involved the overall supervision and co-ordination of the project, which was sub-divided and awarded to various specialist Contractors under the following Contracts:

- Foundations and building Works (Contractor, George Wimpey (Caribbean) Limited).
- Structural Steelwork (Yorke Structures Limited)
- Infrastructure including ramp, car park, roads and drainage (Seereeram Brothers Limited)
- HVAC and Mechanical Lift Installations
- Electrical and Communication Installations
- Sewerage Treatment Plant (Biwater (Caribbean) Ltd.)

NOVEMBER - DECEMBER 1985
ENGINEER – TOCO BEACH RESORT, SALYBIA BAY, TRINIDAD
WEST INDIES

My work on this project involved site investigations, drainage catchment area analysis, preliminary design and report for the establishment of a limited recreational facility which included a seawater pool within a river channel near the sea as part of an overall beach facility development.

JANUARY – AUGUST 1986
PROJECT DESIGN ENGINEER – CROWN POINT AIRPORT FIRE STATION

Undertake the design and preparation of all Contract Documents and Engineer’s Cost Estimate for this facility which consist of a structural steel frame building with approximately 7,000 sq. ft. (650 sq. m) of ground floor and 3,760 sq. ft. (350 sq. m) mezzanine floor, a control room, vehicle service garage and related infrastructure works.

The structure was designed as a semi-rigid steel frame with a wind speed resistance of 91 mph (41 m/s)
SEPTEMBER – OCTOBER 1986  PROJECT ENGINEER – CROWN POINT AIRPORT DEVELOPMENT
PHASE II, TOBAGO, WEST INDIES

Undertake the design and supervision of construction of commercial facilities as part of the continued development of the Crown Point Airport, Tobago. These facilities included Bureau de Change, Tourist Board Information, Craft Shops and Duty Free Shops.

Other involvement on this project included investigation and report on the establishment of General Cargo and Cold Storage facilities and the relocation of an existing navigational aid to accommodate the continued development of the Crown Point Airport.

OCTOBER 1986  PROJECT ENGINEER – PROPOSED GREYHOUND RACING FACILITY, TRINIDAD, WEST INDIES

Undertake technical report, preliminary design layout, analysis of project cost and preparation of construction schedules relative to employment, equipment use, cash flow and programme of works.

NOVEMBER 1986 – AUGUST 1987  EAST/WEST CORRIDOR HIGHWAYS PROJECT IDB LOAN NO. A84-10C-TT FACILITY, TRINIDAD, WEST INDIES

This project funded by the Inter-American Development Bank (IDB) at a cost of US $ 40 Million involved the development of two major roadway projects. One of these comprised the conversion of 4.95 km (3 mls) of an existing two-lane highway into a four-lane divided highway and included the construction of eighteen culverts and one bridge.

The other roadway comprised the construction of 7.5km (4.7 mls) of two-lane roadway for use as an exclusive mass transit bus-way and included the construction of seventeen (17) reinforced concrete box culverts, seven (7) pipe culverts and three (3) bridges.

Involved with a team of Engineers reviewing the design for these projects. Responsibilities included:

- Detailed analysis of roadway geometric
- Hydraulic assessment of culverts and bridge crossings
- Highway longitudinal drainage detailing
- Detailing of road signages, traffic signals and safety control
- Supervision of the preparation of revised drawings and additional detailed drawings
- Preparation of Tender Documents including Conditions of Contract, Specifications and Bills of Quantities
- Preparation of Engineer’s Cost Estimates for the projects

AUGUST-DECEMBER 1987  CROWN POINT AERODROME DEVELOPMENT PROJECT, TOBAGO WEST INDIES – DESIGN STAGE

This project constitutes Phase III of Crown Point Airport Development at a cost of US $22 million to upgrade the Airport to that of Category I capable of accommodating wide-bodied aircraft. The works involved upgrading and extension of the existing runway to 9,000ft, and included land reclamation, coastal slope protection, large scale embankment construction (1,400,000 cu. meters of land fill), construction of ramp, taxiway, drainage and installation of runway lighting and navigational aids.

Responsibility included:

- Design and Detailing of reinforced concrete Aircraft Ramp to ICAO and FAA Standards
- Investigation and preliminary design of Air Traffic Control Tower
- Preparation of General and Special Conditions of Contract and Bills of Quantities for inclusion in Tender Document
- Site Investigation and report on land acquisition requirements
- Rigid and flexible pavement thickness design

JANUARY 1988 – RESIDENT ENGINEER – CHURCHILL ROOSEVELT HIGHWAYS

- 3 -
This project is one of two major highway development projects, funded by IDB Loan No. 513/0C-TT, in which I was previously involved at the Design Review and Tendering stages.

The construction under this contract, which was awarded separately, comprises conversion of an existing two-lane highway into a four-lane divided highway made up of central median and four lanes of traffic with inner and outer shoulders.

The work involved construction of embankment about 2m (6. ft.) high and a pavement structure consisting of select material sub-base, crushed stone base course and bituminous concrete road base, binder course and wearing course.

Also included were eighteen (18) culverts and one Bridge constructed of prestressed concrete beams supported by reinforced concrete abutments on a pile foundation.

Responsibilities included:

- Overall site supervision of the project.
- Cost and time schedule monitoring, measurement and payment certification.
- Approval of shop drawings and preparation of miscellaneous design alterations for construction as determined by site conditions.
- Supervision of staff which included inspectors, draughting personnel, specialist materials technicians, one Materials Engineer and one Structures Engineer.
- Quality Control monitoring at precast yards, concrete batching plant, asphalt batching plant and at site with the facilities of a site laboratory.
- Preparation of monthly progress reports and other special reports.
- Evaluation and selection of specialist nominated sub-contractors.
- Coordinating with the owner’s representatives, Local Authorities and Utility Services.
- Review and Evaluation of claims arising out of the Contract.

This project involved the structural design and detailing of a six-storey octagonal reinforced concrete Air Traffic Control Tower Structure which formed part of the infrastructure work for the development of Crown Point Airport, Tobago, W.I.

Responsibility included:

- Structural Design and detailing aided by STADD-III computer program.
- Co-ordination of Service Engineers in the preparation of details for electrical, Mechanical and Air Conditioning installation.
- Preparation of Contract Document for Tender invitation of Specialist Suppliers with respect to the supply and installation of an Air Traffic Visual Control Room Cab and Passenger Lift.
- Tender evaluation and selection of Specialist Suppliers.
- Project co-ordination with Airports and Civil Aviation Authorities.

This marine Terminal is a facility to service a LPG Plant which formed part of an overall LPG project undertaken in the Point Lisas Industrial Estate, Trinidad W.I. The Terminal Structures are required to accommodate bulk carriers of up to 10,000 tons DWT.

Responsibilities included:
- Structural design detailing of breasting Dolphins, Mooring Dolphins, Loading Platform and Trestles, based on size and layout requirement as determined by the Client.
- Selection of Marine Fenders.
- Determination of Pile arrangement and loading required to support the structures.

APRIL - MAY 1990 PROJECT ENGINEER – GENERAL CARGO WAREHOUSE, CROWN POINT, AIRPORT, TOBAGO, W.I.

Responsible for design and detailing of Airport General Cargo Warehouse and Related Infrastructure to facilitate handling of international and domestic cargo. Include preparation of Specification, Bills of Quantities and other Tender Documents.

MAY – JUNE 1990

Involved in the preparation of Technical Proposals for Design and Construction of Richmond River Bridge and Secondary Road in Tobago, W.I. Prepare Technical proposal for highway extension project in Trinidad, W.I. Undertook design review of proposed infrastructure works for industrial Development Park, St. Lucia, W.I.

JULY – AUGUST 1990 CIVIL ENGINEER (MAINTENANCE AND IMPROVEMENT WORKS) ERIC WILLIAMS MEDICAL SCIENCE COMPLEX 500 BED HOSPITAL AND MEDICAL SCHOOL TRINIDAD W.I.

Responsible for providing technical direction on maintenance and improvement works undertaken by direct labour and contracts. Include preparation and evaluation of Tender Documents for execution of contract works.

SEPTEMBER – OCTOBER 1990 ACTING RESIDENT ENGINEER – CROWN POINT AERODROME DEVELOPMENT CONSTRUCTION STAGE

Involved in the construction supervision of US$22 million Airport Development Project which include coastal land reclamation, construction of a 9,000 feet runway, apron, taxiway, fueling facilities, navigational aids and related infrastructure works. Previously involved in the design stage of this project.

NOVEMBER – DECEMBER 1990

Involved in the following:

Design and Construction supervision of concrete Road Pilot Project, Pioneer Drive, IDC Estate, Sea Lots Trinidad in association with Trinidad Cement Limited.

Hydrographic survey for maintenance dredging of Port Castries, St. Lucia W.I.

Preparation of technical proposal for Pre and Post Contract Services for infrastructure and Housing Development work, National Housing Authority housing estate, Almond Drive, Morvant

Co-ordination of construction work in progress with respect to Crown Point Airport Development, Preparation of Master Plan for future development of Crown Point Airport.

JANUARY – FEBRUARY 1991

Responsible for the following:

Design of Crown Point Terminal Building Extension to provide a new domestic arrival hall and co-ordinate work of architect, contractor, services engineers during the construction stage.

Review of engineering design and contract documents for Coast Guard Berthing Facilities, Scarborough Harbour, Tobago.

Design of berthing pier and protective berthing dolphin for small vessel of approximately 2,000 tons DWT for LPG Marine Terminal Point Lisas, Trinidad.

Preparation of Technical proposals for design and Construction of Secondary Roads, Canaan, Tobago and for Consultancy Services for Design of Canaan/Bon Accord By –Pass Road and Castura/Mt. St. George Road, Tobago for Tobago House of Assembly.
MARCH – JUNE 1991

Responsible for the following:

Design and Detailing of Crown Point Airport Police Station. This Building consists of a two level reinforced concrete structure to meet the requirements of all national security functions at the Airport.

Design of Store Bay Local Road Extension, Crown Point, Tobago, including geometric alignment, drainage and pavement structure.

Evaluation of tenders for construction of Coast Guard Berthing Facilities of the Port of Scarborough, Tobago.

Assist Client’s Legal Officers in Preparation of defence in an Arbitration matter arising out of a Highway Project.

JULY 1991 – JUNE 1993

PROJECT ENGINEER – CONSTRUCTION OF IMPROVEMENTS TO CHURCHILL ROOSEVELTH HIGHWAY, GOLDEN GROVE ROAD TO O’MEARA ROAD

This project compromised conversion of 6.1km of existing two-lane highway into a four-lane dual carriageway highway.

The construction work was executed in two sections by separate main Contractors and involves construction of deep embankment, pavement structures, installation of traffic signals and highway lighting at intersections as well as associated works such as sinages, pavement markings and drainage.

Responsibilities included:

- Overall site supervision and co-ordination of Contract Administration with the project director and client’s representative.
- Preparation of design changes with respect to highway geometrics, drainage, structures and signages, traffic signals etc.
- Preparation of detailed engineering designs of frontage roads and all variation works undertaken under the contract.
- Materials, Quality, Cost and Schedule Control and monitoring.
- Preparation of progress reports and other special reports, survey checks and measurements.
- Supervision of site staff which included inspectors, specialist technicians and two site Engineers.

JULY – NOVEMBER 1993

PROJECT ENGINEER – PROTOTYPE MULTI-PURPOSE COMMUNITY FACILITIES

This project involved the design of a proto-type community facility to be constructed at five different housing development sites of the ministry of Housing and Settlement, viz.: Malabar, Bon Air West, Couva North, Union Hall and Harmony Hall. The project cost at each site was TT$1.5M to TT$2.0M.

Responsibility includes:

- Structural design and detailing.
- Preparation of specification and contract documents.
- Co-ordinate the work of the Project Architect, Service Engineer and Quantity Surveyor.

CONSULTING ENGINEERS ASSOCIATES LIMITED - 1994 to present, Managing Director and Principal Engineer with responsible charge for the following projects:

- Infrastructure design and construction supervision of Pizza Hut Restaurant at Gulf City, San Fernando (Client: Prestige Holding Limited).
- Construction Supervision of Contract 1 of the IADB funded Rural Access Roads and Bridges Rehabilitation Programme, Phase 1 (Client: Trintoplan Consultants Limited).
- Engineering Services provided to Hydro Agri Trinidad Ltd (now YARA), Savonetta Plant
  - Preparation of Engineering Designs and Contract Documents for Drainage of Sports Field and Area 8 and Rehabilitation of access road to Area 10 of Hydro Agri Point Lisas Plant Facilities
- Berthing Dolphins, Hydro Agri Inner Basin Pier Savonetta, Piling, topside structures, fenders and bollards
- Project Management of Refurbishment and Renovation Works of Old Chemical Building for use as Offices
- Preparation of Designs and Specifications for Hydro Learning Center Refurbishment
- Drainage Study of Hydro Agri Point Lisas Plant Facilities – Detailed Hydrological and Hydraulic Study of Plant Facility with the View to Identifying Existing Drainage Deficiencies and Making Recommendations for Mitigation Measures
- Inspection, structural appraisal, engineering design and construction supervision of Cooling Water Channel Lining rehabilitation.

•  Preparation of detailed civil and structural design works for the site 1 Control Building and Main Intake Substation, Petrotrin Refinery Upgrade Project (Package D –1 (A)), Pointe-a-Pierre. (Client: George Wimpey (Caribbean) Limited).
•  Design of Elevator Lift Shaft and Building Extension for Gulf City Medical Center (Client: Gulf City Medical Center).
  
  **Engineering Services provided to Power Generation Company of Trinidad and Tobago Limited**

- Engineering Designs and Construction Supervision of new Workshop Facilities for Point Lisas Power Station
- Engineering Designs for Water Treatment Plant, Penal Power Station
- Glycol Cooler Pipework redesign for installation of standby pump, Point Lisas Power Station
- Design and Construction Supervision of Westinghouse Motor Hoist Structure, Point Lisas Power Station
- Design and Construction Supervision of Airhouse Catwalk Structure, Point Lisas Power Station
- Design of Lube Oil Dispensing Room and Regeneration Settling Tank, Port of Spain Power Station

•  Parkview Development, Chaguanas: 5.5Ha. Land Development project (Client: Parkview Holdings Limited).
•  Atlantic LNG Plant Construction Site Offices, EPC in association with L. John Williams Services Ltd. (Client: Noelle Whessoe Inc.).
•  Amoco Bluff Erosion Mitigation, EPC in association with Tarmac Construction Limited (Client: Amoco Trinidad Oil Company).
•  Fire Water Tank Foundation 650,000 gallons Fire Water Tank for Atlantic LNG Plant, Point Fortin, EPC in association with Damus Limited (Client: Bechtel).
•  Tank Farm Facilities for Oil Recycling Plant, Point Fortin (Client: HJ Gransaul & Co. Ltd.).
•  Structural Design of Satellite Dish Support Structure (Client: Royal Netherlands Embassy).
•  Design Review of Solomon Hochoy Highway Extension (Tarouba to Cross Crossing) Southern Road Development Project (Client: Trintoplan Consultants Limited).
•  Engineering Designs for Gulf View Medical Center Expansion.
•  Engineering Designs for Circored Project Administration Building, Point Lisas – EPC in Association with W.E. Whiteman & Co. Ltd. (Client: Cliffs and Associates Ltd. /Bechtel Canada).
•  Engineering Designs for Amoco Beachfield Maintenance Building -EPC IN Association with Tarmac Construction Limited (Client: Amoco Trinidad Limited).
•  Preparation and Steel Placement Detailing for Lurgi Core Plant Foundations –Circored Project, Point Lisas, Contractor: W.E. Whiteman & Co. Ltd. (Client: Cliffs and Associates Ltd. /Bechtel Canada).

  **Engineering Services provided to WASA**

- Design and Construction Supervision of WASA Quality Control Laboratory at Arouca (Cost: $9.0M)
- Design and Construction Supervision of WASA Modern Workshop Facilities at Arouca (Cost: $7.3M)

  **Engineering Services provided to PCS Nitrogen Trinidad Limited - Point Lisa Industrial Estate:**

Engineering Designs for Boarding Tower Foundation and Reactor Access Catwalk

Engineering designs of Pile Foundations for the new Fired Heater, Primary Reformer and Pre-Reformer Units on #03 Plant

Design of Mat Foundation for Relocation of Hydrogen Recovery Unit.

Design of Foundation Structures for BFW Pre-Heater.

Evaluation of 2215JJT and 2215JBM Foundation for installation of new 2215JJT and 2215JBM Pumps.

Evaluation and recommendations for retrofitting of Foundation Piers for 2300-JC Surface Condenser.


Evaluation of 174-C Vessel Foundation for installation of New Condensate Cooler Vessel on #04 Unit.

Design and Construction Supervision of Foundation Retrofitting Works for E-709 Foundation on #03 Unit.

Design of Foundation Modification Works for E-721 Vessel on #03 Unit.

Preparation of Designs and Specifications for Replacement of 2 No. pumps on #01 Unit.

Design and Construction Supervision of Foundation Works for LTS Catalyst Converter Foundation on #02 Plant.

Design of Structural Supports and Foundations for Sea Cooling Water Make-up Line

Supervision of Piling and Foundation Works during construction of #03, 750 STPD Ammonia Plant.

Supervision of construction works for relocation of PCS Tool Shed and extension of Plant 01/02 Control Room.

Engineering Study of Urea Portal Scraper Rail. Include Investigation and evaluation of irregularities in the scraper rails alignment, Evaluation of the rail foundation, Preparation of engineering designs, drawings and cost estimates for implementation of the recommended solutions.

Project Management Services to Sunco Engineering Services Ltd. for the following projects:

Site Clearance, Grading, Roads, Underground Piping and Transfer Tower Shore Concrete Works for Cicored project, Point Lisas (Client: Cliffs and Associates Ltd.: Bechtel Canada).

Construction of Savonetta Pier #4 Access Road (Client: The National Gas Company of Trinidad and Tobago).

Construction of Petrotrin Bitumen Loading Facility, Point a Pierre (Client: Petroleum Company of Trinidad and Tobago).

Construction of Sedimentation, Quench and Settling Ponds for Cicored Steel Project at Point Lisas (Client: Bechtel, Canada).

Site Preparation Work, Atlas Methanol Plant, Point Lisas (Client: Lurgi Caribbean Ltd.)

Bien Venue and Orange Field Housing Development Project (Client: Sugar Industry Labour Welfare Committee)

Construction of Stage II Access Roads and Infrastructure to Labidco Industrial Estate (Client: NEC)

Construction of Trinmar Pipe yard Facilities at Labidco Estate (Client: Petrotrin - Trinmar Operations)

Construction of Cross-Island Pipeline Road Repair and Rehabilitation Works (Client: National Gas Company)

• Design Review and Contract Administration Services for La Brea Dock Extension, (Client: IMC Logistics T/dad Ltd.).

• Engineering Designs of Lurgi Electrical Sub-Station, Cicored Project, Point Lisas – EPC in association with W.R. Whiteman & Co. Ltd.

• Design of Foundations and infrastructure for Shop Oil Recovery Plant at Point Galeota (Client: H.J. Gransaull and Company Limited).

• Design and Construction Supervision of Coora River Sluice Gate System (Client: Ministry of Agriculture).
- Design detailing of 30m Span Coora River Bridge (Client: Ministry of Agriculture).
- Design of Sampson Heights Condominium (Client: C & H Associates Limited).
- Detailing of the Caroni River Crossing for 54" Pipeline for the Caroni Treatment in Association with TRINSULT Limited (Client: Water and Sewerage Authority of Trinidad and Tobago).
- Design of Kings Bay Villa, Kings Bay Development, Tobago (Client: Parkview Holdings).
- Preparation of Detailed Bid Documents for the Design and Installation of an Incinerator at Port of Spain General Hospital in association with Solid Waste Management Company Limited (Client: North West Regional Health Authority).
- Design of Roads, Drainage and Sewer Infrastructure for Plaisance Park Industrial Estate (Client: Property and Industrial Development Company of Trinidad and Tobago).
- Design of Infrastructure and Buildings for Plant Expansion of Associated Brands Industries Limited Plant at San Juan (Client: Associated Brands Industries Limited).

**Project Management Services to Civil and General Contractors Limited for the following projects:**
- Felicity Main Drain Construction, Felicity Chaguanas (Client: Drainage Division, Ministry of Works and Transport).
- First Citizens Branch (Client: First Citizens Bank).
- Detailed Structural Design for 24-room Chaguaramas Hotel (Client: Zinnick Investment Ltd)
- Detailed Structural Design of North Ridge Villas, St. Augustine (Client: URBASYS Ltd).
- Detailed Structural Design of Elizabeth Gardens Villas, Maracas St. Joseph (Client: URBASYS Ltd)

**Construction Management Services provided to R. Mahabir & Sons Ltd. for the following Projects:**
- St. John’s River Sluice Gates system (Client: Ministry of Works and Transport)
- Trinidad River Exclusion Gates System (Client: Ministry of Agriculture and Marine Resources)
- Marabella River Improvement Works (Client: Ministry of Works and Transport)
- Gucharan River Improvement Works – Cantilever Walling and Channel Invert Lining (Client: Ministry of Works and Transport)
- Mitchell Drain Improvement Works - Cantilever Walling and Channel Invert Lining (Client: Ministry of Works and Transport)
- Construction of 1.5km of Coastal Revetment Wall, Cocos Bay, Manzanilla (Client: MOWT)
- Alley’s Creek – Cantilever Walling and Channel Invert Lining (Client: Ministry of Works and Transport)
- Design-Build Contract for design and construction of El Quemado Road Bridge and reconstruction of El Quemado Road, Talparo, (Project Cost $7.5M; Client: Rural Development Company of Trinidad & Tobago Ltd)
- Design of Cantilever Retaining Walls of varying heights for lining of Honda River near Bridge Structure on the Southern Main Road.

- Detailed Design of Civil Works Infrastructure for 30-Acre Fabrication Yard Site at Labidco Industrial Estate, EPC in association with Sunco Engineering Services Company Ltd. and Geotech Associates Ltd. (Client: National Gas Company of Trinidad and Tobago)
- Civil/Structural Engineering Designs of 124,000 sq. ft, 7-Storey Office Complex at the New Union Industrial Estate, La Brea (Client: National Gas Company of Trinidad and Tobago, estimated project Cost - $180,000,000.00)
- Civil/Structural, Electrical and Mechanical Engineering Designs for development of a 28,000- sq.ft. Office Complex at Brechin Castle, Couva (Client: National Energy Skills Centre, estimated Project Cost - $42,000,000.00).
- Civil/Structural Engineering Design of 10,500- sq.ft. Office and Warehouse Complex at Labidco Estate (Client: National Energy Corporation estimated Project Cost – $25,000,000.00)

**Engineering Services provided to Phoenix Park Gas Processors Limited (PPGPL), Point Lisas**
- Structural Design and Construction Supervision of 7,700 sq.ft Mol Sieve Storage Warehouse ($3.5M)
- Design and Construction Supervision of New Tanker Loading Arrn Foundation
- Engineering Analysis and Structural Evaluation of New Control Building to resist a 3 psi Blast Load
Civil/ Structural Engineering Design of 16,000 - sq.ft. Office Complex at Rivulet Road, Point Lisas (Estimated Project Cost - $24M)

Inspection, Condition Assessment, Report and Tender Documentation for rehabilitation of Entranceway Trestle to PPGPL Dock No. 1 Jetty

Engineering Services provided to Telecommunication Services of Trinidad and Tobago (TSTT)

- Structural, electrical and mechanical engineering designs and construction supervision of bMobile Services Centers at Brian Lara Promenade, POS; Trinity City Mall and Library Corner, San Fernando.

- Structural engineering designs and technical support services during construction for the expansion of the Cipriani College of Labour and Co-operatives campus facility at Valsayn. Project cost $30 million

- Complete infrastructure design including roads, drainage, sewage collection system, sewage lift station and retaining walls for 100 Acres HDC Housing Development Site consisting of single family, townhouse and apartment units, nursery school, primary school, library, community and commercial centres at Corinth Gardens, San Fernando. (Client: Design-build Developer, Pace Construction Limited)

- Engineering design of the roads, drainage infrastructure and Retaining Walls for 6.5 hectares (16 acres) Lady Young gardens development project on sloping lands off the Lady Young Road, Morvant.

- Engineering design of all infrastructure works including Roads, Drainage, Water Reticulation, Sewage Collection System and Drainage Detention ponds for a 100-Acre land development project in Claxton Bay. (Client: Ocean View Development Limited)

- Detailed Engineering Design, Construction Drawing and Specifications for development of a 50-acres housing development site. (Immortelle Housing Development, Point Fortin). Designs include road network, drainage and hydrology studies, sewage collection system and sewer treatment plant design for the development which consist of single family, townhouse and apartment units and community services facilities. (Client: Immortelle Development Limited, project Cost $35M)

Engineering Services provided to the Estate Management and Business Development Co. Ltd. (EMBD)

- Planning, sub-division into 2-acre agricultural plots, engineering design and construction supervision of infrastructure, including road network, drains and irrigation systems for Caroni Agricultural Land Development Project at three former Caroni Estate sites to provide sustainable agricultural plots to former Caroni workers. (Orange Grove Estate – 250 Acres, Felicity Estate – 1,532 acres and Edinburgh Estate – 1,750 acres)

Engineering Services provided to the Port Authority of Trinidad and Tobago (PATT)

- Engineering Design, Contract Documents and Supervision of New Water Reticulation System at the Port of Port of Port of Spain

- Engineering Design, Contract Documents and Supervision of Reconstruction of Berths at Caricom Wharves – POS

- Engineering Design, Contract Documents and Construction Supervision viz; Port Roads Rehabilitation Works; Dock Road Drainage Works; GSS Terminal Infrastructure Upgrade; Invaders Bay Infrastructure Works; West Gate Development Project; Crane Anchor Buffers; Lunch/Change Room and Crane Maintenance Building

- Fast-track design, construction management and inspection for the upgrade and retrofitting of a number of Port facilities (Sheds 3 & 4, Cruise Ship Complex & Admin Bldg.) and Dock Road paving and lighting in preparation for the 5th Summit of the Americas conference in POS.

- Engineering Study of PATT Berth 6A Crane Rail. Include Investigation and evaluation of irregularities in the rail alignment which have led to deterioration of sections of the rail due to impact loads between the rail and crane rollers.

Consultancy Services provided to Rural Development Company of Trinidad and Tobago Limited

- Coalmine Community Development Works. Include condition assessment of existing infrastructure and development of a Master Plan for improvement of existing infrastructure and facilities and development of engineering designs and Tender Documents for upgrading of existing infrastructure and facilities and for construction of additional facilities to serve the social needs of the community. Estimated Project Cost $10 M.

- Caroni Large Farms Development Projects. Undertake detail engineering designs of infrastructure including roads, drainage system, water supply, electricity and telephone; prepare Tender Documentation, construction supervision and Contracts administration for two 100-acre large farm development projects at Jermingham Estate and Caroni Estate respectively. (Project Cost – Jermingham Estate - $12.5M and Caroni Estate - $9.94M)
Consultancy Services provided to Methanol Holdings Trinidad Limited (MHTL)
- Provision of QA/QC inspection services during construction of the foundation works for MHTL MS000 Plant at Point Lisas (Client: IPSL). Services included Site Supervision, Inspection and Technical support services to IPSL in execution of the QA/QC function
- Provide QA/QC services for construction of MHTL-AUM complex at Point Lisas (Client: IPSL). Included on-site supervision and inspection of the works to ensure conformity with the project specifications.
- Engineering Design and Tender Documentation for construction of Infrastructure works for 1.9Ha Laydown Yard at Point Lisas.
- Structural Assessment Report on AUM Complex MHTL Administration Building
- Engineering Design and Tender Documentation for AUM Lab Extension
- Design, construction management and inspection for the design-build, fast-track construction of SWMCOL Waste Transfer Station at Sea Lots, Port of Spain. (in association with design-build contractor MSR Construction Limited).

Consultancy Services provided to National Maintenance, Training and Security Company Limited (MTS)
- Structural, M&E Engineering Design, Tender Documentation and Construction Supervision of La Seiva Community Centre
- Details design of pre-engineered building for the construction of a new wing to the Speyside Secondary School. (in association with Design-Build Contractor - MSR Construction Limited.
- Detailed Civil/Structural Designs of Community Centres at Buccoo, Betsy Hope, Speyside, Lowlands and Plymouth, Tobago
- Detailed Structural Design of Black Rock Pan Theatre, Black Rock, Tobago

Consultancy Services provided to the National Self Help Commission (NSHC), Ministry of Community Development, Culture and Gender Affairs
- Engineering Designs, Contract Documentation and Construction Supervision of Community Centres at Gonzales, Bagatelle, Ortoire, Sisters Road, Bagatelle, St. Augustine, Samaroo Village, Bon Air, Roystonia and North Manzanilla
- Structural Engineering Designs and Contract Documentation for Community Centres at Hindustan, North Eastern Settlement, Palo Seco, Upper Malabar, Penal Rock Road and Rochard Douglas Road

Consultancy Services provided to Education Facilities Company Limited (EFCL)
- Supervising Engineer providing Contract Administration and Supervision Services for construction of Marabella ($145M) and Couva ($175M) Secondary Schools on behalf of the Education Facilities Company Limited (EFCL).
- Engineering Designs and Tender Documentation for Retaining Walls at Biche High School (RC Cantilever Wall and Sheet Pile Wall) – Client: Education Facilities Company Limited
- Structural, M&E Engineering Designs and Tender Documentation of Bon Air Government Primary School

PROFESSIONAL PRESENTATIONS AND PUBLICATIONS

- “Why This State of Transportation Crisis? – Options and Derelictions” – Presentation at APETT Breakfast Seminar – TTMA Building, May 2006
- Impact of the Proposed National Network of Highways Project on T & T Transportation Infrastructure” – Presentation at APETT 50th Anniversary Presidential Lecture Series – 27th October 2009
- “Lessons Learned from Haiti’s Earthquake Experience” - Presentation at Trinidad & Tobago Contractors Association Breakfast Seminar – “Are We Prepared for Natural Disasters” – February 3rd 2010.
- “Towards a Sustainable Drainage Solution” – Presentation at APETT’s Public Consultation Series–“Bridging Engineering and Society” – 21 September 2010.
- “The Transport Infrastructure Crisis in Trinidad and Tobago” – Publication Vol. 1. No. 1 2007, APETT’s Engineering Magazine “The Engineer”
- “Planning and Decision Making Issues in Development of National Transportation Infrastructure” – Presentation to the Rotary Club of Point-a-Pierre, Petrotin Lakeside Club, 20th January 2011.
- “The Pros and Cons of Pre-engineered Steel Buildings vs. The Traditional Engineered Low Rise Steel Structures in Trinidad and Tobago” – Feature Presentation at Pre-engineered Steel Building Technology Seminar, Hyatt Regency Hotel, Port of Spain, 26th January 2011

FIDIC & OTHER TRAINING COURSES

- “The Responsibilities and Duties of Dispute Adjudicators and Parties of Dispute” (FIDIC Red and Yellow Book) November 22nd & 23rd, 2010 - by IDIC in partnership with JCC and ECV;
- “The Practical use of the 1999 FIDIC Contract Conditions for EPC Turnkey Projects (Silver Book) and Comparisons with Plant & Design-Build Contract (New Yellow Book)” 25th & 26th June 2009 - by ECV in partnership with JCC;
- “Seismic RC Shear Wall Design” - December 8th 2006 - Dr. S.K Ghosh & UWI Continuing Engineering Education Centre;
- "Contract and Negotiation Skills" 16-18 August 2006 -by Arthur Lok Jack Graduate School of Business;
- "Mastering MS Project" - 21-25 August 2006 - Arthur Lok Jack Graduate School of Business;
CURRICULUM VITAE

NAME : Magda Lezama

DATE OF BIRTH : May 16, 1956

PROFESSION : Civil/ Drainage Engineer – Chartered Engineer

Present
Associate & Senior Consultant – Consulting Engineers Associates 2005 Ltd.
Senior Engineer - Flood Risk Management, City Development, Leeds City Council, Leeds UK.

Qualifications
M.Sc., B.Sc., (Eng) C. Eng, M.I.C.E, M.A.P.E

Education

2003 Advanced Professional Diploma in Leadership & Management
Leeds Metropolitan University, Faculty of Cultural & Education Studies
School of Education & Professional Development, Leeds UK.

1996 M.Sc. in Construction
Sheffield Hallam University, Sheffield UK

1992 Post Graduate Diploma in Civil Engineering Studies
Sheffield City Polytechnic, School of Construction, Sheffield UK

1980 B.Sc. Civil Engineering
University of the West Indies, St Augustine Trinidad.

Training

2004 Sustainable Urban Drainage, SUDS Online course
University of Abertay, Urban Water Technology Centre, Scotland, UK

1997 Internal Quality Auditing Training Course
SGS Yarsleys, International Certification Services Ltd, UK

1991 Highway & Traffic Systems Design
Sheffield City Polytechnic, School of Construction, Sheffield UK

1989 Project Management
Gov’t of T& T and the Caribbean Development Bank, Trinidad, W.I.

Current on-going Training in the use of:
- River modelling software for hydrological modeling (ISIS & HEC-RAS)
- Confinement space entry
- Safety in Construction
- Supervision of contractors (Water Training International)
- Health & Safety matters / Safe working practice and legal responsibilities.
- ArcView GIS – ESRI UK
  (to create, edit, display, query and analyze geographic and tabular data to create presentation quality maps & charts)

Professional Affiliations

1995 Corporate Member - Institution of Civil Engineers, (UK)

1985 Member - Association of Professional Engineers of Trinidad & Tobago
RECORD OF ENGINEERING EXPERIENCE

1994 – Present:  - Associate & Senior Consultant – Consulting Engineers Associates Ltd. (CEAL)

Provide Technical Support to CEAL in matters of Flood Mitigation and Drainage Infrastructure Design Works

2002 – present: Senior Engineer, Flood Risk Management, Leeds City Council, Leeds, UK

Assist the Principal Engineer in promoting sustainable drainage systems and assessing drainage proposals for developments in the City of Leeds.

Undertake strategic assessment of the impact of development on land drainage systems and advise on planning application for these developments.

Assist in carrying out the council’s statutory and common law duties related to Flood Risk Management.

Check and approve drainage designs submitted by developers.

Prepare agreements with developers for the future maintenance of land drainage schemes.

Preparation of some of Leeds City Council’s standards for sustainable drainage and directives/ protocol to enable developers to deal with surface water runoff at source.

Contribute to responses to government policy consultation papers on Land drainage, flood defence and other drainage issues. Produce and update drainage related planning conditions for developments. Liaison with other council departments, Yorkshire Water, the Environment Agency, the public, developers and council members on land drainage and sustainable drainage issues.

June 1995 to 2002: Project Engineer - Land Drainage

Engaged in the strategic planning and management of land drainage systems particularly in relation to the assessment of the condition and capacity of watercourses and control the effects of development with the vetting of planning applications. Advised the Planning Department on conditions to be attached to planning consents in relations to SUDS and the need to improve and protect downstream watercourses. Promoted and advised on the use of Sustainable urban Drainage Systems (SUDS) in accordance with council and national policies and guidelines.

Engaged in the approval (or otherwise) of the culverting of watercourses and controlled the activities of developers where they affect watercourses. Assist in the development of detailed catchment area studies to detail policies for surface water management. Engaged in the investigation of flooding and other watercourse and land drainage problems and dealt with the aftermath of flooding incidents. Advised and coordinated with other sections to have the necessary repair/ maintenance works carried out. Designed the drainage systems for some highway schemes.

April 1990 to 1995: Engineer

Involved in investigation, technical analysis and model building of drainage networks while liaising with other technical staff and external organizations in the preparation of Drainage Area Studies and other technical reports. Engaged in the design and hydraulic modeling of combined sewerage systems and overflows and continued with the specification, detailing, preparation of contract documents and cost estimates to the construction supervision of various drainage/ sewerage network schemes and reinforced concrete Combined Sewer Overflow structures. Also supervised others in the AutoCAD drawing and STC 25 digital record retrieval for the sewerage records.
Engaged in the design and construction of sewerage and land drainage schemes for Yorkshire Water and Leeds City Council. Investigated structural problems of critical sewer and assessed their condition from CCTV surveys.

Engaged in the preparation of contract drawings and documents with consideration for the Departments’ procedures for Safety and Quality assurance. Supervised works on site as the Engineer’s representative. Planned and scheduled site works and liaised with contractor’s staff and statutory authorities to ensure safe and efficient works in accordance with site safety and safe working practices and prepared site reports, as built drawings, notes of meetings and general office records.

Prepared scheme variation reports, analyzed completed project to certify contractual claims and variations to contracts as well as adjusted final costs and calculated liquidation damages. Investigated flooding of properties caused by overloading of the sewerage system, surveyed and identified problems as well as proposed feasible solutions.

**December 1986 to January 1990: Tobago House of Assembly, Works Division. Acting Civil Engineer 11- Planning and Construction.**

Responsible for the design, construction and maintenance of the road network in Tobago. Planned and scheduled road works and coordinated procurement of labour, materials and equipment on sites. Supervised technical staff including laboratory technicians, Asphalt plant staff, and Quarry site personnel.

Planned and scheduled with senior foreman the use of vehicles, equipments and their operators for numerous ongoing projects and scheduled service and maintenance for all vehicles and equipments. Planned and estimated overall construction costs for road development projects and controlled budgeted expenditure for projects as well as accounted for and reported quarterly on work progress and costs. Liaised with the public and statutory bodies for coordination and scheduling of the road works.

Supervised the dredging of river and construction of wing wall at culvert crossing to stabilize and protect adjacent properties. Supervised the construction of 5.8m span reinforced concrete bridge and gabion baskets to arrest the erosion of land by tidal waves.

Engaged in administrative exercises to pay sheet checking to union matters. Tutored in the Works Division (Tobago) ongoing program for the training of supervisors.

**January 1985 to November 1986: National (Secondary Roads) Development Company Ltd., Tobago Division. Civil Engineer 11.**

Responsible for the design and construction supervision of road and drainage networks for two major housing developments. This involved the planning and scheduling of labour, materials and equipment as well as the supervision of surveyors, equipment operators, trades-men, labourers, technical staff, site supervisors and laboratory technicians while liaising with statutory bodies and residents to ensure minimal disruption with continued access for residents during the construction works. Supervised equipment stores and monitored equipment parts, materials arid general supplies for maintenance of a minimum stock level and approved reorder.

**August 1980 to December 1984 Promanco Ltd., Trinidad. Assistant Design Engineer.**
Responsible for survey and infrastructure design for land development schemes and assisted in the layout and design of Sewerage Treatment plant. Completed route location and re-alignment of 900 mm transmission mains for the Port of Spain Water Supply Project. Engaged in slope stability evaluation and design of Bin Type retaining wall for elevated reservoir site. Engaged in survey, soil investigation and analysis for arresting landslip in steep terrain (5-7m). Engaged in the investigation and preparation of report on dust pollution and siltation of river adjacent to a quarry site. Engaged in the survey, drainage analysis and design of water and sewerage scheme and assisted in the Activated Sludge Treatment plant design for major development. Prepared estimates, contract documents, material scheduling as well as supervised and co-coordinated activities on building construction sites.

**Awards received**

Leeds City Council (LCC) - Highway Services Award for Excellence
(Incl. in) Highly Recommended Team of the Year 2008, LCC
Highly Recommended Individual 2009 (for works related to the Environment – Sustainable Drainage Systems (SUDS)) – Leeds City Council, UK
CURRICULUM VITAE

dionwebber@yahoo.com
33A King Orange Avenue, Santa Rosa Heights Arima
667-0676 (Home): 479-4481(Cell)

NAME : Dion Webber
DATE OF BIRTH : July 7, 1986
PROFESSION : Civil Engineer / Structural Engineer
NATIONALITY : Trinidad and Tobago

PROFESSIONAL OBJECTIVE

To establish a successful career in the field of Civil/Structural Design, Construction Management while simultaneously networking with individuals & organizations in the local and international business arena to effect positive changes globally.

PERSONAL INFORMATION/WORK EXPERIENCE

Civil Engineer  June 2008 – Present
Consulting Engineers Associates 2005 Ltd (CEAL)
#54 Ramsaran Street
Chaguanas

➢ Design of San Fernando Medical Waste Incinerator (November 2012)
A Medical Waste Incinerator was required to be constructed by Water Tech limited at San Fernando General Hospital and as such a structural design was necessary before construction can take place.

For this Project, my responsibilities were to conduct the structural design of the proposed structure and to supervise the preparation of the construction drawings for this project.
- **Design of Carapichaima Roman Catholic Church Mezzanine Floor (Nov 2012)**
  The RC Church desired to construct a mezzanine floor for the purpose of accommodating additional church members.

  Accordingly, my responsibilities were to conduct the design of the mezzanine floor and to supervise the preparation of the construction drawings.

- **Design of Emergency Escape Platform for Methanol Holdings Trinidad Ltd (MHTL). (September 2012)**
  MHTL desires to construct an Emergency Escape Platform connected onto an existing pipe rack structure located at the south of the plant. As such MHTL requires a structural evaluation and analysis of the existing pipe rack structure and proposed escape platform respectively to determine its structural integrity and capability to support the proposed loadings.

  My responsibilities were to conduct both the structural evaluation and analysis of the existing pipe rack structure and proposed escape platform respectively. I also supervised the preparation of the construction drawings for the project.

  MTS desired to construct a Fishing Facility Structure located in Charlotteville Tobago and as such required a structural design of the proposed structure.

  For this project, I supervised the design of the proposed structure and also supervised the preparation of the required construction drawings for the project.

- **Design of Charlotteville Beach Upgrade Structure for National Maintenance and Security Company Limited (MTS) (July 2012)**
  MTS desired to construct a Beach Upgrade Structure located in Charlotteville Tobago and as such required a structural design of the proposed structure.

  My responsibilities included the design of the proposed structure and to prepare the required construction drawings for the project.

- **Design of Retaining Wall at Belle Garden Community Centre for National Maintenance and Security Company Limited (MTS) (April 2012)**
  A Retaining Wall was required to restrain the soil of a steep slope above the location of a proposed carpark at the construction site of a proposed community center at Belle Garden Tobago.

  My responsibilities include the design of seven different types of Retaining Walls each of varying heights to be constructed on the site. I also supervised the preparation of the construction drawings for this project.
- **Design of a residential home for Mrs. Jemma Marquis. (Mar 2012)**
  An architectural design of a proposed house was submitted to CEAL for a structural design to be conducted.

  My responsibilities were to conduct the structural design of the proposed structure and to supervise the preparation of the construction drawings for the project.

- **Design of Laboratory for Water and Sewerage Authority (WASA) (February 2012)**
  WASA desired to construct a laboratory on the inside of a warehouse located behind Bhagwansingh’s Hardware Arouca. The laboratory consisted of a mezzanine floor to which a structural design was required.

  For this project I conducted the structural design for the proposed mezzanine floor and prepared the required construction drawings.

- **Design of a residential home for C & H Associates Ltd. (Mar 2012)**
  An architectural design of a proposed house was submitted to CEAL for a structural design to be conducted.

  My responsibilities were to conduct the structural design of the proposed structure and to prepare the necessary construction drawings for this house construction project.

- **Structural Evaluation of Existing Roof for Phoenix Park Gas Processors Ltd (PPGPL) (Dec 2011)**
  PPGPL had a steel roof constructed over an existing walk way constructed using six (6) inch steel channels for the purpose of shelter during a rainfall event. Upon completion, questions were raised concerning the structure’s structural adequacy. As such CEAL was engaged to perform the structural analysis of the structure.

  On this project my responsibilities were to perform the Structural Evaluation of the structure and to prepare a Structural Report based on the results.

- **Design of Longdenville Roman Catholic Church (November 2011)**
  This project required a structural design of the proposed RC Church.

  My responsibilities were to conduct the structural design of the proposed church and to supervise the preparation of the construction drawing for this structure.
- **Structural Assessment of structure on Eden Centre Shopping Mall San Fernando (November 2011)**
  Digicel desires to construct a cell tower on the roof top of Eden Center, San Fernando. As such Digicel requires a structural assessment of the existing AC room structure that would be supporting the loads from the RBS Unit of the Cell Tower.

  My responsibilities were to conduct the structural assessment and prepare a condition report which giving recommendations to further strengthen the existing structure.

- **Design of Lab Extension for Methanol Holdings Trinidad Ltd (MHTL). (October 2011)**
  MHTL desired to extend the existing laboratory located in a blast resistant control room. As such MHTL requires the design of the proposed lab extension in accordance with relevant blast design codes.

  My responsibilities included the design of the lab Extension in accordance with relevant blast codes and to supervise the preparation of the relevant construction drawings.

- **Structural design of Digicel Cell Towers (October 2011 – Sept 2012)**
  Digicel desired to extend five of their existing Cell Towers to accommodate loads from additional antennas. As such Digicel required a structural evaluation of the existing cell tower and the tower extension to determine its structural integrity and capability to support the proposed loadings.

  My responsibilities included the structural analysis of the five towers over the period and to prepare the design report based on the results from the analysis.

- **Design of Coastal Revetment (June 2011) - (Client: Phoenix Park Gas Processors Limited, PPGPL)**
  The Project involved the Design of a coastal revetment along the shoreline in the area of PPGPL Dock 2 and Access Road.

  My responsibilities include the design of the rock armour layer and the preparation of a Bill of Quantities, an Engineer's estimate and Construction drawings.

- **Design of Catwalk for Holiday Snacks Compound El Socorro (May 2011)**
  Holiday Snacks Ltd desires to construct a Catwalk on the roof of an existing structure located on their compound. Accordingly a structural analysis was required to assess the structural capability of the existing structure and a structural design of the proposed catwalk structure.

  On this project, my responsibilities were to supervise the structural analysis and design of the existing structure and the proposed catwalk. I also supervised the preparation of the construction drawings for the project.
- **Design of a Retaining Wall at Biche High School (February 2011)** - (Client: Education Facilities Company Limited)
  The Project involved the construction of two types of retaining walls. Type A wall was a sheet pile wall with whaler beam and tie-back rods and type B wall was a typical cantilever wall with 7.0 m piles.

  My responsibilities include the structural design of the retaining walls including the preparation of an Inception Report, a Preliminary Report, a Final Report and Construction drawings.

- **Design of Retaining Wall for The Blind Institute (October 2010)**
  This project involved the construction of a Fence bounding the entire property and the construction of a Carpark which would require a Retaining Wall for soil stability.

  My responsibilities were to design the appropriate Retaining Wall and to supervise the preparation of the construction drawings for the Wall and Fence.

- **Design and Supervision of NIHERST Car Park Repairs and Kids Area Rehabilitation Works. (July 2010)**
  This is a two part project which consisted of construction of a Carpark including drainage and the rehabilitation of an existing Kids Play Area shed.

  My responsibilities include the design of the Carpark and drainage and to formulate a method to rehabilitate the existing Kids Play shed. I also prepared the construction document and the engineers estimate for the proposed works. Upon commencement of the works, I supervised the contractor and ensured completion within budget and time.

- **Design of a Retaining Wall at Honda River (March 2010)**

- **Design of a Retaining Wall at Honda River (March 2010)** - (Client: Ministry of Works and Transport)
  My responsibilities on this project were the evaluation of the existing ground conditions and developing a suitable design of two retaining walls with varying heights. Other responsibilities include the preparation of Construction drawings and specifications for the construction of the wall.
- **Project Engineer on Samaroo Village Community Center** - (Client: Ministry of Community Development Culture and Gender Affairs)
  My responsibilities include
  - Overall site supervision and co-ordination of Contract Administration with the Contractor and client’s representative.
  - Approval of shop drawings and preparation of miscellaneous design alterations for construction as determined by site conditions.
  - Preparation of forth nightly progress reports and other special reports.
  - Coordinating with the client’s representatives, Local Authorities and Utility Services.
  - Review and Evaluation of claims arising out of the Contract.
  - Preparation of progress reports and other special reports, survey checks and measurements.
  - Preparation of payment certificates

- **Project Engineer for Jerningham Large Farm Project and Caroni Large Farm Project.** - (Client: Rural Development Company)
  This project involved the construction of Concrete Box Drains, Concrete line Trapezoidal Drains and the Construction of new roads for access to the proposed Large Farm.
  My responsibilities were to directly supervise the contractor as the works progressed and provide engineering designs for proper drainage infrastructure for the large farms. Other responsibilities include the coordination with the client’s representative and the Utility Services representative.

- **Design of a retaining wall at Cocoyea Village San Fernando.** - (Client: Jumect Services Limited)
  The Project involved the construction of a Reinforced Concrete Retaining Wall approximately 27 m long on a pile foundation.
  My responsibilities include the structural design of the retaining wall including the preparation of Construction drawings, Bar Bending Schedules and Specifications.

**Civil Engineer Assistant  May – August 2007**
Consulting Engineers Associates 2005 ltd (CEAL)
#54 Ramsaran Street
Chaguanas

- **Corinth Housing Development**
  Responsibilities were to assist in the preparation of the hydraulic design for the housing development and to prepare detailed Engineering Drainage Drawings for construction.
Civil Engineer Assistant  May – August 2006
Consulting Engineers Associates 2005 Ltd (CEAL)
#54 Ramsaran Street
Chaguanas

- **Design Drawings**
  Responsibilities were to assist in the preparation of all Engineering Designs and Drawings for various projects undertaken by CEAL.

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**EDUCATION**

Engineering Student
University of the West Indies
St Augustine

- MSc. Construction Management – (2012)
- BSc. Civil Engineering (2005-2008) – Second Class Honours (Upper Division)

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**SKILLS**

- STAAD Pro 2008
- AutoCAD 2000 to 2012
- AutoCAD Civil 3D
- AutoCAD Architectural 2006 to 2012
- Microsoft Office 2003, 2007
ERLAND ALLEYNE
CURRICULUM VITAE

PROFILE

NAME: Erland Alleyne
POSITION: Civil/Structural Engineer
NATIONALITY: Trinidadian
WORK EXPERIENCE: 6 Years (2007 – 2013)

EDUCATION/PROFESSIONAL AFFILIATIONS

B.Sc. Civil Engineering (2003 – 2007) - University of the West Indies, St. Augustine
4 Cambridge A-Level Certificates (2001 – 2003) – Presentation College San Fernando
10 CXC O-Level Certificates (1996 – 2001) – Presentation College San Fernando
Member of The Association of Professional Engineers of Trinidad and Tobago (APETT)

WORK EXPERIENCE

R.M Engineering (January 2007 – December 2007)

• International Waterfront Project
• Yara Trinidad Ltd.: Tringen II Access Platform Design
• Yara Trinidad Ltd.: Port Building Staircase Support Design
• Caribbean Nitrogen Company: Proposal for Conversion of Existing Buildings to Gas Refuges
• Telecommunications Services of Trinidad and Tobago (TSTT): St. James Street Antennae Structural Check Calculations
• Scaffolding Manufacturers Ltd.: Scaffolding Test
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- Craft Market: Formwork and Scaffolding Design
- Tiger Tanks Trinidad Unlimited: Cargo Basket Design
- Mariners Haven Ltd.: Structural Design Check on Existing Dock

Lee Young & Partners: Consulting Engineers & Project Managers (January 2008 – April 2009)
- Moruga Water Supply Project Study: Pipeline Modeling and Design
- ArcelorMittal: Proposal for New Compactor Building
- Tobago Regional Health Authority: Health Centres
- University of Trinidad and Tobago (UTT)
- Trinidad and Tobago Electricity Commission: Cable Crossing Structural Design
- PowerGen: Moora Dam Pipeline
- Lee Young & Partners: Structural Design for Steel Roof at Barataria Soils Laboratory

Estate Management and Business Development Company Ltd. (April 2009 – August 2012)
- Utility Corridor Inspections with T&TEC
- Liaising with T&TEC, TSTT and FLOW concerning the Utility Corridors
- Inspections with the Trinidad and Tobago Fire Service
- Supervision of Remedial Works on Utility Corridors
- Supervision of Lot Filling and Road Paving Exercises
- Audit of EMBD’s Agricultural Developments
- Supervision of the construction of Detention Ponds
- Creation of Bills of Quantities, Tender Documents, Inspection Reports etc.
- Supervision of general civil works (box drains, culverts, lot grading etc.)
ERLAND ALLEYNE

Consulting Engineers Associates 2005 Limited (August 2012 – Present)

- WASA Modern Laboratory and Workshop Facility
- BuenIntento Retaining Wall
- McSween Road Culvert Crossing
- Charlottesville Fishing Facility
- Port Authority of Trinidad and Tobago – GSS Maintenance Works
- Port Authority of Trinidad and Tobago – GSS Baggage and Arrival Hall, Barrel Shed

SKILLS

- STAAD Pro.
- AutoCAD 2012
- Watershed Modeling System (WMS) 9.1