CONSULTING ENGINEERS ASSOCIATES 2005 LTD

COMPANY HISTORY AND 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, Trinicity Mall, Trinicity 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, Chaguanaas. (Client PARK View Holdings Limited)
Park View Development

Design of Infrastructure Works for Park View Hosing 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. 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.

**Mr. L. Bholasingh - Electrical Engineer**

Mr. Bholasingh is an Electrical Engineer with over 28 years experience in engineering practice. Mr. Bholasingh is principally responsibility 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.

### 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.
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.