

STATEMENT OF QUALIFICATIONS

ELECTRICAL ENGINEERING



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1 Executive Summary

SECON Private Limited is an ISO 9001:2008 certified, NABL Accredited, GIS Driven Multidiscipline Engineering Company. SECON is a financially sound, stable, zero-debt Company that was established in 1981. SECON is one of the leading multidiscipline engineering consulting firms and one of the largest and oldest Surveying and Mapping firms in India. Most of SECON's clients are repeat and long-term clients.

The key differentiator for SECON is that the company is a well-established (established in 1981) financially stable (Zero Debt and Consistently Profit Making) Multidiscipline Mapping and Engineering firm that provides a total solution from a single window for the entire lifecycle of an Infrastructure development project.

The domain expertise of SECON comprises:

Design Consultancy and Engineering Services	Investigation and Services
1. Irrigation, Flood Control and Water Management	1. Land Surveying for Topographic, Cadastral Mapping, Construction Supervision and Hydrographic Surveys
2. Water, Sanitation and Storm water Engineering(Public Health Engineering)	2. Geotechnical Engineering and Soil Investigations
3. Highway Engineering and Construction Supervision	3. Water Distribution System Leak Detection, Rehabilitation and GIS Based Asset Management Services
4. Electrical Network Distribution Engineering	4. Photogrammetry, LiDar, Satellite Image Processing and Remote Sensing and generation of 3D Digital Terrain and City models.
5. Oil and Gas Pipeline Transportation Routing and Feasibility	5. GIS Data Conversion and Maintenance
6. Web enabled GIS Driven Software Development and Database Creation for Infrastructure.	6. Route Planning, 3D Corridor Mapping, Generation of GIS database
7. Software development to improve productivity for Engineering Design and Drafting (CAD) fields.	7. Ground water and Resistivity Surveys
8. Civil and Structural Design	8. Underwater Leak Detection and Turnkey Solutions
9. Town Planning and Urban Development	9. Exploration, Mine Survey & Planning
10. Environmental Engineering and Environmental Impact Assessments and Permitting	10. Terrain Evaluation and Geological Appraisal
11. Assistance in Right of Use Acquisition and Permitting	11. Detection of Underground Utilities using Ground Penetrating Radar and Associated Tools.

SECON is the only firm in India to offer a Total Solution for Mapping, Infrastructure Investigation, Engineering Design and Construction Supervision. All of these services are offered wholly in-house by SECON.

SECON's over **3 decades of mapping experience** in Land Surveying, Photogrammetry, LiDAR Data Acquisition and Processing, and Remote Sensing, gives it a significant advantage for advanced mapping since it has a comprehensive combined experience in all of the above technologies.

SECON has long-term partnerships with International Engineering and Mapping Firms across Asia, North America, Africa, Middle East, Europe and Australia and has executed both Engineering and Mapping projects in these areas for its clients. SECON is registered with Asian Development Bank (ADB) and DACON (World Bank) to provide consultancy services.

SECON has been awarded the 3rd CIDC Vishwakarma Award 2011. This is a National Award for Projects of National Excellence.

SECON has been awarded the best services Export Excellence Award-2010 by Federation of Chamber of Commerce and State Bank of India.

SECON has the following standing in India:

- The largest private Land Surveying and Mapping firm in India for Topographic and Cadastral Surveys.
- One of the Largest and most Experienced Firms for Land Acquisition Assistance for Pipeline, Highway and other Linear Corridor and Large Area projects. SECON has developed Customized Web Enabled Software for Data Management and Administration of this Complex Process which have included the compilation and data management more than 10 million parcels compiled by SECON as of date (including field data collection).
- One of the leading private Mapping and Design firm for Irrigation and Water Management projects.
- One of the largest private Highway Mapping, Design and Construction Supervision firms in India.
- One of a handful of firms in India to have the NABL certification for its Geotechnical Laboratory. NABL is the National Accreditation Board for Testing and Calibration Laboratories (NABL).

Government of India has authorized NABL as the sole accreditation body for Testing and Calibration laboratories.

- The first private company to execute LiDAR flying and processing services in India. SECON now one of the largest LiDAR Data processing company in India

SECON has executed over:

- 65,000 km of large-scale Pipeline Corridor Mapping – this includes Route Engineering, Topographical and Cadastral Mapping and Rights-of-Way Acquisition assistance and management. This is the largest amount of Pipeline Corridor mapping done by any corporation in India.
- 15000 km of mapping, design, and construction supervision of highways
- 11950 sq km of large-scale mapping (topographical and cadastral) for Irrigation projects. This includes the Topographic and Cadastral Mapping of 6000 Sq Km for the World Bank Aided Uttar Pradesh Water System Restructuring Project.
- 7950 Sq Km of Irrigation and Water Management design projects. SECON is currently executing and Irrigation Mapping and Design Project for an area of 14000 sq km for the Narmada River Basin in Madhya Pradesh. This project was done by mapping with a combination of High Resolution (0.5 m) Stereo Satellite Imagery and Land Survey Method. This technology is being used for the first time in India for an Irrigation and Water Management project.



Statement of Qualification, Electrical Department

- 600 infrastructure development projects (includes subdivision/township mapping, design and planning) which includes construction supervision and quality control for the International Tech Park (ITPL) in Bangalore.
- 600,000 meters of geotechnical investigation and drilling in various soil strata including investigations for the Bangalore International Airport.
- SECON has completed a major multimillion dollar mapping and consulting project for the planning and design of the Water and Sanitation system for 13 municipalities (100 settlements) in Libya. The capital expenditure of the project is around 2.5 billion US\$.
- SECON has successfully completed the Multi Million Dollar Contract for Project Management Consultancy Services for Up Gradation of important Road Corridors in Bangalore Urban and Rural Districts for a length of 1004 Km. Estimated capital expenditure of the project is 9.96 Billion Rupees(US \$ 220 million).
- SECON has successfully completed more than 500,000 Sq Km of LiDar, Photogrammetry and Remote Sensing Projects as of August 2010.

SECON has a state of the art 105,000 sq ft ISO 9001:2008 certified operations center set on a 2.5 acre campus in Bangalore, India that is fully owned by the company. Bangalore is the technology capital of India and is globally recognized for its technical excellence.



2 Electrical Engineering

2.1 Introduction:

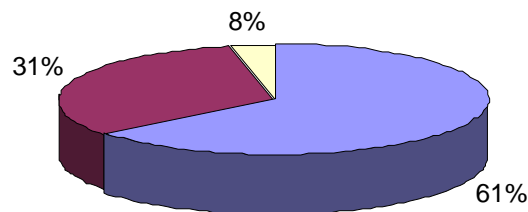
Electrical Energy is the most important sector in any country worldwide due to its direct and active impact on socio-economic activities and also due to its important role on the development of all other sectors. Electrical Energy is the driving force behind any development and the existence of the well-developed Electrical systems benefit the society and affords them a higher quality of life.

Consultancy, Planning and Design form part of 'Scope of Services' provided by SECON. Total Engineering Solution for Electrical Power distribution network system for new area having composite activities and old area where refurbishing is required, undertaking survey and validation of data which form foundation for producing a viable and effective system.

2.2 Human Resources:

SECON carries talented Senior Engineers having experience in multi-varying domain in state electrical utility and knowledge and enthusiastic young engineers.

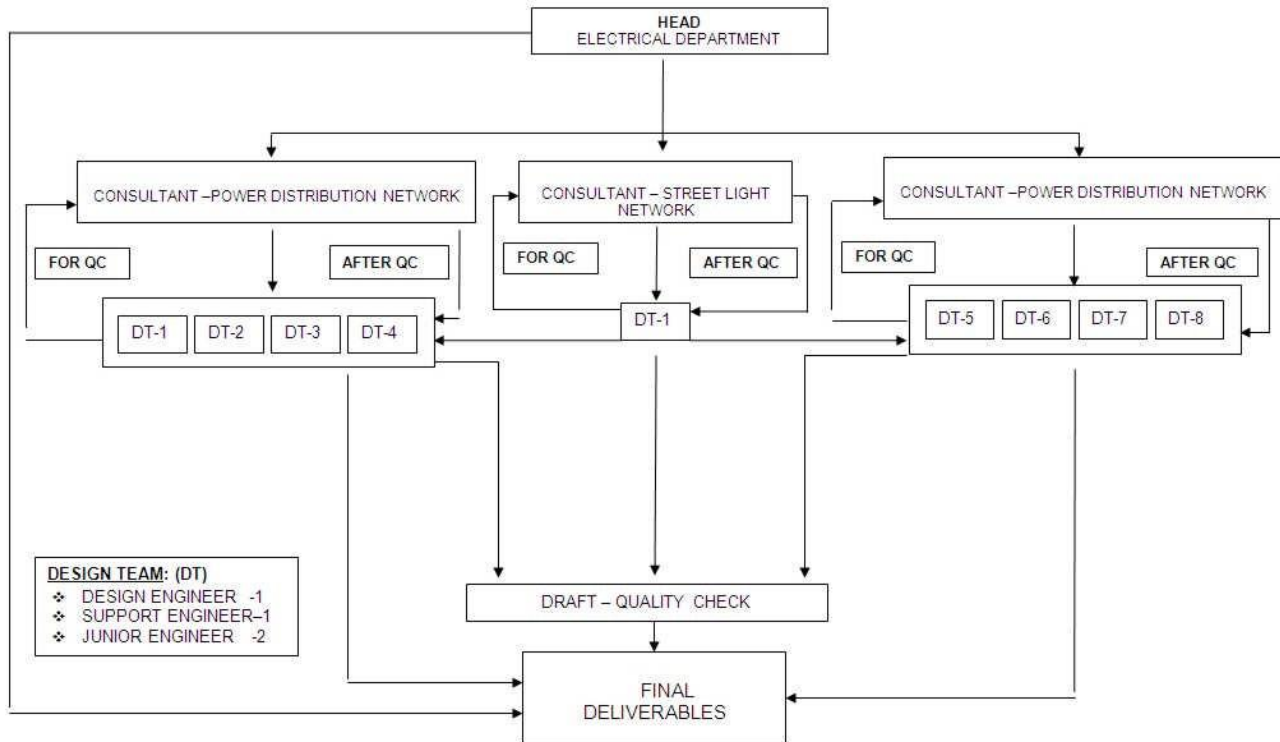
The composition of the Electrical Department is illustrated as below.



COMPOSITION OF SKILL – ELECTRICAL DEPARTMENT

- Senior Electrical Experts
- Design Engineers
- Junior Engineers

2.3 Organization Chart



3 Service Offerings

SECON Provides Comprehensive Engineering Solutions in the field of ELECTRICAL ENGINEERING

Scope of Services

Consultancy, Planning and Design of

- High tension distribution system
- Low tension distribution system
- Street, Road and Highway lighting
- Support Engineering Design for PHE (Public Health Engineering)
- Water pumping and Treatment Stations
- Sewage pumping and Treatment Stations
- Storm water drain
- Rate analysis, assessment of quantity, bill of quantities and cost estimation
- Preparation of tender documents
- Project implementation and supervision
- Energy audit and energy management

SECON has experienced senior engineers to provide viable and effective solutions for

- Refurbishing existing Micro and Mini Hydel stations.
- Refurbishing existing High tension and Low tension distribution network.
- Refurbishing existing street lighting.
- New high tension distribution network, low tension distribution network.
- Energy auditing and energy management.

3.1 Validation of Available Data and Survey

SECON has reasonable experience in:

- Pre-feasibility, feasibility and detailed project report for refurbishing existing electricity Distribution system.
- Electrical load projection for short term project and long term project.
- Investigation of sources “Generating Station/sub-station /receiving station”, EHT/HT lines and route.
- Existing population.
- Population growth rate.
- Land use pattern.
- Priority of development.
- Validation of data collected.
- Feasibility and detailed project report
- Highway/ Road / street lighting based on the traffic movement and the luminance required
- Renovation and modernization of existing system
- Markedly new product for foreseeing areas

3.2 Support Engineering for Public Health Engineering

- Validation of the requirement
- Surveying the existing system
- Studying the feasibility of cable /line route
- Design Electrical system and project report against requirement for Water pumping and Treatment Stations, Sewage pumping and Treatment Stations, Storm Water Drainage.

3.3 Rate Analysis, Detailed Quantity Assessment, Bill of Quantities and Cost Estimates

- Preparation of rate analysis for major items as per specifications.
- The rate analysis will also take into account the other materials for the project
- The rates of materials, equipments & labor will be based on the prevailing market rates/Government rates.
- Preparation of Bill of quantities of all items classifying the same under various heads.
- Cost estimation for the project based on the above

3.4 Preparation of Tender Documents.

- Finalization of the technical specification for the various components of the project.
 - Preparation of detailed specification.
 - Preparation of tender documents.

3.5 Project Implementation and Supervision

- Supervision and quality control of the work daily.
- Checking and certification of quantities used as per the specifications laid down in the tender document
- Certification of bills.
- Assisting client in clearing arbitration if any.
- Identification of approved variation from the tender drawing.

3.6 Energy auditing and Energy management system

- Validation of the data given of the plant/industry
- Studying the process chain
- Physical verification of each equipment
- Assessment of efficiency of each equipments functioning
- Identification of out-dated process system and equipments.
- Suggestion to improve the system computing the energy saving.

4 Project Experience:

A. International:

Sl. No	Name of the Project	Area in Ha	Remarks
1	Electrical Power Distribution Network and Street/Road Lighting System Design in Existing Area		
	a) First Lot of 21 Settlements	3818.9	Completely Approved
	b) Second Lot of 28 Settlements		
	i. 24 Settlements	13628.8	Completely Approved
	ii. 4 Settlements	8153.7	Under Review
	c) Support Engineering Solution to PHE -66 Settlements	13165.5	Completely Approved
2	Electrical Power Distribution Network and Street/Road Lighting System Design in New Area		
	a) New Residential Area inclusive of street, Parking lot, walkway illumination system.	78	Completely Approved
	b) Amusement Waterfront inclusive of street, Parking lot, walkway illumination system.	20	Completely Approved

B. National:

Sl. No.	Name of the Projects	Total Capacity of Pumps / Stretch	Remarks
1.	Low Tension System for water Pumping.		
	a) SPJ Project / Madhya Pradesh	2000 KW	Completely Approved
	b) Punasa Lift irrigation scheme.	1800 KW	Completely Approved
	c) GSEG Ltd.	390 KW	Completely Approved
	d) ISGEC Lauriya	50 KW	Completely Approved
	e) ISGEC Sugauli	32 KW	Completely Approved
2.	Street / Road lighting system		
	a) On bridges at Karnataka.	1 KM	Completely Approved
	b) KSKWIPL.	6.3 KM	Completely Approved