

STATEMENT OF QUALIFICATIONS PUBLIC HEALTH ENGINEERING



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Revision Chart

| Date | Author | Approved By | Description of Changes |
|-------------|---------------|--------------------|-------------------------------|
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1 Executive Summary

SECON Private Limited is an ISO 9001:2000 certified, NABL Accredited, GIS Driven Multidiscipline Engineering Company with around 650 personnel. 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 the largest and oldest surveying and mapping firm 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 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 |
|--|--|
| <ol style="list-style-type: none"> 1. Water, Sanitation and Stormwater Engineering(Public Health Engineering) 2. Highway Engineering and Construction Supervision 3. Irrigation, Flood Control and Water Management 4. Electrical Network Distribution Engineering 5. Oil and Gas Pipeline Transportation Routing and Feasibility 6. Web enabled GIS Driven Software Development and Database Creation for Infrastructure (Public Health Engineering, Highway, Irrigation, Pipeline, and Electrical) Networks and Assets. Also includes GIS for Topographic, Cadastral, Environmental and Urban Planning. 7. Software development to improve productivity for Engineering Design and Drafting (CAD) fields. 8. Civil and Structural Design 9. Town Planning and Urban Development 10. Environmental Engineering and Environmental Impact Assessments and Permitting 11. Assistance in Right of Use Acquisition and Permitting | <ol style="list-style-type: none"> 1. Land Surveying for Topographic, Cadastral Mapping, Construction Supervision and Hydrographic Surveys 2. Geotechnical Engineering and Soil Investigations 3. Ground water and Resistivity Surveys 4. Underwater Leak Detection and Turnkey Solutions 5. Photogrammetry, LiDar, Satellite Image Processing and Remote Sensing and generation of 3D Digital Terrain and City models. 6. GIS Data Conversion and Maintenance 7. Route Planning, 3D Corridor Mapping, Generation of GIS database 8. Exploration, Mine Survey & Planning 9. Terrain Evaluation and Geological Appraisal 10. Water Distribution System Leak Detection, Pressure Monitoring and GIS Based Asset Management Services 11. Detection of Underground Utilities using Ground Penetrating Radar and Associated Tools. |

SECON has long-term partnerships with international engineering firms and can operate in most areas of Asia, the Middle East, and Africa. SECON prefers the partnering model for its US and European areas of operations. SECON has a strong and ongoing partnership with European, Middle Eastern and North African companies for both Indian and International projects.

SECON is registered with Asian Development Bank (ADB) and DACON (World Bank) to provide consultancy services.

SECON has the following standing in India:

- The largest private (non-government) surveying and mapping firm in India for Topographic and Cadastral Surveys
- A dominant firm in the field of pipeline corridor mapping and providing assistance for acquiring Right of Use and ROW for land in India
- The largest private (non-government) mapping and design firm for irrigation and water management projects
- One of the largest private (non-government) highway mapping, design and construction supervision firms in India
- One of the largest and most experienced firms for Land Acquisition assistance and has developed customized software for automation of this complex process.
- One of the few Engineering Consultants to have a National Accreditation Board Laboratories (NABL) Accredited laboratory for Soil Testing.
- The first private (non government) company to execute LiDar flying and processing services in India. SECON now 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
- 1,195,000 Hectares 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
- 795,000 Hectares of Irrigation and Water Management design projects
- 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 was responsible for fixing alignment for 3 Expressways with the aid of high resolution stereo satellite imageries for the first time in India.
- SECON has successfully completed more than 500,000 Sq Km of LiDar, Photogrammetry and Remote Sensing Projects as of August 2010.
- Presently, carrying out mapping of more than 45,000 acres of built-up areas across municipal limits and in the adjoining urban areas of Mysore City.

SECON has a state of the art 105000 sqft ISO 9001:2000 certified operations center set on a 2.5 acre campus in Bangalore that is fully owned by the company.

This operations center is a secure facility and has robust security controls.



2 Public Health Engineering Division

2.1 Introduction

Due to fast urbanization taking place, Water Supply and Sanitation are crucial to any Municipal Infrastructure System. Water is a basic need. The provision of safe and adequate drinking water to the urban population continues to be one of the major challenging tasks. Safe and potable water supply and scientifically designed sanitation facilities are the two basic essential amenities the community needs on top priority for healthy living. Unless there is Proper Collection, Treatment and Safe Disposal and Reuse of Wastewater generated by the community, there could be serious health concerns, pollution of water resources and environmental degradation.

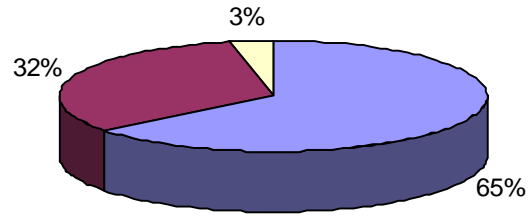
Lack of proper and adequate drainage system is serious as storm water gets pooled in low lying areas causing damage to buildings, roads and posing a threat to Public Health in general.

SECON Provides consultancy services/Technical assistance in Public Health Engineering at National and International level to Private / Public and Government sectors on Feasibility studies, Survey, Investigation, Design, Tendering and Construction Management and Supervision

One of SECON's strengths is to view and treat water (Raw Water, Waste Water, Storm, Treated Water, and Industrial Effluent) in an integrated manner. SECON have the potential to include in-house specialists from other discipline like Water Resources, Town planning, institutional and organizational development, socio-economy, health issues, infrastructure, financial and economic assessments and more importantly the environmental aspect.

2.2 Skill Set

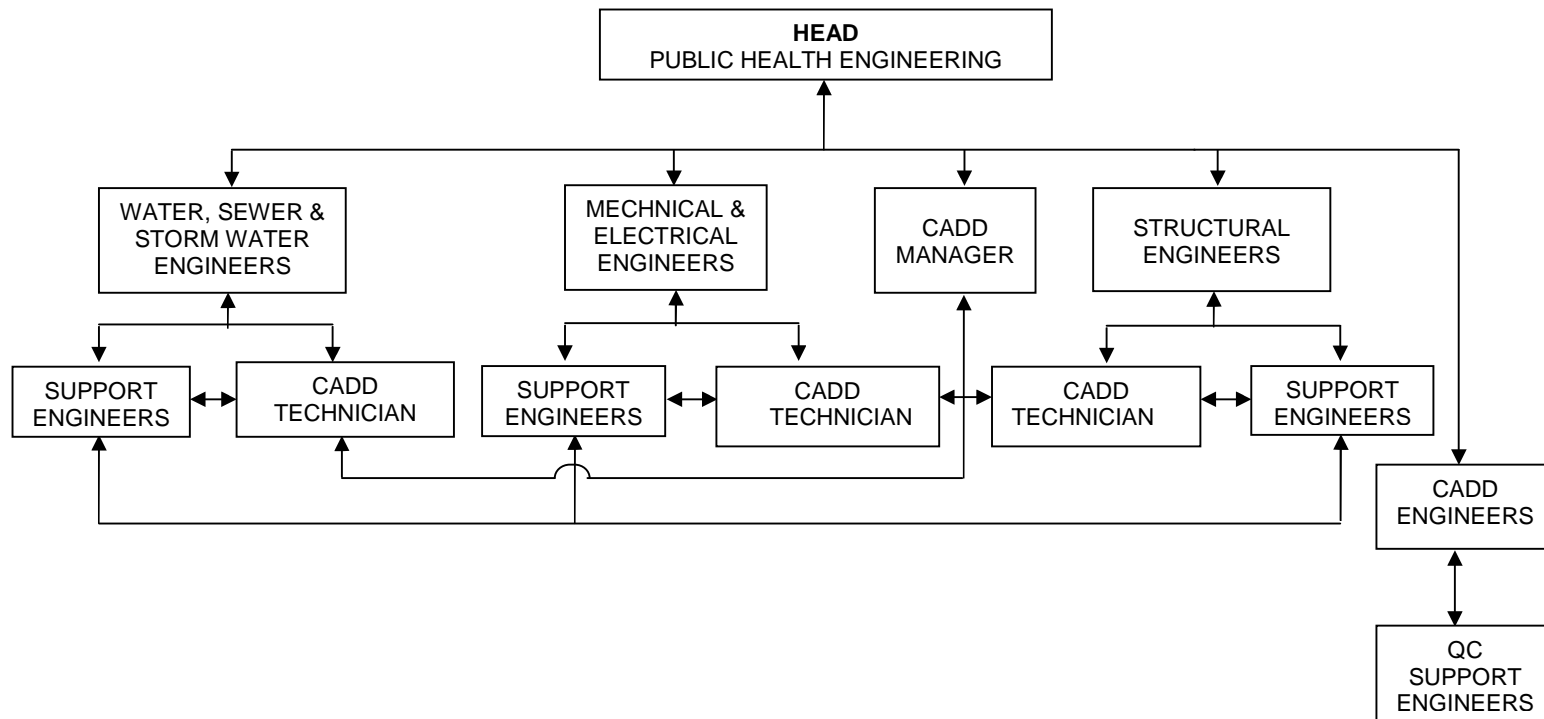
The Team composition is a very good mix of senior and experienced engineers having held responsible positions in their respective fields in both public and private sectors and have successfully implemented various infrastructural schemes. The staff composition chart will be as follows



SECON- PHE- SKILL SET

- Engineers
- CADD Engineers
- Administration

2.3 Organization Chart



3 Facilities

3.1 Hardware and Software

The Skill set of team is augmented with high end computers and latest design and drafting software.

3.2 Computer Aided Optimal Design and Drawings

The department has experienced design engineers capable of undertaking complicated **Multilevel Data Analysis** using the design software for **Surge Analysis, Distribution Network Analysis**.

SECON also has **In-House Software Application** development department to develop project specific / need based software like **Design - Drawing - BOQ Interface, Electronic Quality Assurance**, etc.

Some of the important software held and used for computer aided optimal design and drawings include the following:

| Components | Critical Design Parameters | Software |
|---------------------------------------|--|---|
| Transport Main & Distribution Network | <ul style="list-style-type: none"> • Demand Calculation • Residual Head • Unit Head Loss • Velocity • Chlorine Concentration • Skeltalization | <ul style="list-style-type: none"> • Water GEM • WDN- Interface Software Developed In-House for Generation of Profile • DN-Extract: Interface Software Developed In-House for Bill of Quantities • SAP (Surge Analysis Program - developed by India Institute of Science, Bangalore) |
| Pumping Machinery and Pumping Station | <ul style="list-style-type: none"> • Net Positive Section Head • Cavitations • Velocity, Pressure • Selection of Pumping Machinery | <ul style="list-style-type: none"> • In-House Software |
| Water Treatment | <ul style="list-style-type: none"> • Selection of Process based on the Water Quality, Techno-Economical Comparisons, Environmental Impact. | <ul style="list-style-type: none"> • In-House Software |
| Sewer Collection Network | <ul style="list-style-type: none"> • Demand Assessment • Delineating Catchments • Gradient and Velocity • d / D Ratio • Depth of Cut | <ul style="list-style-type: none"> • Sewer GEM • SDN-In-House Software for Generation of Profile and Planimetry |
| Sewage Pumping Station | <ul style="list-style-type: none"> • Detention Period for Sewage in Wet Well • Minimum & Maximum Level • Frequency of Pump On / Off | <ul style="list-style-type: none"> • In-House Software |
| Sewage Treatment Plant | <ul style="list-style-type: none"> • Selection of Process based on the BOD, Techno-Economical Comparisons, Environmental Impact, Land Availability, Temperature, Location, Wind Direction, Reuse of Final Effluent, Ease of Operation and Maintenance | <ul style="list-style-type: none"> • In-House Software |

| Components | Critical Design Parameters | Software |
|--------------------------------|--|---------------------------------------|
| Storm Water Drainage | | |
| Rainfall Data Analysis | <ul style="list-style-type: none"> • Probability Estimation • Return Period • Velocity | SMADA Gumball's Analytical Methods |
| Runoff Estimation | <ul style="list-style-type: none"> • Runoff Factors • Defining Catchment • Time of Concentration • Intensity | In-House Software |
| Storm Water Collection Network | <ul style="list-style-type: none"> • Maximum Discharge • Gradient and Velocity • d / D Ratio • Depth of Cut | Storm CAD |

3.3 GIS Driven Information System

For any Water Supply and Sewerage System to be successful, it has to cater the consumer demands like "Adequate Quantity, Acceptable Quality at Affordable Tariff". The water managers strive balancing between ever-increasing demands. Various tools and techniques are used in the systematic approach in Water and Wastewater Management and Use of GIS (Geographic Information System) make this task easier.

GIS is a computer based system "for Capture, Storage, Retrieval, Analysis and Display of Spatial Data". By querying of both spatial and non-spatial data various planning scenarios for decision making can be generated. Man, Machine Users, Data, Software are major components of GIS.

GIS represents the real world digitally. Data could be gathered in many ways, and overlaid to present maps, which could enable people to make the right decisions.

SECON has capability in understanding client requirement and developing project specific GIS System for Water and Wastewater Management.

3.4 Knowledge Base

PHE library is well equipped with collection of Manuals, Journals, Books Covering different Fields of Public Health Engineering, IS Codes, BS Codes and ASTM Standards. SECON being an ISO 9001:2008 Certified, the PHE department has all activities complied to ISO Standards and activity manuals are available for the approach to Planning, Design and Preparation of Drawings.

4 Service Offerings

SECON is having capability in addressing and identifying solutions in gamut of issues associated with water (both Drinking Water and Industrial Water Requirement), Sewage and Storm Water Drainage Systems. The service offerings with the complete project cycle includes the following:

- Preparation of Conceptual Report

- Project Appraisal
- Preparation of DPR based on Computer Aided Optimal Design and Drawing

- Tender Documents & Cost Estimates
- Construction Supervision & Management
- GIS Driven Information System
- Training and Capacity Building Programs

4.1 Preparation of Basemap

- Topographic / Planimetric / Urban Mapping
- Digital Terrain Models
- Preparation by Data Collection and Processing from:
 - Satellite Images
 - Photogrammetry and Lidar

4.1.1 Survey and Investigation

- Field Survey to Generate Plan / Profile / Cross Sections, Manhole Invert Elevations, Transport Main Profile, Longitudinal Sections, Developing of Hydraulic mean Gradient Levels & Intersection Levels of Distribution Networks.
- Underground Utility Location using GPR (Georadar)
- Above Ground Utility Mapping
- GPS Mapping and Inventory for GIS Asset Management
- Geotechnical Investigations
- Geological Investigations
- Hydraulic Investigations
- Hydrological Investigations

4.1.2 Feasibility, Planning, Design

Water Supply, Sewerage and Storm Water Drainage System

- Feasibility Study of the proposed system with respect to the Topographical Features, Source, Demand, Environment, Supply and other factors by considering and analyzing the existing system
- Assessment of Water Resources (Ground Water and Surface Source) & Water Supply, Preparation of Preliminary Design and Estimate for Urban / Rural Water Supply Schemes
- Water Quality Analysis using various methods, proposing suitable technology for the Treatment of Non Potable Water according to the water quality Parameters affected.
- Preparation of Engineering Study Report Involving Population Projection, Economic Analysis Water Hammer Analysis of Rising Main & Distribution System using latest Network modeling software.
- Development and Management of Water Resources
- Design of Water Treatment Plant with a Schematic Diagram

- Potable Water Supply and Public Sanitation Facility Development for low-income dwelling complexes, if required
- Diagnostic studies including flow gauging and computer-based hydraulic modeling of Sewerage Systems using Sewer CAD
- Design of the Sewage Treatment Plant
- Purification and recovery of Wastewater for Irrigation, and recharging of Ground Water Aquifers
- Sewerage Development, Treatment of Sewage and Disposal of Sewage
- Design of Storm Water Drainage Network using Storm CAD.
- Irrigation, Drainage and Flood Mitigation Works
- Aesthetic water bodies development for recreation Designed Sewer Networks, Trunk Sewers, Pumping Stations, Oxidation Ponds and Outfall
- Preparation of Detailed Working Drawings for the Network, Appurtenances and Structures

4.1.3 Rate Analysis, Detailed Quantity Calculation, Bill of Quantities & Cost Estimates

- Calculation and Presentation of Detailed Quantities for the Various Items
- Preparation of the Bill of Quantities of the items after classifying the same under various heads.
- Preparation of Rate Analysis for the Major items as per the Specifications
- Calculation of the Cost Estimates for the project based on the above
- The Rates of the items shall be based on the prevailing Market Rates / Government Rates for Material and Labour

4.1.4 Preparation of Tender Documentation and Vendor Evaluation

- Finalisation of the Technical Specifications for the various components of the project
- Preparation of Bid - Documents as per the Clients standard procedures followed such as World Bank Procurement policy, FIDIC etc.,
- Preparation of Detailed Specifications for the items
- Preparing Pre-Qualification Documents for the Contractors
- Preparation of Tender Documents for the Contractors
- Assisting the Client in Evaluation of the Tenders

4.1.5 Project Implementation Supervision and Generation of As Built Drawings

- Supervision and Quality Control of the Day-to-Day Construction
- Checking and Certification of Quantities executed as per the Specifications laid down in the Tender Document
- Contract Management of the Project
- Verification of Bills

- Assisting Client in Clearing Arbitration and Disputes
- Identification of Approved Variations from the Tender Drawings
- Preparation of as Built Drawings Incorporating the Changes, if any for Effective Management

4.1.6 GIS Based Asset Management

- Field Survey and Data Collection
- GIS Data Development (Converting Hardcopy / CAD Plans / Asbuilt Drawings into GIS Database for Water / Sewer / Storm Water Networks)
- Development of Enterprise GIS applications for Asset Management and Environmental Monitoring
- Generation of Network Mapbooks (Generation of Network System Maps in Hard Copy and Digital format Viewable on Web Based Systems)

4.2 Training and Capacity Building Programs

SECON has capacity in carrying out tailor made training and capacity building programs to various stakeholders in the field of Water and Wastewater Management.

4.3 Leak Detection and Pressure Monitoring

SECON has required resource in carrying out Leak Detection:

- Field Survey and Data Collection
- Verification of As-built drawing using advance technology
- Identification of the District Metered Areas (DMA), DMA preparation
- Programme for isolation of the study area
- Primary Survey - Reconnaissance Survey
- Secondary Survey - Pin point the location of leaks using advance technology
- Unaccounted Water and Calculation of Losses
- Pressure monitoring using GSM technology
- Hydraulic analysis and Draw up overall reduction plan

5 Relevant Project Experience

Relevant experience gained in executing major International and National Projects are listed below

International

- Preparation of DPR for **“Water Supply, Sewerage, Storm Water Collection System, Electrical Town Distribution Network, Telecom Distribution Network and Roads for 100 towns** in Tripoli Region, **Libya**.
- Design of **“Storm Water Drainage Collection and Disposal System**, Design of Road and Structural Design of Civil Structures ” for Shuqaiq Phase 2 and Estern Provibce Water Transmission System Phase 2 ” in **Kingdom of Saudi Arabia**
- Engineering Survey and **Design of Water Supply System, Sewerage System, Storm Water System**, Electrical Town Distribution Network, Street Lighting, Telecommunication Network, Gas Distribution System and Roads for Al Herrah Project in Tripoli Region, Libya for **Saving Investments and Urban Development Company (SIUDC), Libya**.
- Preparation of DPR for **“Water Supply Distribution Network, Sewerage Drainage System, Storm Water Drainage System, Irrigation System, Roads and Pavement Designs with Parking Area ”** for **Gargaresh Cornish Beach Development (Water Front) in Tripoli, Libya**.
- Detailed Engineering Survey, Design of **Water Supply, Fire Hydrant Network, Sewerage Network, Storm Water Network, Roads, Sidewalks, Car Parking**, Electrical Power, Road / Street Lighting Network including Lighting for side walk along the beach, Telecommunication Network and Irrigation System for gardens and green areas for complete area inside the boundary of the approved Master Plan of **Gargaresh Beach Area, Tripoli, Libya for Organization for Development of Administrative Centers (ODAC), Libya**.
- Preparation of **“Preliminary and Detailed Design Of Water Supply, Sewerage and Road Network”** for **Al Quryat Eshargiah , in Libya**
- Preparation of **“Preliminary and Detailed Design Of Water Supply, Sewerage System, storm water Drainage System Road Network, Electrical and Telecommunication Town Distribution System”** for **Al Tawarga , in Libya**

National

- Survey Planning, design of **Anjanapura Township, Uttarhalli Hobli, Bangalore** South Taluk - **Design of Roads, Water Supply, Sewer, Storm Water and Cross Drainage Works**. Preparation of BOQ & Detailed Project Report and Preparation of GIS Data Base for GIS / MIS applications for Bangalore Development Authority.
- Field Survey and Geotechnical Investigation for ”Consultancy Services for Preparation of Detailed Project Report for **Bangalore Water Supply and Sewerage Board (BWSSB)**.
- Topographical Survey, Geotechnical Investigation, Hydro-Geological Investigation and compile the Meteorological data for **International Airport at Devanahalli, Bangalore**.
- Techno Economic Feasibility Study for Transportation of **Raw Water from Cauvery River to Industrial Areas in and Around, Bangalore - Karnataka Industrial Area Development Board**.

- Provision of **Raw Water and Filtered Water Transmission Main from River Manjra to Naubad and Kollarkhurd Industrial Area Bidar - Karnataka Industrial Area Development Board.**
- Consultancy Service for Detailed Engineering Service for Execution of Punasa Lift Irrigation Scheme including **Water Transport Main, Water Supply Distribution Mains for Drinking Water Supply to 110 Villages** and Irrigation for 35008 Ha – **Narmada Valley Development Authority.**
- Project Management Consultancy Services for Up gradation of important road corridors in Bangalore Urban and Rural Districts for a length of 1004 Km.
- **“Engineering Survey, Investigation, Hydrological Analysis, Design of Raw Water Transmission Main, Intake System with Pumping Stations and Design of Intermediate Reservoir** to the proposed 3500 MW Coal Based Power Plant at Chhattisgarh State for KSK Mahanadi Power Company Ltd., Hyderabad.
- **“Survey, Investigation, Hydrological Analysis, Design of Barrages, Design of Dam, Raw Water Transmission Main, Intake System with Pumping Stations and Preparation of Drainage Plan”** to the Proposed Steel Plant of capacity 1 Mt / year at Madhya Pradesh State for SPJ Steel & Minerals Pvt Ltd.,Kolkata,
- **“ Engineering Survey & Cadastral Survey, Hydrological Survey, Geo-Technical Investigation, Obtaining Statutory Clearances, Design of Water Transmission Main, Intake System with Pumping Stations and Project Management Consultancy Service”**to Hazira gas-fired Power Plant expansion project in Gujarat.
- Study Report for **Fixing Raw Water Pipeline Alignment from Kota Barrage to Chembal Fertilizer and Fertilizer Ltd.,**in Gujarat
- **“Engineering Survey, Investigation, Design of Intake System and Raw water Pipeline from Ghandhak River to Sugauli”** for Hindustan Biofuels subsidiary of HPCL Ltd, Uttar Pradesh.
- **“Engineering Survey, Investigation, Design of Intake System and Raw Water Pipeline from Ghandhak River to Lauriya”** for Hindustan Biofuels subsidiary of HPCL Ltd, Uttar Pradesh.
- **“Techno – Feasibility and Hydrological Study for Drawal 10 MLD Raw Water”** for proposed Cement Plant, Gulbarga District
- **“Techno Feasibility and Hydrological Study for drawal of 10 MGD water from Ghataprabha river”** for proposed Fertilizer Plant in Belgaum.
- **“Project Management Consultancy Services for the work of preparation of DPR for the Water Supply scheme of 15 MLD (192 MCFT) to Dobaspet industrial Area. Bangalore Rural District and Hirehally Industrial Area”** Tumkur District
- **“Engineering Survey, investigation and Preparation of Detailed Project Report (DPR) & Draft Tender Preparation (DTP) for Sewerage System”** for 32 Taluka H.Q Villages / Towns of Gujarat State.

6 Certificates of Achievements

SECON as received a certificate of achievement from Bentley Systems for projects for Design of Water Supply, Sewerage and Storm Water Network.



DESCRIPTION OF ASSIGNMENTS

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/100000) | Status |
|-------------------------------|---|--|--------------------------------------|-----------|
| International Projects | | | | |
| 1. | Preparation of DPR for "Water Supply System, Sewerage System, Storm Water Collection System, Electrical Town Distribution Network, Telecom Distribution Network and Roads for 100 towns in Tripoli Region, Libya | <ul style="list-style-type: none"> • Project Area / Towns : 24000 Hectare / 100 • Water Supply Distribution System : 2500 Km • Water Supply Transport Main : 480 Km • Ground Level Reservoirs : 75 No. (100 Cum to 1700 cum Capacity) • Elevated / Over Head Tanks : 79 No. (100 Cum to 2000 cum Capacity) • Water Treatment Plant : 45 Nos. (0.50 MLD to 84 MLD Capacity) • Sewerage Collection System : 2000 Km • Sewerage Transport Main :350 Km • Sewage Treatment Plant : 73 No. (0.30 MLD to 64 MLD capacity) • Sewage Pumping Station: 317 No. • Storm Water Collection Network: 1215 Km. • Storm Water Pumping Stations : 25 No. • Preparation of Detailed Project Report and Tender Documents. | 5515.00 | Completed |

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/100000) | Status |
|---------|---|---|--------------------------------------|-----------|
| 2. | Preparation of DPR for "Water Supply Distribution Network, Sewerage Drainage System, Storm Water Drainage System, Irrigation System, Roads and Pavement Designs with Parking Area" for Gargaresh Cornish Beach Development (Water Front) in Tripoli, Libya. | <ul style="list-style-type: none"> • Design of 14.50 Km Water Distribution Network • Design of 16.50 Km Sprinkler Irrigation System with 1700 No. Sprinklers • Design of 10.0 Km Drip Irrigation System • Design of 150 m Sewerage System • Design of 2.5 Km Sewerage Transport Main • Design of 5 Nos. Sewerage Lift Stations • Design of 6.50 Km Storm Water Drainage Network with Marine Outfalls • Preparation of Detailed Project Report and Tender Documents | 64.00 | Completed |
| 3. | Preparation of DPR "Water Supply Distribution Network, Sewerage Collection System, Storm Water Drainage System, Roads and Pavement Designs with parking area, Street Lighting & Electrical Town Distribution System, Telecommunication and Gas Network" for Al Harrah Town ship in Tripoli region, Libya. | <ul style="list-style-type: none"> • Design of Water Supply Components such as 4 Km Transport Main, 22 Km Distribution Network, 2 No. Pumping Stations, 2 No. ground Storage Reservoirs • Design of 10 Km Sewer Collection System • Design of 5 Km Sewer Transport Main • Design of 2 No. Sewage Pumping Stations • Design of 19 Km Storm Water Drainage Network • Design of Storm Water Pumping Station, 1 Km Storm Transport Main • Design of Collection Reservoir / Recharge • Preparation of Detailed Project Report and Tender Documents | 60.00 | Completed |

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/100000) | Status |
|---------|--|---|--------------------------------------|---------|
| 4. | Consultancy Services for Preparation of "Concept Plan for Sewerage System for Organization For Development of Administrative Centres (ODAC), General People's Committee, Covering Western, Central, Southern and Eastern Regions" of Libya | <ul style="list-style-type: none"> • Review of Existing Reports • Evaluation of existing Sewer Transport Main carrying capacity for additional flow • Evaluation of existing STP Treatment Capacity additional flow • Design of Sewerage Transport Main • Design of Sewerage Treatment Plants • Preparation reuse plan for STP Treated Water for Agricultural purpose | 809.00 | Ongoing |
| 5. | Design of "Storm Water Drainage Collection and Disposal System, Design of Road and Structural Design of Civil Structures " for Shuqaiq Phase 2 and Eastern Province Water Transmission System Phase 2" in Kingdom of Saudi Arabia | <ul style="list-style-type: none"> • Design of Roads and Storm Water Drainage System, Storm Water Outfalls, Storm Water Pumping Stations and Storm Water Pumping Shafts. • Structural Design of Steel Water Tanks, Valve Shafts, Station Buildings and allied Structures. • Total 48 No of Water Storage and Plumbing Stations • Preparation of Construction Drawings | 324.75 | Ongoing |



| | | | | |
|----|---|--|--------|---------|
| 6. | Preparation of “Preliminary and Detailed Design of Water Supply, Sewerage System, Storm Water Drainage System Road Network, Electrical and Telecommunication Town Distribution System” for Tawarga , in Libya | <ul style="list-style-type: none"> • Population Projection and Water Demand Assessment • Analysis of Existing System Components to Incorporation with the Proposed System • Hydraulic Modeling of Water Supply Distribution System • Hydraulic Modeling of Sewerage System. • Design of Storm water Drainage System. • Design of Road Network • Design of Electrical and Telecommunication Town Distribution System • Preparation Preliminary and Detailed Design Report • Preparation of Construction Drawings | 206.14 | Ongoing |
|----|---|--|--------|---------|

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/100000) | Status |
|---------|--|---|--------------------------------------|---------|
| 7. | Preparation of “Preliminary and Detailed Design of Water Supply, Sewerage and Road Network” for Al Quryat Eshargiah , in Libya | <ul style="list-style-type: none"> • Population Projection and Water Demand Assessment • Analysis of Existing System Components to Incorporation with the Proposed System • Hydraulic Modeling of Water Supply Distribution System • Hydraulic Modeling of Sewerage Collection System • Preparation Preliminary and Detailed Design Report • Preparation of Construction Drawings | - | Ongoing |

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/100000) | Status |
|--------------------------|---|---|--------------------------------------|-----------|
| National Projects | | | | |
| 1. | Project Management Consultancy Services for Up Gradation of important Road Corridors in Bangalore Urban and Rural Districts for a length of 1004 Km. | <ul style="list-style-type: none"> • Recommending Geometric / Junction Improvements • Review of the execution details submitted by the Execution Agencies • Preparation of Quality Manual for Implementation • Monitoring Progress and Reporting • Preparation of catch up Plans • Quality Control and Quality Assurance • Ensuring Adherence to Safety measures during Execution • Submission of Monthly Progress Report indicating Progress, Contractor's Performance, Quality of Works and the Project's Financial Status & Forecast • Certification of Measurements for Payments | 1820.95 | Completed |
| 2. | "Engineering Survey, Investigation, Hydrological Analysis, Design of Raw Water Transmission Main, Intake System with Pumping Stations and Design of Intermediate Reservoir to the proposed 3500 MW Coal Based Power Plant at Chhattisgarh State. | <ul style="list-style-type: none"> • Design of 85 Km 1100 mm Dia MS Pipeline (Two Lines) for 1493 Ips Discharge. • Design of 2 No. Intake Structures, 3 No. Pumping Stations and Allied Structures for Pumps of Capacity 1493 Ips discharge with Head varying from 50 m to 122 m • Design of Earthen Reservoir to store 16 Mcm water with bund height up to 20 m. • Preparation of Detailed Project Report and Tender Documents. | 101.00 | Completed |

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/100000) | Status |
|---------|--|---|--------------------------------------|-----------|
| 3. | Topographical Survey, Geotechnical Investigation, Hydro-Geological Investigation and compile the Meteorological data for International Airport at Devanahalli, Bangalore | <ul style="list-style-type: none"> • Carrying out Topographical Survey on 1:1000 Scale showing all Topographical and Cultural features including sheet Rocks and their Extent • Providing the Demarcation and setting out facilities • Equally splitting the flight catering around area of 7 Acres into 3 parts of 2.33 acres each • Soil Investigation at locations identified by the Client • Analysis of field and laboratory Test Data and Preparation of Geo-technical Reports in duplicate and CD • Geo-technical Investigation through 7 Borehole Locations | 93.57 | Completed |
| 4. | “Survey, Investigation, Hydrological Analysis, Design of Barrages, Design of Dam, Raw Water Transmission Main, Intake System with Pumping Stations and Preparation of Drainage Plan” to the Proposed Steel Plant of capacity 1 Mt / year at Madhya Pradesh State. | <ul style="list-style-type: none"> • Transport Main : 27 Km, Diametre ranging from 400 mm to 1000 mm Dia MS Pipelines for discharge 125 lps to 950 lps • Intake / Pumping Stations : 3 No. Intake Structures, 3 No. Pumping Stations and Allied Structures for Pumps of Capacity 125 lps to 475 lps discharge with Head varying from 67 m to 119 m • Reservoir : Design of One barrage with storage capacity 24.70 Mcm, One Dam with storage capacity 3.85 Mcm and One dam with 1.90 Mcm Storage capacity • Drainage Scheme : Preparation of Drainage scheme for Steel Plant Area | 75.00 | Completed |

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|---------|---|--|---------------------------------------|-----------|
| 5. | Survey Planning, Design of Anjanapura Township, Uttarahalli Hobli, Bangalore South Taluk - Design of Roads, Water Supply, Sewer, Storm Water and Cross Drainage Works. Preparation of BOQ & Detailed Project Report and Preparation of GIS Data Base for GIS / MIS Applications for Bangalore Development Authority. | <ul style="list-style-type: none"> • Establishing Planimetric and Height Control using DGPS and Auto Levels • Topographical Survey using Total Stations • Preliminary Geotech and Material Investigation • Design of Layout including Public and Civic Amenities • Design of Road Alignments, Pavement and Cross Drainage Works • Design of Storm Water Drainage System, Electrical Supply & Distribution System, Water Supply and Sanitary Scheme • Preparation of Bill of Quantities, Cost Estimates and finalization of Tender Documents | 17.48 | Completed |
| 6. | Study Report for Fixing Raw Water Pipeline Alignment from Kota Barrage to Chembal Fertilizer, Gujarat | <ul style="list-style-type: none"> • Water Adequacy Analysis to meet the 10 mgd requirement from Kota barrage • Capacity Analysis of existing Right Bank Canal to convey required water • Fixing of Pipe 50 Km Pipeline Alignment Carrying Economical Analysis to select suitable Alignment | 8.50 | Completed |
| 7. | Field Survey and Geotechnical Investigation for "Consultancy Services for Preparation of Detailed Project Report" for Bangalore Water Supply and Sewerage Board (BWSSB) | <ul style="list-style-type: none"> • Soil Investigation at locations identified by the Client • Analysis of Field and Laboratory Test Data and preparation of Geo-Technical Reports • Geo-Technical Investigation through 15 Borehole Locations • Conducting Laboratory Test as per relevant Indian Standards and as Specified • Submission of Soil Investigation Report in Duplicate and Soft Copy in CD. | 3.18 | Completed |

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/ 100000) | Status |
|---------|---|---|---------------------------------------|-----------|
| 8. | “Engineering Survey, Investigation, Design of Intake System and Raw Water Pipeline from Ghandhak River to Sugauli”. | <ul style="list-style-type: none"> • Fixing of Pipeline Alignment • Carrying Topographical Survey and Geotechnical Investigation • Designing of Intake at Ghandhak River • Designing of Raw Water Pipeline System and Surge Analysis • Preparation of Detailed Project Report , Cost Estimates and Tender Documents | 13.00 | Completed |
| 9. | “Engineering Survey, Investigation, Design of Intake System and Raw Water Pipeline from Ghandhak River to Lauriya”. | <ul style="list-style-type: none"> • Fixing of Pipeline Alignment • Carrying Topographical Survey and Geotechnical Investigation. • Designing of Intake at Ghandhak River • Designing of Raw Water Pipeline System and Surge Analysis • Preparation of Detailed Project Report, Cost Estimates and Tender Documents | 11.00 | Completed |
| 10. | “Techno - Feasibility and Hydrological Study for Drawal 10 MLD Raw Water” for proposed Cement Plant, Gulbarga District | <ul style="list-style-type: none"> • Collection of relevant SOI Topo Maps, Geological Maps, local Irrigation Maps, Development Plans, Water Atlas, Meteorological, Hydrological Data, Client’s Input etc., as available. • Identification of intake sites and pipeline corridors for aligning Transport Main. • Carryout the Water Adequacy Analysis. • Workout the storage capacity of the reservoir required to address the lean period flow in the river. • Reconnaissance Survey of Intake Point, Pumping Station, Important Crossings, Land Availability, Obstacles, Accessibility and Safety of Public & Property. • Techno-economical Analysis for alternate pipeline routes based on the topography, optimization of pipeline route and estimated Cost. • Preparation of Pre-Feasibility Report and Techno-Feasibility Report. | 12.00 | Completed |

| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/ 100000) | Status |
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| 11. | Consultancy Service for Detailed Engineering Service for Execution of Punasa Lift Irrigation Scheme including Water Transport Main, Water Supply Distribution Mains for Drinking Water Supply to 110 Villages and Irrigation for 35008 Ha . | <ul style="list-style-type: none"> • Transport Main: 20 Km, Diameter Ranging 1400 mm to 2100 MS Pipelines for discharge ranging from 2 to 6 Cum / Sec. • Distribution Main : 459 Km • 3 No. of Reservoirs of Balancing Reservoir • Catchment Area : 35008 Hectare | 334.64 | Ongoing |
| 12. | “Engineering Survey & Cadastral Survey, Hydrological Survey, Geo-Technical Investigation, Obtaining Statutory Clearances, Design of Water Transmission Main, Intake System with Pumping Stations and Project Management Consultancy Service” to Hazira gas-fired Power Plant expansion project in Gujarat. | <ul style="list-style-type: none"> • Design of Intake Structures, Pumping Station and Electro Mecanical Components for 315 Ips Discharge for 34 m Head. • Design of 22 Km, 800 mm Diameter MS Transport Main for discharge of 630 Ips • Design of allied Structures and Buildings. • Preparation of Detailed Project Report and Tender Documents. • Project Management Consultancy during Implementation | 59.91 | Ongoing |
| 13. | “Techno Feasibility and Hydrological Study for drawal of 10 MGD water from Ghataprabha river” | <ul style="list-style-type: none"> • Collection of relevant SOI Topo Maps, Geological Maps, local Irrigation Maps, Development Plans, Water Atlas, Meteorological, Hydrological Data, Client’s Input etc., as available. • Identification of intake sites and pipeline corridors for aligning Transport | 12.00 | Ongoing |



| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/ 100000) | Status |
|---------|---|--|---------------------------------------|--------|
| | for proposed Fertilizer Plant in Belgaum. | Main. <ul style="list-style-type: none"> • Carryout the Water Adequacy Analysis. • Workout the storage capacity of the reservoir required to address the lean period flow in the river. • Reconnaissance Survey of Intake Point, Pumping Station, Important Crossings, Land Availability, Obstacles, Accessibility and Safety of Public & Property. • Techno-economical Analysis for alternate pipeline routes based on the topography, optimization of pipeline route and estimated Cost. • Preparation of Pre-Feasibility Report and Techno-Feasibility Report. | | |



| Sl. No. | Assignment Name | Assignment Highlights | Consultancy Fee (Rs. in Lakh/ 100000) | Status |
|---------|---|--|---------------------------------------|---------|
| 14 | <p>“Project Management Consultancy Services for the work of preparation of DPR for the Water Supply scheme of 15 MLD (192 MCFT) to Dobaspet industrial Area. Bangalore Rural District and Hirehally Industrial Area” Tumkur District</p> | <ul style="list-style-type: none"> • Reconnaissance Survey for Fixing of about 36 Km transport Main Alignment. • Engineering Survey and Investigation • Design of 3 Intake and 3 Pumping Stations • Design of 9.11 mld and 2.25 mld Water treatment Plants. • Design of 36 Km Transport Main for 0.393 cum /sec discharge • Design of Pumping Machinery for 0.393 cum / sec discharge • Project Management Consultancy during the implementation. | 21.12 | Ongoing |
| 15 | <p>“Engineering Survey, investigation and Preparation of Detailed Project Report (DPR) & Draft Tender Preparation (DTP) for Sewerage System” for 32 Taluka H.Q Villages / Towns of Gujarat State.</p> | <ul style="list-style-type: none"> • Collection of Historical Data on Population • Population Projection for 2040 • Evaluation of existing Sewerage System • Evaluation of existing STP Treatment • Design of Sewer Network, Sewage Pumping Stations and Sewage Treatment Plant • Identify the Sewage Disposal Point • Preparation of details Cost Estimate with drawings, Project Report, Financial and Economical analysis, Draft Tender Document with detail specification. • Design of Sewerage Treatment Plants | 230.00 | Ongoing |